Prologue Part 1

Sometime around 100 BC Vitruvius defined the principle concerns that compose architecture: "*Commodity, Firmness, and Delight*." The classical 3 divisions imply application by the architect as heroic gestures which assume knowledge of how these 3 are met. This authority imagines that all understanding of the circumstances of any project are known. Currently we might replace that triad with "Circumstance", because all of the triad can only be embodied in the project by understanding and bowing to the circumstances of the time and place. It would seem important to probe the triad a bit.

Commodity focuses on what we now call program, the embracing of all the functional needs of those people who will use the building (or landscape) as imagined over the life of the project. It might also apply to a different set of uses for the project based on longevity, which now edges a bit into Firmness. So Commodity is the sum of all the present and possibly future circumstances of use.

Firmness focuses on structure, not at its initial Greek inception, but over time as needed by commodity, always without the understanding of future environmental circumstances. There is some issue involving Leon Batista Alberti's understanding of firmness; does it mean the structural adequacy of the building, or the visual-psychological impression of adequacy, because the 20th century's structural technologies certainly can transcend any visual understanding of structure. When Viollet-le-Duc designed the Paris library using cast iron columns of amazing slenderness, visual sense of firmness fell.

: Arches of cast iron in the main library ,Paris, France

Steel towers in the gallery addition at 4th Corner

Does not firmness depend on potential environmental threats yet unperceived? Does the use of certain materials undermining the stability of the planet fit into this category? So Firmness is the sum of all understood and potential circumstances impacting the project and the potential of the building to harm the environment.

Delight might be better replaced by Engage, in as much as it is only in the eye of the beholder. However, innovation which has an intellectual or resulting unusual form could either engage the viewer, who may or may not be the user, or annoy them. Anything dystopic might catch the eye of the visually competent with no way of preconceiving a response. Conforming to prior harmonies of form eliminates any future history as it must continue the established. In the 21st century we are way beyond that constraint. So Delight is dependent on the circumstance of the intellectual and emotional responses to forms determined by diverse circumstances that can, and should, evolve the forms.

Perhaps Circumstance, which can contain the limited ideals of the initial triadic dogma, could lead to a broader set of guidelines for the discipline, which would include the future of civilization. But one must first define the breadth of this concept. The art historian, Vincent Scully, wrote in his preface to Architecture the natural and the manmade:

"At present, most human beings of the developed nations live in an environment that is almost entirely manmade…But underneath all the complexity of those urban situations the larger reality still exists: the fact of nature, and of humanity's response to the challenge – the threat, the opportunity – that nature seems to offer in any given place."

In other words: our current civilization ignores the critical conditions of the planet, by assuming an architectural organization that has emerged to suit its own workings and whose buildings are responsible for half of all carbon dioxide release. This is a result of this specie's disregard of the immensity of this impact and its initial damage to the only environmental conditions suitable for this species, and the bulk of most other life forms. Perhaps this is due to civilization's excessive admiration of its accomplishments and its wish to self-reward at every turn.

Much of this is based on emotional human nature, resulting in aesthetics, certainly another circumstance with a most prominent and permanent influence on architecture. Thus we merge the triad with its most difficult challenge: that which is uniquely whimsical, the non-factual element on the architect's shoulders: Art. Again quoting Scully, "All works of art have to do with meaning. We can never, in fact, experience form without deriving meaning from it." (Or attaching meaning to it…) "All experience of art, all writing about art, is deeply involved with the viewer's cultural stance…"

Thus we have analysis meets inconsistent whimsical aesthetics. Even those of the architects which are, at a sub-conscious level, images seen over a lifetime, stored in the depths of memory, later to be melded into buildings. Architecture and object design are the only artforms encompassing use. These are thus always impure. A shape that has no reason for existence, i.e. having no use, belongs to the purely visual arts. Shapes having use are therefore Forms belonging to architecture and object design. Even in most buildings shapes are arbitrary, with no *Raison-d'Etre*. Often it is impossible to know the origin of a particular configuration of building parts: necessity or whimsy?

So the circumstances of the architect's education, experiences, and emotions, are the essential added elements to the Vitruvius triad. However, these are the only aspect of the discipline that machine intelligence most probably cannot perform, but only emulate, (which would be a type of deception.) In other words, machines can make buildings; humans must make architecture. The digital will always be the assistant, and if given more authority, architects will no longer exist.

When historians analyze architecture, they mostly discuss the circumstances of the aesthetics, with some mention of the building "requirements", or requested program, and existing conditions of place. Such studies are incomplete. A more holistic approach would include the reasons for use of materials. sociological requirements, historical connections (physical and metaphysical), political influence, economic limitations, and personal ideologies of the architect.

Categorizing architecture into types has been a limiting factor in this discipline over the last several thousand years. Culture after culture has evolved "styles" which are then emulated, forgotten, or modified over time. Much of what we call 'styles' is found in the realm of ornament as well as the basic envelope of the work. The expanse of time is no barrier for emulation; for example the service quarters of Hadrian's Villa find themselves reborn in Louis Kahn's Indian and Bangladeshi work, though somewhat abstracted. (However, a careful examination of photographs of the Villa might reveal the sources of the insertion of the horizontal strips of marble between the pours of concrete in Kahn's project. Whether a use of structure or ornament in either cases, it serves as a secondary level emulation, with the first being the arches of different scales.) Borrowing from antiquity always seem more refreshing than borrowing from a more recent past, and reveals a similarity that seems, in some way, intrinsic to universal human construction: a return to basics.

However, a careful examination of photographs of the Villa will reveal the sources of the introduction of the horizontal strips of marble between the pours of concrete in Kahn's project, (a use of ornament in both cases,) but the primary emulation of the Villa being the arched brick of different scales and portions. Borrowing from antiquity always seem more refreshing than borrowing from a more recent past, and reveals a similarity that must, in some way, be intrinsic to universal human construction, a return to basics.

Hadrian's Villa Service building

Portion of Capital assembly buildings in Bangladesh

Arches of the Foundation House, 4C Foundation

The above example shows transitions from centuries and continents. In Vermont the main entrance drum, the walls enclosing the greenhouse, and exterior walls supporting an out door deck with staircase to the ground, are using the same arching of brick for a variety of uses, referring not only to those of Louis Kahn, but in this continent, to the colonial work of Thomas Jefferson. He mixed forms from Roman work and Palladio's villas when designing his Virginia home, and in the undulating, single withed, curved brick walls at the University of Virginia.

When Le Corbusier wrote in *Toward an Architecture, 1925, "*Architecture is a matter of 'relationships', a "pure creation of the mind', he created a movement, an attitude, of autonomy. He claimed detachment from all circumstances existing in the real world in favor of what is completely internal. From where does this internal force derive? From his experience of the real world. So, in effect, he is pretending to shun all circumstantial influence in favor of egotistical mysticism: hardly a process sympathetic to the modern world he wanted to create, a world attempting to use science as the fundamental material of the future.

He rejects the absolute requirement of structures and material science necessary to create a pure geometric, Cartesian modernism. (It must be remembered that Rene Descartes was a mathematician as well as a philosopher.) There is no pure creation of the mind. Creation is the unique assembly of external influences and learned ability through experimentation so as to produce an object. Le Corbusier's influence on architecture and urban planning for the last hundred years has proven powerful and sometimes destructive, but distrust is in the air, as the methodology, though clean, has become repetitious and run out of steam.

One of the 20+ public housing projects in Massachusetts

Autonomy

Autonomy is a difficult aspect of design process to define and to obtain. Most architectural process in the 21st century has been jointly organized, most recently by BIM which seeks inputs by allocated collaborators ranging from zoning officials to electrical suppliers. Ideally this includes the whole range of professionals connected to the project. Crowd sourcing design should not be viewed as comparable to crowd-sourcing fund raising.

This system is a complete rejection of autonomy, and an examination and critique of buildings resulting from its use will be needed to understand its impact. The old story of *a camel is a horse designed by a committee,* might be replaced by: *a goat is a tiger designed by a committee*. It is the blandness, the lowest common denominator that often results, fighting for first prize with budget inflexibility. Usually there Is one person on most committees who through ignorance holds down a possibility of design excellence, (*commonly referred to in the business world, as the feces in the punch bowl.)*

Under the Carter Administration, the Massachusetts Office of Renewable Energy created a pilot project for its public housing using increase conservation and solar heating systems, One head of a town housing authority, disputing known science, claimed that in his ocean-fronted town the sun rises in the North and sets in the South, and that he did not like insulation. He did not remain with the project.

On the horizon is a use of digital design in which computation would go beyond the helper stage and iterate thousands of solutions engaging all the input information it is fed, and making judgment as to the 'best' of those. However, what information is fed into the program by humans will inadvertently influence, or disturb the results. At that point it is machine created design, perhaps of great practicality and economy, but will not be human architecture. However, the AI can examine structural needs to suit many condition with resulting forms which otherwise would be overlooked as being possible. Maximizing the responses to the program, location etc. will not solve all the impact of unknown circumstances. The role of the machine in architecture is different than its role in building. Is it possible for the machine to know about the centuries of human creations in physical structures, the philosophies, the triggers of human emotions, or the connections to current visual aesthetic preferences? There is the sad possibility that the future of human interest in the Arts, will be so dulled by incessant connectivity, the addictive lure of unestablished information for economic and political greed, that ties to the history of the Arts will be nullified.

Look at the world's largest cities: There, numerous buildings are mostly absorbed by process, by economy, and by lack of insight; hither and yon lie a few identifiable buildings embedded with some architecture, some level of experimentation, and some ability to secure the mind's eye. It seems the influence of the machine by many insertions has already dulled the city, or in some case, made silly Disneyesque objects.

The Digital

What do we mean by "machine"? Most new buildings have many computer controlled elements (features) that modify parts of the building to suit changing conditions within or without. The Massachusetts Office of Renewable Energy discovered in the process of class- A monitoring that one adjacent housing units with the same occupancy used 3 times as much energy than the other. The discovery revealed the importance of the impact of human choice. One kept a window open all winter, the other did not. This reality was later recognized as an undermining reality in the LEED program's projections..

Basically unless you remove all opportunities for wasteful energy consumption, you cannot predict specific outcomes. For those who view energy minimal use as an absolute necessity, the only hope is machine autonomy. If the device delivering fresh air into a super insolated, insolated space fails, will humans die? Thus "the rise of the machine." One can extrapolate to reducing all domiciles to the minimum possibilities in use of materials, use of labor, and use of energy, and freedom of humans behavior. This pattern is now being established. Educating people of the necessity of all types of conservation has not born adequate fruition.

I like to think
(it has to be!)
of a cybernetic ecology
where we are free of our labors
and joined back to nature,
returned to our mammal
brothers and sisters,
and all watched over
by machines of loving grace..—Richard Brautigan

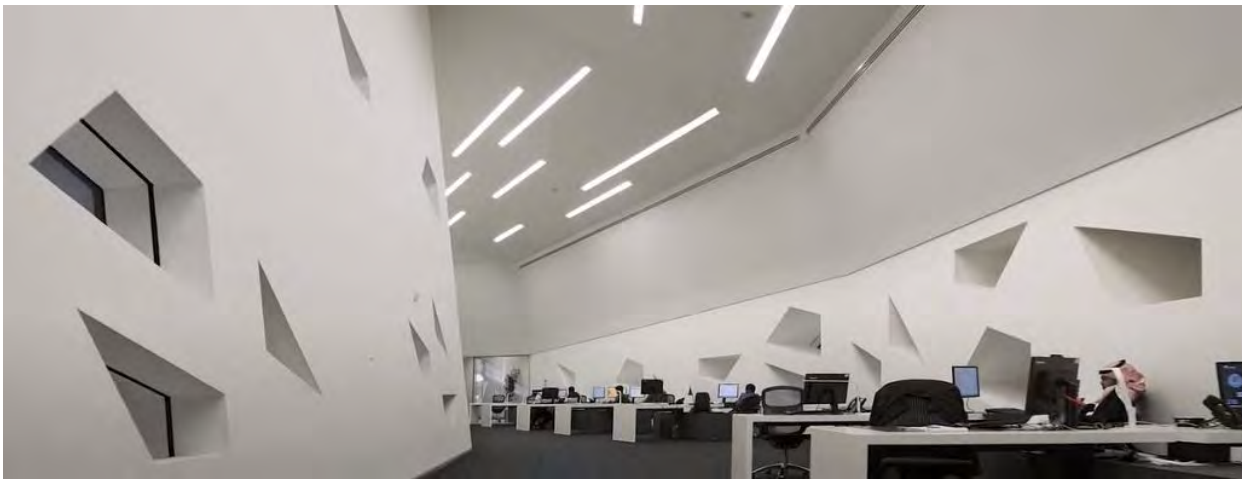
At the same time Brautigan was writing this vision of the future, we were also watching "Wild, Wild World of Animals" in which the most prevalent scenes were of animals eating each other. This vision of humans left to frolic with nature, is the Hollywood version of religious heavens. Certainly John Ruskin presented a different view of human activity when he wrote:

When we build, let us think that we build forever. Let it not be for present delight nor for present use alone. Let it be such work as our descendants will thank us for: and let us think, as we lay stone on stone, that a time is to come when those stones will be held sacred because our hands has touched them, and that men will say, as they look upon the labor and wrought substance of them, "See! This our fathers did for us."

Architecture is built on architecture. Created in the past are the circumstance of time, what has happened before. These objects have embedded memories of the culture that inhabited them. Things we currently share with past cultures reduces obsolescence of those earlier buildings because we can continue to use them, even if we have to make improvements and restorations. If we pretend that we are making something utterly new, we are deceiving ourselves, and worse we are confessing ignorance of the continuity of human history. If what is known now as parametric architecture creates geometries having no bearing on history, it will be a machine structure occupied by humans . A recent animated video of a research building in Saudi Arabia posits a person walking through the building; it is all angles and all white. There is no art, a few desks with a single occupant in a vast space showing a frozen office work environment. It is hard to believe that the creators of this design and its video think that they are creating anything other than a fantasy.

Perhaps this is acceptable in such an autocratic society. Also if one studies the classic and dominant architecture of that country, one discovers patterns, both intricate, and softly geometrically ordered. The main urban extent is principally of earthen fabric, soft rectangles with labyrinthine organization of the parts.

aerial view of the roof and a corridor-like office with desks in theKing Abdullah Petroleum Studies and Research Center

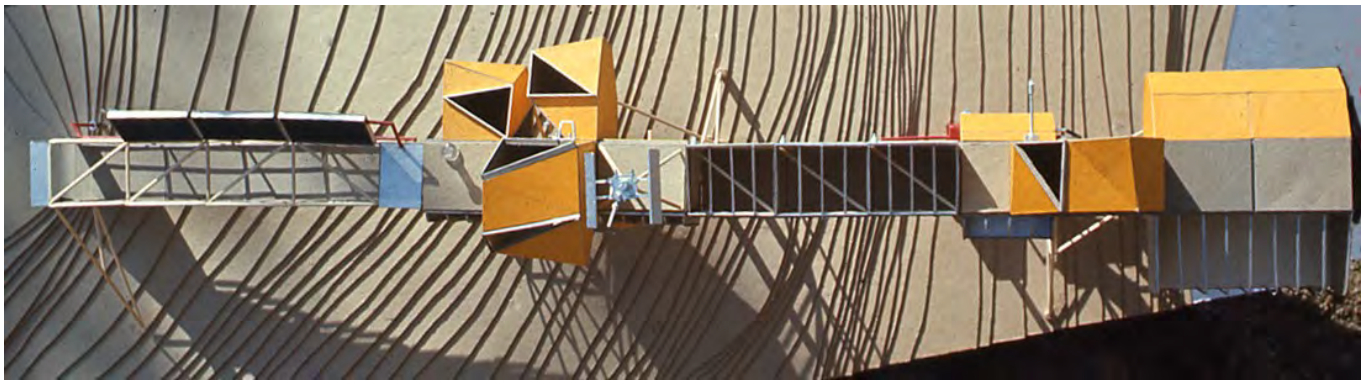


If one looks at the wall with triangular holes on the left of the above image, it might bring to mind a wall in a sacred building in France, Le Corbusier's Notre Dame de Haut. The massive wall, made from the rubble of the old destroyed church, is punctured by a series of rectangular recesses holding stained glass of various colored rectangles. It is like a European art gallery wall transformed into deep 3 dimensions, giving off an aura of rich colored light into the sacred space of the sanctuary. In comparing these two projects more than 50 years apart, one can see the change from the 'work of the hand' (a repeated theme of le Corbusier) countered by the work of the machine. More broadly iis the difference between the sensations received by the 2 spaces. Perhaps the petroleum business has lost its connection to humanity, and if so, there could be no better representation of this collapse. So where does the love of the machine begin? Post surrealism the most striking upsurge starts with Archigram.

The British group, Archigram, in the nineteen-sixties, created images of buildings that appeared to be machines, some combination of the moon lander and moving medical devices creating an aesthetic that was radical, but based on images of recent human technological invention. The most extreme project was the walking cities, proposing a different urban design idea, of parts of cities that could be repositioned as necessary over time.

This idea might have its day if global warming makes it difficult to have habitation in parts of the planet, and if we do not want to abandon buildings, but rather take them with us to better ground. Archigram was a human designed continuing view of prior human designed machinery. The walking cities were creatures dissatisfied with their location. Certainly these creations surpassed the entrenched modernism of the time. They were architecture with connections and responses to past human design, but they were not buildings, since they were not built. Architecture is indeed in the drawings, but can sometimes inhabit buildings.

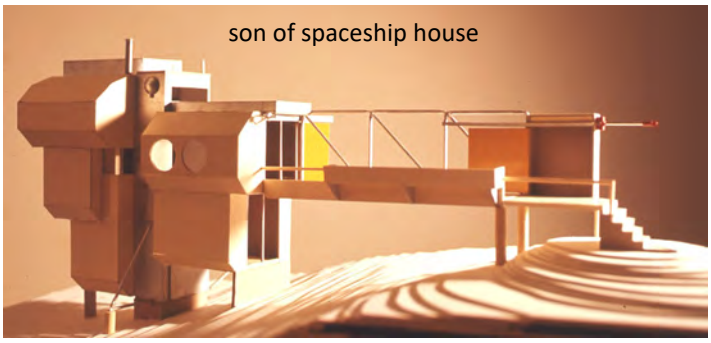
Archigram's Walking Cities



Modular prefab vacation house Citation winner
Progressive Architecture Design Awards

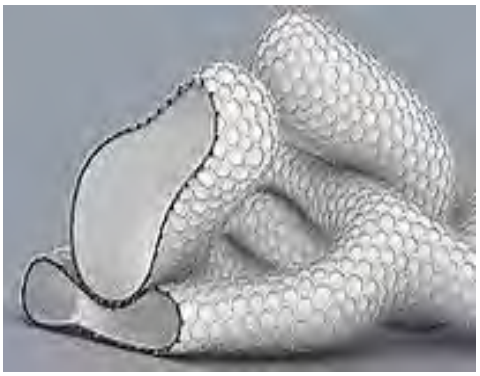
House for the Spokane Expo

Cabin over a pond



son of spaceship house

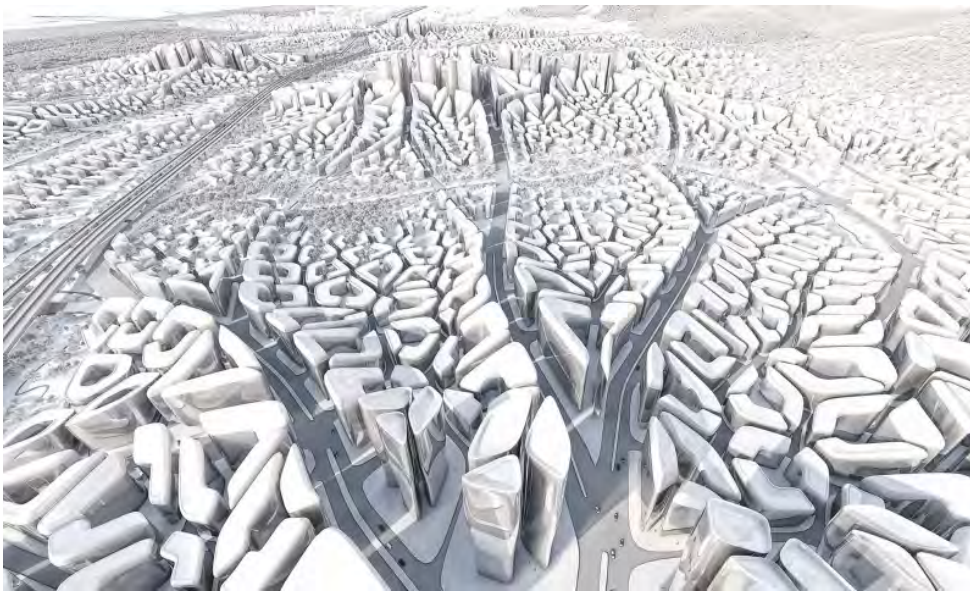
In 2022 these projects appear to be, not only children of the Archigram aesthetic, but ancient attachments by comparison with parametric projects . For example: this Rhino image, below left, has more of a connection to biology than architecture; it is organic, sculptural, and without a program. The scale of it is unknown, but if large enough to classify as a building, it is hard to imagine what one would do inside, unless it is an amusement park adventure. There are implications of cave dwellings and tunnels, as well as animal organs. There is also a similarity, whether or not intentional to the tiny dwelling of Archigram (top of page 6.) There is nothing intrinsically wrong about its shape as it cannot be discussed in relationship to a program, whereas other currently-built projects of a parametric nature with a specific program can have a powerful presence as architecture. In Seville an urban sculptural project with a program for human strolling and entertainment transforms an open space into a vibrant public creation defining a new memorable sense of place. Amazingly it is also made out of fiberglass-coated plywood!



Computer model

Seville plaza structure

In a sense it is a folly that makes covered spaces and a walkway that winds its curving way to the top where one can overlook the old walled city. The initial 3D programs could not make curved surfaces, but flat surfaces shifted to points of a curve, an approximation. The Seville structure is an assembly of flat surfaces in to a multi-curved approximation. A more recent and telltale model of extreme parametric curvature posits an enormous city resembling large cracked barren earth, which is not much different than areas around Mexico City, where one-story-concrete-block houses with corrugated steel roofs densely cover the landscape as far as the eye can see.



a fantasy of future city

I assume that this model is an abstraction and a great number of variations of height, volume, planting, and color would exist in the built version. Also it must be targeted for a very hot climate as little sunlight can penetrate these crevasses. Urban planning should not be autocratic even as a starter. It would be very bland because of its universality of forms. Not at all like Paris.

the robots of *Silent Running*

While it is impossible to know the future, imagining it might tweak it a bit. There are great opportunities for computing in the design process, and how it advances will depend on economics, the cost of labor, the cost of CAD-CAM, political motivation or interference, the impact of climate change, and education. Presently books and films mostly portray machine intelligence as evil, except for cute little robots.

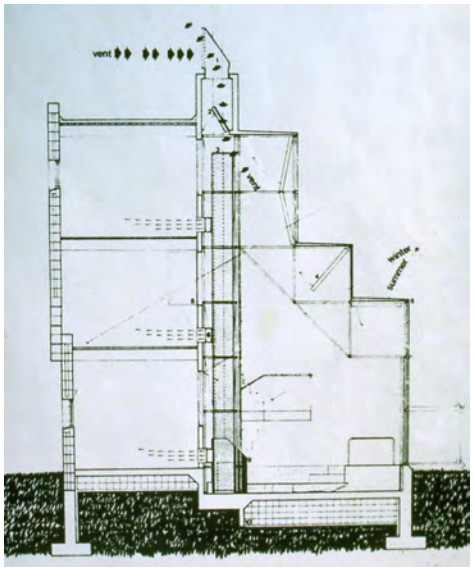
What are circumstances, and how are they discovered and incorporated into architecture ?

If all that is necessary to make architecture is to collect all pertinent potential aspects of the proposed project and stir them as if in a potpourri, then voila, the perfect building. This is only science, which is critical for the process, but not satisfactory for standing up to historical standards because there is no judgment about combining these varied aspects to make architecture. There is also the question of whether our responses to all the circumstances are even possible, so a type of editing may choose to respond to one, but not another, or with different emphasis. It can be argued that the egalitarian mix of all aspects will produce melba toast when what is wanted is a souffle grand marnier.

It is also sometimes impossible to resolve some conflicts over bits and pieces of circumstances; for a true example: should the grand piano be placed in the living room, the study, or the basement? Post working drawings, the clients raised this issue, but finding it unresolvable, they divorced. (Probably there were other undisclosed issues.) Every piece that is fitted this way or that excludes a myriad of other options. No matter what, everything will not be included: if too many large people try to get into the VW beetle; either smaller or fewer people or a larger car are required, but any choice might spoil the trip.

The Circumstance of:

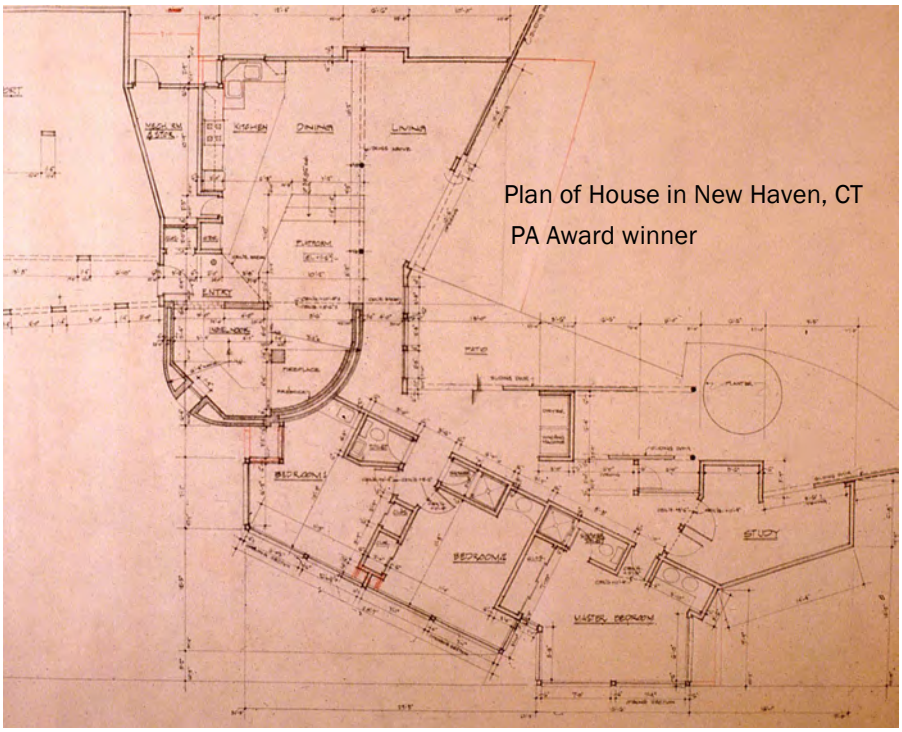
Program requirements
Site location and terrain
Local climate
Local building codes
Local materials
Existing aesthetics
Budget Constraints
Political Values
Construction Skill
Possible future impacts
Prior history/current history



Section showing thermal mass wall and sunspace of House in Rhinebeck, NY

Program requirements

Once hired, the architect must engage with the clients, and empathize with their needs, although also being a educator when necessary, in order to have an open interplay of agreement. Nomenclature must be established so that false starts do not create later barriers. One client once stated that he wanted a modern home and therefore it should have split levels and Swedish modern furniture. Furniture aside, the split level also required the dinning space be above the living room. While this seemed very amusing at the time when the first proposals were discussed, the living room/dinning space issue evaporated in favor of ease of access. This proved to be a more useful plan with the only elevated space, a fireplace nook, 3 steps up from the main spaces. The important focus was outside the house to a circular grove of evergreens.



Plan of House in New Haven, CT
PA Award winner

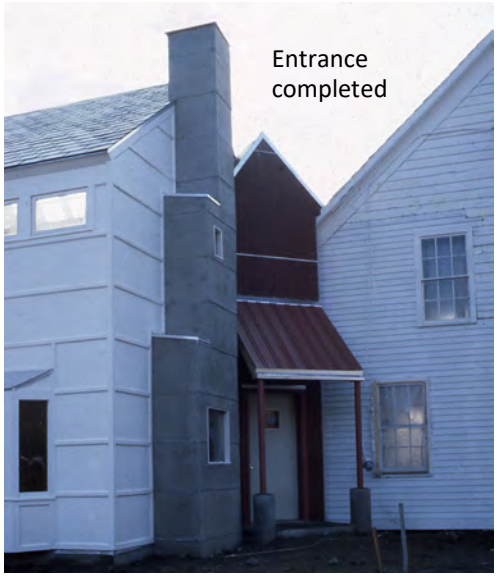
The architect must look at a longer period of a building's existence as a requirement. Although the future is unpredictable. Whether it be storms, earthquakes, or fire, the structure should be as resistant as the budget will allow. The Client may overrule this benefit if it is felt that the property is only to exist

for a short period, such as an ocean front, uninsurable beach house. There is also the environmentally irresponsible deliberate destruction of the property by next-time buyers, who like the land and general location, but dislike the house for reason of program or aesthetics. (A pre-civil war farmhouse in New England underwent a 2 year revival with insulation upgrades, significant solar capture systems, and repurposing of the inner space including the adjacent small barn. Years later the Client had to move and sold the property to people, uneducated in environmental issues, who tore off all the new parts of the buildings that did not resemble the image of the house as a true colonial abode. (At least they kept the insulation improvements and the new basement structure.) There is no guarantee that this type of insolent, selfish, backtracking will not ravage the buildings that are in sync with the needs of the future.

view from the southwest colonial

view of upgraded additions

Site location and Terrain



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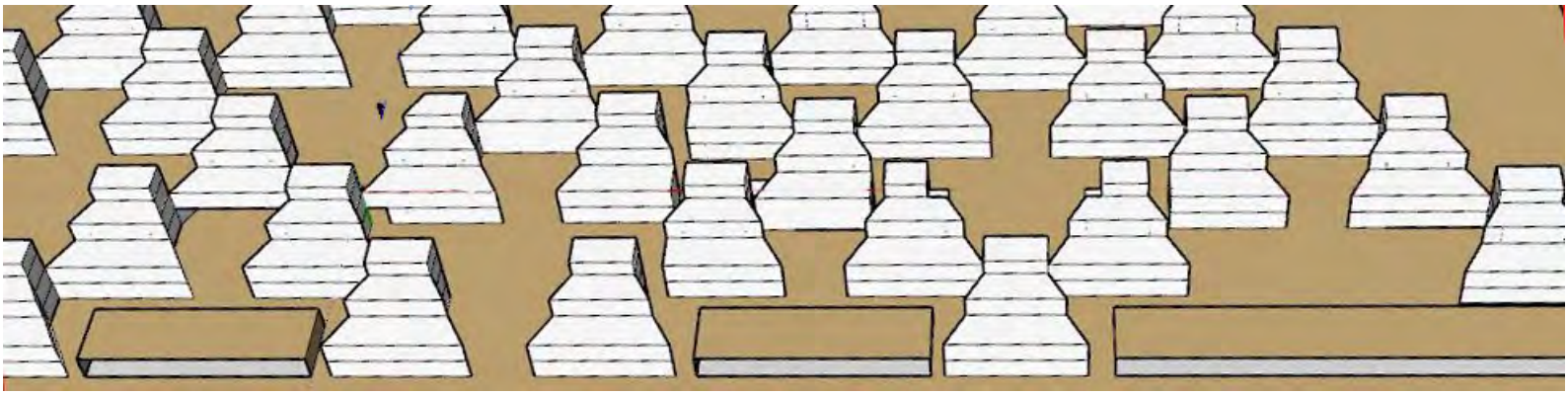
Once the project begins, the site must be examined in great detail: soils, rock strata, water drainage, solar orientation possibilities, climate specific to the area and site, which may differ. Also the future of the site should effect the building, if other buildings can be located in a way as to harm the building: blocking sunlight, invading private outdoor areas, excessive night-lighting, acoustic nuisance, create surface drainage problems, run-away septic waste, drain down available water in adjacent wells, etc. These possibilities can occur in both urban and suburban areas. Large rural estates are somewhat less exposed to some of these concerns.

In forested areas in temperate to cold climates, trees need to be cut, and preferably used as construction material, to allow sunlight to reach the building surfaces. The cut should be about 45 degrees East and South (in the Northern Hemisphere) and about 25 to 30 degrees up and out from the bottom edge of the house. At sunrise and sunset the sun will be lower than this profile, and if minimal cutting is desired, a curved arch to the south could represent the solar path.

Over the years trimming is necessary to maintain this exposure. Some people think that if one had deciduous trees in front of the building that they would shade the house in summer, and because the leaves would be gone in winter the sun would hit the house. This assumption is incorrect. The trees will still add a good amount of shade in the winter, depending on the type of tree‘s branch density, A 30% reduction in sunlight would not be unusual. Thie solar desirable exposure is more difficult to arrange for more urban density

In countries with ubiquitous car use, the access streets and parking can provide some or all the needed openness. The opened land can also be used for gardening ,mini-lawns, terraces , and low gazebos. A use more environmentally responsible is a series of plots for mixed vegetable and botanical plantings, managed by professional landscaping agriculturists. (*see appendix #1 for article "Rescape" which details this plan*.)

In Hot climates spacing of housing should be denser with all shading strategies in place such as gazebos, roof extensions, shade trees with lower vegetation. In all climates where water is sparse, aquifers are overdrawn by wells, roofs should be collecting water and cisterns should be storing it. Residential water systems can currently treat waste water to an extent that it can be potable, although these require maintenance and contain a larger carbon footprint than using the water for non-potable uses. Certainly in many cases, terrain and climate change resistance are intertwined. There are also many reasons why certain sites that might be very attractive economically, but in the long run will be seen as mistaken, should be left alone. We are far into unnecessary land invasion, urban sprawl, and waste dumps, the later having been clearly critiqued years ago in the book "God's Own Junkyard: the Planned Deterioration of the American Landscape" by Peter Blake.



Sketch of a sample urban spacing plan for 4 story housing with openings based on northern USA solar access.

When whimsical philosophies dictate specific urban planning, the most damaging and long term impacts on the quality of life occur; the external environment lingers onward, too expensive and too resistant to be replaced or restructured. In the suburbs massive commercial and office structures having a questionable future will leave vast amounts of mediocre architecture to be either torn down or rehabilitated.

One reason for the failure of urban and suburban planning, is that the organization is based solely on monetary gain, both by the enterprises requiring the space, and the governmental institutions permitting it with the purpose of collecting tax revenue, (also often using un-necessary eminent domain confiscation of property and eviction of the poor to gain the revenue.) Very rarely are current projects tailored to the notion of experience, of making a place of artistic and fundamentally lasting quality, with versatility to respond to changing conditions. In areas of historic quality, like central Paris, Seville, Key West, etcetera, the surrounds are developed in a manner that ignores all that went before, all that attracted generation of visitors and residents, all of the highest quality of diverse architecture and space.

Learning the lessons of these special places has been replaced with a modern failed system of build-cheaply-for-maximum-profit. The people who built these special places initially were not unaware of the necessity of livelihood. They were capitalist of moderate means whose lifestyles were based on unwritten social rules of behavior. Certainly, behavioral constraint and lack of greed stemmed from a moral-social-religious position and the notion of reward from experiences other than solely business success. The architects today are creating places dictated by the culture of extremity, of excess possession of goods, and space to display, sell and house them. The resulting use of planetary resources for the goods and the buildings abuts the possibility of continuing such growth. The fact that even though typical home volume has doubled since 1945, the commercial storage spaces have a total

volume in which every American citizen can stand inside comfortably. It is necessary to revise shelter from being a hording palace to being a viable dwelling with basic comforts, utility, and contact with the out-of-doors. Commercial spaces should not overwhelm those needing essentials and a few extras, nor making driving from parking lot to parking lot the principal (environmentally damaging) activity in-between acquisition fulfillment.

Construction Skills

Big Architecture does big buildings, and one can see the record of work by many large construction companies. However, when an excellent performance captures the minds of the designers, they not only hope to have the same team return on their next project, but may even be tempted to design it, extending their ideas and techniques, based on their positive past experience. There is a bit of danger in that assumption even with preliminary contracting that the builders will not default for any reason. Even the best contractors make mistakes (as do the best architects.) The City Corp building in NYC is the classic case of neglect. When the engineers who were hired to do “as-built” drawings discovered that a series of bolts in the steel structure had been neglected, their calculation showed the likelihood that in a 50-year-wind the 50-some-story tower would collapse. Repairs were made immediately. If that had not been discovered a catastrophe similar to the attacks on the World Trade Center could have occurred.

Some aspects of tower architecture in dense urban centers may have some limited integrity, especially in the face of climate change, lacking the resistance for which they were not constructed, as well as the benefits accorded to such density. The building collapse in Surfside in 2021 is the most recent example of building neglect. There is a resistance to new materials and how to use them by the construction industry, unless they see an immediate return on learning new skills.

An example of this was the introduction of Aerated–Auto-claved-Concrete (AAC) materials on the two time-spaced additions for a residence in Santa Fe. (See page 14) end result was acceptable but took twice as long on an hourly contract, but discouraged this crew to every use the material in the future. The AAC 2’x8’x3”panels were screwed onto the sips-paneled wall without difficulty and stuccoed the standard way. This material uses 1/10th of the cement in regular concrete blocks and has an R value between 1 and 1.5 per inch depending on the selected type.

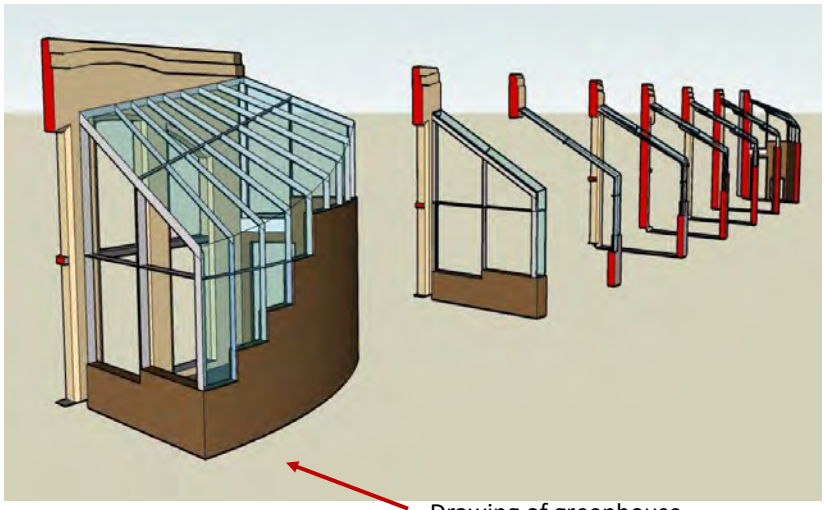
AAC BLOCK

The first attempt was met with shear refusal to install the AAC block as recommended by the manufactures. The AAC blocks needs only a 1/8” mortar joint of a special mortar and can be leveled without pounding on the blocks, reducing the installation time and effort in half.

The masons refused to follow these methods and used regular cement mortars, pounding the blocks relentlessly They ignored the special tools as well, making their life very difficult. This took much longer to complete and somewhat discouraged this crew to every using the material in the future. The AAC 2’x8’x3”panels, however, were screwed onto the sips-paneled wall without difficulty and stuccoed the standard way. This material uses 1/10th of the cement versus regular concrete blocks and has an R value between 1 and 1.5 per inch depending on the selected type. It has the potential to be a carbon dioxide reducer, replacing a large amount of energy-intense cement.

Example

Manual skills of construction contractors can still intersect with new machine drawing tools. It can be CAD/HUMAN as opposed to CAD/CAM. In the example below the simple 3D Sketch-up drawing when broken into slices was then measured in continuing drawings eventually determined the size and lengths of the aluminum and glass parts. The skeleton was made from flat plate aluminum with adhered L-angled aluminum strips on both sides top and bottom (home-made I-beams.)



Drawing of greenhouse

With the exception of the end walls, the intermediate beams were positioned to intersect an imaginary line extended from the center of a dome inside the building, Also the glass roof was pitched in 2 directions, allowing an East wall to be high enough to provide access to a roof terrace.

At the mid points of the beams cross pieces support the joints in the glazing which required hand-made templates since there were no identical sizes and slight changes from the model would change the geometry. (In a huge CAD-CAM project in Spain a large amount of the glass based on the model had to be replaced.) Here 2 people built the frames and 2 other people installed the glass.

The heat generated in this space is blown into the house by a fan activated by 2 small photovoltaic panels (small white squares in the photo.) The computer was a necessary tool to aid in the manual production. It pays to remember, however, that the Sidney Opera House was built from drawings using slide-rules to engineer the very complex curves of the now monumental image that represents Australia.

Greenhouse mullions lined up to center line of dome extended

Local Materials

Wherever one builds on planet Earth, the locale provides native materials which, if used in lieu of imported materials, not only reduces atmospheric carbon dioxide, but can be a visual announcement of locality. Identifying with past cultures, materials such as bamboo, wood species, and types of rock also engage the local skilled labor for assembly. The use of animal products may have problems with access depending on location. Exceptions to this negation can be wool, silk, and whey from cow's milk for making protective coatings.

Where stone, clay, and wood are available, these may replace more environmentally damaging substances. High demand for specific desirable materials may prevent access; then one must search elsewhere. (An example of such shortages was natural rubber for making tires in world war II. The Axis Powers had monopolized it and the USA realized that the only option for solving this problem was to invent artificial rubber from fossil fuel, essentially a flexible plastic.)

Some success has been made with making concrete less damaging to the climate. One example is replacing some portion of cement with furnace slag, a byproduct of coal burning plants and some other manufacturing waste. But if we faze out coal plants which we must, that residue would not be available.

Some other efforts are going forward, One of which that has been available for some time, is aerated auto-claved concrete. It uses one tenth of the cement to aggregate ratio of regular concrete. This is only available in block and panel form, because it require a factory to make it and it cannot be simply poured into a form on a construction site, and further it is too porous to be used underground. Also it needs to be coated with a stucco, on the exterior, and is somewhat crumbly as an interior wall finish. It's best roll is replacement of concrete blocks or panels to cover wood frame walls for both water and fire protection.

This material is made in many parts of the world .It is available in Australia, Europe, and Mexico, but has not caught on in the United States. It is much easier to work with for many reasons such as weight, cut able with carbide blades unlike concrete product which require diamond blades. It also has an insulation value of R 1 to 1.5 per inch thickness, which, while not adequate for walls in colder climates, it far surpasses that of standard concrete blocks.

Much of the structural work of concrete can be replaced with steel. Steel has been used in buildings for several centuries. The most profound early use was the Eiffel Tower.

Blocks and panels stacked on construction site.

A curved wall showing internal location of reinforcing bars before filling with 3/8" diameter aggregated grout.

Above: steel house by Robert Bruno, Lubbock, TX

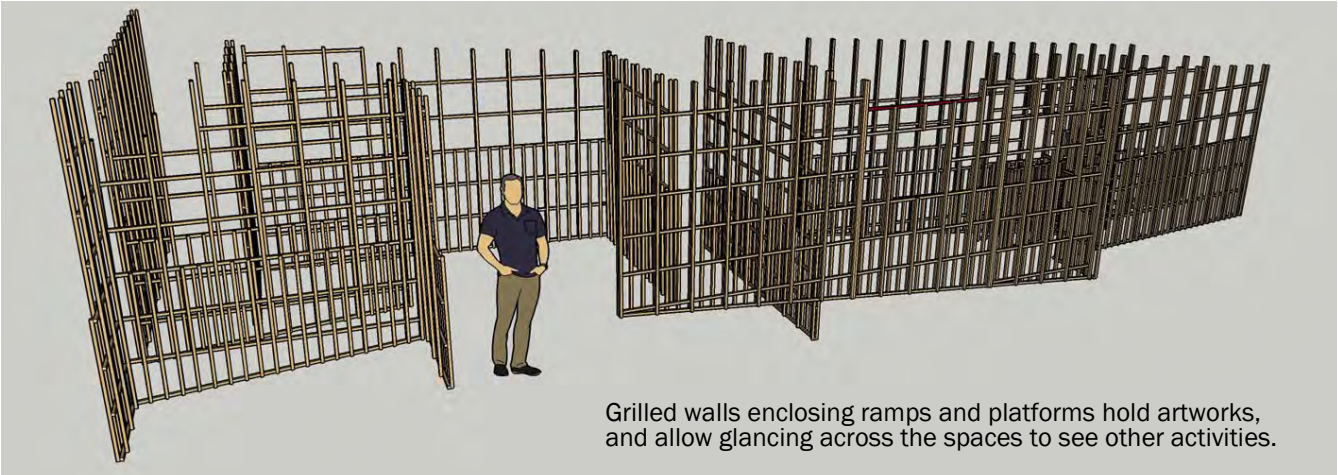
Mostly when steel was used structurally it was clad with stone, or panels of various types. This was because the steel had to be protected from corrosion and fire. When painted and then exposed, it would require repainting on a consistent schedule. Now with epoxy paints, and corten steel the exposure possibilities have increased. Steel is not without energy use in its production, but that can be supplied by electricity and steel is easily recycled into increasingly stronger alloys. The sources of iron ore are ubiquitous.

The other ubiquitous material is wood. Most housing in the USA is wood framed, with wood products as sheathing and even finishing. The standard aesthetic is that wood is beautiful and warm whereas metal and stone can be beautiful, but cold. Important questions are where is the wood grown and harvested? How is it transported to its destination, and how far? What energies are expended in harvesting through installation?

a sculpture corner support, the art gallery,

A New England gallery addition , was confronted with enormous inflated prices for wood products in the spring of 2021. However a large amount of wood had been felled several years earlier, sawn into boards at a local mill, and stacked to dry. There were 2 hardwood species and 2 soft wood. All the framing which will remain exposed for the interior ramps and platforms Ramps are covered with the wide pine boards, an inlayed this aluminum strip over the joints allows for expansion and the platforms are covered in tongue and groove ash.

While this design required exceptionally skilled craftsmen, the “farm-to-table” process of minimal energy use proved both cost effective as well as environmentally responsible. Grilled walls enclosing the upper spaces are made of maple 1”x1” strips overlaid, creating a transparent surface on which to hang art and gawk at others ascending and descending the ramps.



Grilled walls enclosing ramps and platforms hold artworks, and allow glancing across the spaces to see other activities.

The History of wood in the great and humble buildings of the past would require its own vast library. In the 20th century mid-size to large buildings used minimal amounts of wood, especially as structure, the exceptions were certain trusses and laminated timbers. Now a way of laminating large boards into “mass timbers” allow the grain overlaps (as in plywood) but in in large timbers or planks, giving it severe strength, earthquake resistance, and a finished surface.

With these timbers various codes require some fireproofing under certain circumstances, like sprinklers in the adjacent image.

The versatility of trees, has allowed for shapes of great complexity to be carved out of chunks and intricate patterns dug out of the surfaces. Asian countries had been working in this media before the west caught up, similar to the making of paper and porcelain where they held a thousand year lead. To make curves in the wood they could control the snapping of a chalk line to imprint the cut. Now we have CAD-CAM to shape our wood and rocks, and plastics, although the promise of that customization has not reached beyond expensive buildings. The manual arts of carpentry may soon be left in the hand of sculptors and, maybe only, brave diehards that will reject dependency on the new technologies. The “progress” of technologies will somewhat depend on the regulation of some industries, government subsidies, and lower cost.

Part of the Ise Shrine, Japan

Current Aesthetics


A Santa Fe House

Approximately 100 years ago Le Corbusier transformed architecture; the image above declares his immense powerful influence on the present, not just from the 1920 white with taught striped windows, but also the later concrete bunker-like boxes. But time should now be up, because the values of the 1920s, rejecting as much of history as could be summoned to memory, are overturned by the conditions of the 2020s. This New Mexico house typifies the security of designing within the former parameters, and perhaps the comfort of the known aesthetic dragging on and on for clients/owners who request it.

The former social program of a more just economic world expressed in the architecture has attempted to move forward but has now regressed, It is also cheaper to build modern with minimal forms and minimal materials. The house above can be analyzed much like Peter Eisenman has done with Terragni's Casa del Fascio in Como, Italy (right). One can sense a duality of the façade with each part being a reversal of solid and void. The overhanging cantilever is stretched thin and is continuous with the wall edge and the ground slab. The wall in shadow has interruptions in the slotted windows reminiscent of le Corbusier's slotted windows on the interior hallway court yard of the monetary of La Tourette


Casa Del Fascio

So on this New Mexico historical house: the concrete is exposed, (whereas the 2 comparison buildings are white stucco-coated over the concrete), and rejecting the adobe and mud coatings of the traditional building material of New Mexico. It is easy to admire this precision and stance on the dessert. There are many new house and small buildings of this aesthetic, housing complexes in particular.

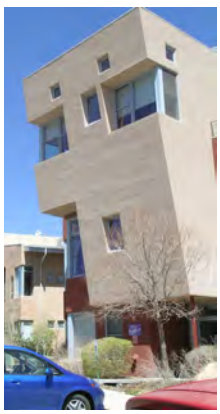
Numerous rectilinear minimalist units prevail in many cities where housing is being built to satisfy demand, especially in Asia and South America. It is a new breed of old hat.

Thus one can build housing as New England Colonials, Texas-style high roofs, Pueblo style, Arabesque, Greco-Roman, Gothic-revival, or Neo-Modern. These are all dedicated styles which are rarely mixed, and in large quantity are overwhelmingly boring, where one is lost in the repetition. All these histories we call styles have had meaning for the eras in which they evolved, sometimes out of necessary use of specific materials, sometime out of political grandeur, or religious fervor. However, there is a different approach to a potpourri of urbanity and urban design.

Variation with a limited number of objects helps with understanding where one is at any given time, and, in addition, the pleasant visuals of the diversity. To do it without being silly as in Disneyland, requires restraint and balance, A basic design problem is: Create a relatively simple repeated element, arrange it for variety arbitrarily or based on external criteria, and then decide when enough is enough.

Going beyond that limit is to create a bland and therefore boring system. A sculptural example of the study is a fence defining a property line and edging a driveway as a lead-in to several buildings.

For housing projects of medium density The Lofts in Santa Fe, NM, more than any new housing in the city, demonstrate this balance. For a series of stacked elongated rectangles of the same size in plan, the variation of placements and slight façade additions present a variety of village-like overlays: a bit of historical desert history mixed with 20th century modernism, and village use with the ground floor being offices or shops, the higher stories being apartments. There is sense of place both at the scale of an overall project, but also in the singular character of the parts. The wall colors vary also, but not repeatedly, used to express variety which is not attached to any specific function.



In smaller buildings there is a current attempt to tweak certain elements to challenge the minimalism which is still the base ingredient of the building, The attitude is " if we create a slight distortion it will take attention away from the sameness," or "this will distinguish this building from another." These tweaks are mostly minor adjustments, because to tweak the whole building would be too expensive. When possible to tweak a whole building arbitrarily, it might make it a clown project. Abstraction based on some circumstance surrounding or embedded in the program, however, can be profound. An example of this is in the Aronoff Center at the University of Cincinnati. The pieces are tumbled by rules of local geometries abstracted and mixed with program requirements.

Aronoff Center

Only slightly disorientating inside, one grows accustomed to interior functions, but can always investigate the forms around them in relation to their purpose, as student of the arts are wont to do. While almost appearing so, these forms are not arbitrary.

In the 1960s Paul Rudolf designed the Art and Architecture building at Yale which was an composite of 2 historical buildings: Le Corbusier's La Tourette monastery in France and Frank Lloyd Wright's Larkin Building in Buffalo (which was torn down to make a parking lot !) He somehow managed to extract the essence of those 2 buildings into one new building. The masses are towers and trays. Rudolf managed to overlap the trays supported by the towers leaving a large central volume, as do the other two, but in a more ridged way. The monk's cells in La Tourette were artist studios at Yale, and open office space in Buffalo While several other buildings were modeled on La Tourette, a Cambridge college, and the Boston City Hall, neither were able to use it in as creatively and interactively as did Rudolf, whose building was heralded as a new direction in modernism. However the wrapping and overlapping of trays carries on in a Singapore housing project on the next page.

La Tourette

Larkin Building

Yale Art & Architecture

The architects took the number of units required on the site, as if making towers, but then rotating the forms to make six story trays stacked on each other with a consistent angle of distortion leaving roof top gardens. The trays are oriented to have light in the windows, but use the position of the blocks to shade outdoor areas, and multiple water bodies helping to cool the spaces by evaporation. A sense of special place results, a new urbanism.

The strange piles of what look like modern relatively standard buildings has some many pleasant attributes , among them courtyards ponds, vistas, and various services incorporated into the design at many levels. It is conventional late modernism scrambled with resulting majesty and intrigue. Another large scale project in Singapore has a very different approach to a similar occupancy per hector, but with a more isolating social arrangement where vista over social interaction prevails.

It seems that the radical nature of these towers is an identity for profit type of architecture, flagrant shape making that shows off its unique nature with structural exhibitionism, It seems that making things seeming in a state of collapse is a new fad, There is here a sense of phallic amusement, Is this a type/style of ill architecture, or a humorous illusion to jostling knights of yore. One would have to decide if collapse is an acceptable aesthetic, in the face of a more violent planetary climate. A housing tower in France has an exterior membrane of glass with solid and glass walls inside. Both of these projects are a result of the fatigue of modernism's longevity. Buckminster Fuller suggested enclosing a large section of Manhattan with a vast glazed geodesic dome. Similarly ata smaller scale in glass usage, a ten unit project in Vermont was designed with a south-facing dome over the homes, with rooftop gardens providing an extended solar season.

Ornament versus Decoration

Ornament has been gaining ground, applied to the facades to jazz it up. Below left, is the siding material that wraps the de Young Museum in San Francisco. It is computer designed and stamped. The same architect's large multi-purpose building in Hamburg up-scales the decoration as apartment windows, the whole reading as a giant cheese grater set upon dense blocks of masonry hiding a parking garage. The orchestra hall is buried and hidden in the interior, a treasure

of high culture wrapped in spatial ornament.

Sometimes it is difficult to determine in any given building whether its surface detail is a necessary expression of particular use or within the nature of the material or if it is merely a whimsical addition like wallpaper. It is either a part of the architecture or an arbitrary element that if removed could easily be replaced with something else or nothing at all. Two examples are below. There are philosophies about the distinction between ornament and decoration.

Left is a classical Asian wall with arches and basins with extremely small scale ornament that could be chosen from traditional patterns, perhaps related to tradition or not but very beautiful. Right is an LA office building with geometrically sculpted gray blocks forming an intricate pattern in their juxtaposed jostling. There the building form and ornament are one, but at the same scale. One adheres to a composition of centrality balanced symmetrically, while the other demonstrates the intrigue of semi-chaos. The two are many centuries and global position apart and both tantalize the eye. While often the modernist view is ornament over decoration, a less doctrinaire view might hold a reverse preference. Some Postmodernists attempted a revival of both, but the world wasn't quite ready for "decorated sheds" unless the decoration was a sign as well. (see the Venturi's "Learning from Las Vegas".)

The Agro shed at the Fourth Corner Foundation is an agglomeration of building pieces, a series of solids and voids. The Eastern most portion is made of 4 towers, triangular in plan, with clearstory glazing above the central roof. The siding is a rain screen of 4 layers, four colors al-

ternately overlaid. Its is also an ornament and experiment in semi random spacing which changes density on each of the eight walls diminishing from south to north.

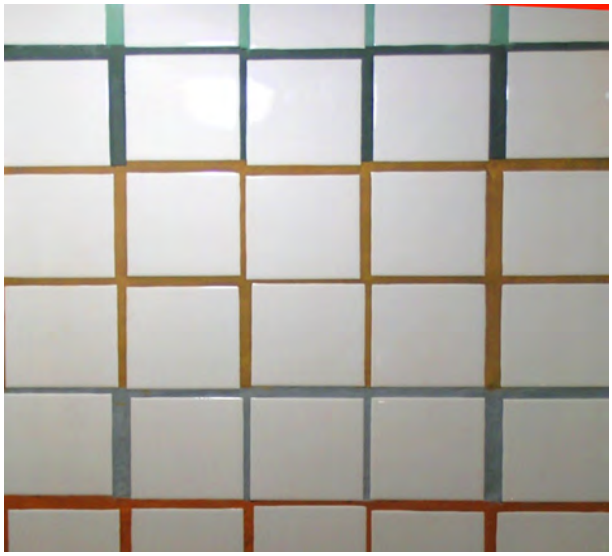
The East end is the first seen when driving into the property which is decorated with same layering, same colors, but pulled apart to a larger scale reducing the density drastically but covering up joints in the base plywood. That solid therefore becomes a sign for a system at the two ends of the complex surrounding a prior garage painted yellow. In a sense, today's ornament does not contradict the modernist desire for a simple clarity of surface, just a bit of teasing, does not overwhelm the form.

The tiles on the left were designed and produced specifically for a house based on a small piece of the floor plan. They can be used for a stable geometric pattern resembling patterns of the Middle East, or as slightly spinning somewhat resembling windmill cookies. There was only one pattern (right and left oriented) but using many different colored slips and then was glazed. The same pattern was cast into some small concrete door headers and some chinaware for the house.

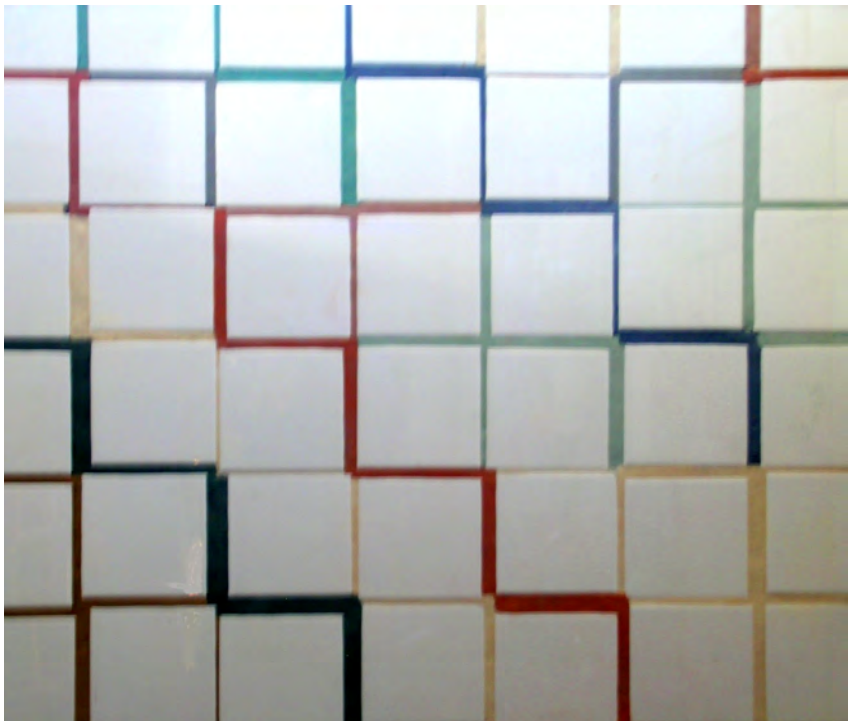
This is quite different, for example, from the Hollyhock House by Frank Lloyd Wright where the ornament derived from the clients love of mallows but was not derived from the architecture. Gaudi's Sagrada Familia where the ornament is so integral to the architecture that without it the remnant would not appear to be related to gothic cathedrals, but a premonition of modernism.

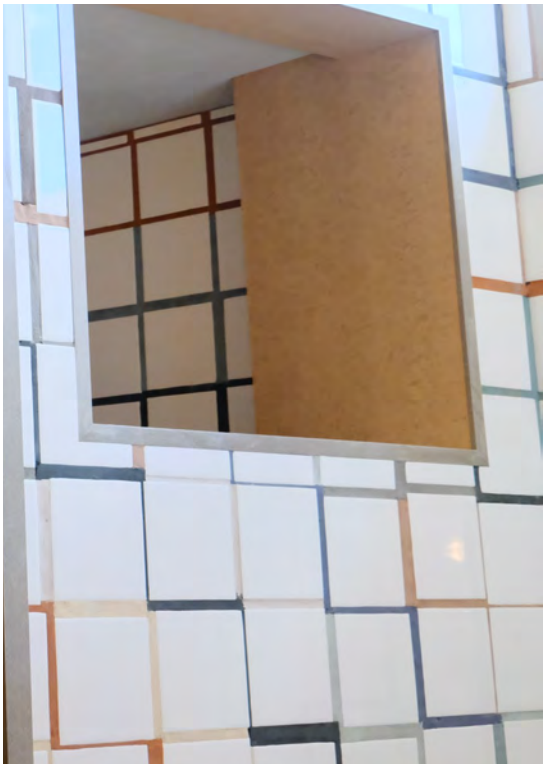
One experiment in decoration questions the basic method of applied tile. Rather than have decorative patterns in the tile what if the decoration was the grout between the tiles. Also what if one altered the space between the tiles. This latter question was first tested on a stairway wall at the Fourth Corner Foundation. Squares somewhat larger than the tiles and a normal wide grout joint were drawn on the wall. Then the tiles were adhered based on a random draw of 5 possible positions of the tile in the space" Top left, top right, bottom right, bottom left, and center. A green grout was used. The overall effect was that the tiles were shifting or perhaps moving forward to backward. The effect is subtle.

The next experiment involved the walls of three small bathroom spaces in another building. There the random spacing of tiles was repeated but the grout joints were filled with many colors of grout ala Mondrian paintings, except using only natural color from minerals, a color pattern more like that of Michael Graves.



There are variations in how the colors imply patterns within the whole. One stresses diagonals, one remains rectilinear, and one leans to celebrate the ad hoc. But in all the colors change sporadically. How much of a color one uses in an area depend s on whims made by designing–in-place, ad hoc. From certain vantage locations one can see simultaneously two of the patterns. For some the design of one or more seen together may seem disruptive, but calls attention to the surface by varied patterns.





Looking at the towers of La Sagrada Familia, there is a combination of ornament and structure, because the substrate base and the ornament are one. Other parts of the building have applied ornament.

It is hard to know whether ornament per se is a good or bad thing . "Less is More" has been countered by Robert Venturi by "Less is a Bore." However, his message never wiped away the Miesian phrase. Most American home interiors have more adornments on the floor and walls than a Roman villa; there is comfort in being enclosed with comforting possessions. However, a surge of purchasing is an expression of acquired wealth which has a significant impact on the environment.

One piece of the post-modern dogma is a reverence for history. Venturi's book "Complexity and Contradiction" undermined the modernist aesthetic of purity of form, that every new building is not aloof from prior history. Many architects took up the newfound cry, for example: James Sterling, Charles Moore, Michael Graves, Richard Myers, to name a few. There was even a brief war of ideas between 2 groups: The Whites and the Grays. The Whites were interested in retuning to the beginnings of modernism with heavy leaning on Corbusier, and the Grays were fascinated by pre modern work, especially vernacular architecture. Also the Whites believed in a world order, whereas the Grays focused on the history of the locality where they were building. It is however hard to find a project in which 2 histories, or 2 cultures are unified in one construction with exception of add-ons to much older buildings than the current addition. An example would be the addition to the National gallery in London. One unusual reference to history is to combine 2 types as an adjacency. The types can be identified by ornament as well as form. Also for a version of postmodernism which combines history with minimalism see the work of Aldo Rossi. (below)

One example of mixing cultures is the rear side of the Long House where a loggia (early Japanese) leading to the parking lot crosses a crushed stone gap between the building and the garden, a zone modeled on Japanese temples. This zone is where the rainwater washes off the roof, and in winter where large ice avalanches fall. The loggia connects awkwardly to a (colonial referenced clapboard) wall extension, supported by 2 concrete columns of Doric and Corinthian abstracted design. Some struts below the roof make a support structure that can be planked for repairs.

Budget Constraints

The predictability of a building's cost is a dubious yet necessary effort. It is entangled with the expectation that biding, and sticking to an agreed price will happen, Large corporate business and cultural entities have more power via more and better lawyers than individuals seeking to build a house or small business. Once a price is determined multiple complications can infect the process, because the grasp for extra profit and power-plays dominates the possibility of the integrity of the design. Because education in most Western countries fails to impart the history and importance of architecture to its citizens in early education, the population can neither desire or understand the visual experience possible in their everyday encounter with buildings. If nothing is expected, nothing will be found.

Budgets being established and program being established usually are not entangled. Basically there is only so much money to spend, specific goals to achieve, and so how to match these two assumptions? The architect is confronted with having the extra task beyond designing to the desired program, of having to prognosticate on a spending path projected over the process of the construction. Also the program sometimes changes in midstream due to changes in the client's economic status, or increases in materials costs outside the responsibility of the contractor.

A True Side Story:

Husband and wife, both medical professionals, commissioned an extravagant house , telling the architect that their accountant suggested their need for a large mortgage deduction. They also wanted it to be a "solar house." When it came time for bidding they insisted on the lowest bid builder, against the architects opinion that he had little record of prior work. Against the advice of the architect, the contractor was paid in advance for materials not yet delivered to the site. The contractor defaulted. When the clients said they were going to be their own contractor, the architect withdrew. The clients made many, very ill informed errors, and made a joke out of the original detailing, incurring some bad results. For example: The aluminum flashing over the white stucco walls was replaced with copper, resulting in large green stains on the stucco. Backer-boards for tile were not uses and regular gypsum board was used below plaster. Lots of cracks.

Years later they asked for an arbitration with the architect who did not have any insurance and had been paid for only a portion of his contract. The architect's lawyer, who later became the governor of the state where this unfortunate project existed, said that architects should never contract with a medical professional client because they, mostly, had no education in the arts, and accounted for more than 90% of lawsuits against architects. When the lawyer asked the clients about what they did not like about the house, they said they loved the house, but it cost more than they had planned. The clients eventually withdrew their claims The house was published by a prestigious architectural magazine which on request of the architect, also included lots of pictures of the 1/4 inch scale model below in order to show original intent. The magazine never sent the clients the free copies they had anticipated. The architect lost most of the commission due to the legal fees.

More recently serious economic problems can impact a project midstream. In the Fall of 2020 a gallery addition in the northeast was enclosed with a wood fame and plywood. After the winter interlude construction resumed only to discover than lumber materials had soared to as much as 400% in the prior six months. This issue was somewhat bypassed by the good fortune of a large amount of trees on the property having been cut and milled into boards and dried for 2 years sat awaiting a use. The 4 species were used to form I-beams, thick beams, studs, trim, and flooring for the gallery. Without this stockpile the project would most likely have been delayed a year.

4 species of wood stacked in covered courtyard.

Making composite beams from property cut trees

Other than the ground floor levels, the upper portion of the gallery, is a series of ramps and level platforms, the greater percentage of which are ramps. Width and angles vary. The platforms are of tongue-and-groove ash. The ramps are wide-board white pine with inlaid aluminum strips between the board to allow the boards to shrink without exposing cracks for dust to drop on visitors below. There are no ceiling finishes under these surfaces; all wood is exposed and sealed. Walls on the edges of the floors are grilles for hanging art, with transparency through the grilles .

The opportunity to change the images of this design due to happenstance changed the architecture, possibly for the better, but in reality some economic abrupt fluctuations could have much less opportunity for positive alternatives.

Political Values

It might seem that politics have little to do with the quality of architecture that our current century is producing. Sometime the political atmosphere can impact the aesthetic values of clients and even designers. For example: A person may think that he or she is an ecologists, environmentalists, and a die-hard back-to-the-arth ideologist, and evolves an image, a style, for a home to be built. This could easily lead to conclusions which force the design into an antiquated set of materials and systems that otherwise might have been state of the art ecology, The goals of the sixties needs a new face.

A new project is attempting to create a serious eco-community in New Mexico. Their website shows a number of bits of information about how the housing should be built, for example, the maximum size being set at 1800 square feet, giving a single floor space of 45 feet x 45 feet, and this **not** containing a garage. The claim is for super insulated wall and roof, but only an inadequate 2 inches of foam under the concrete slab containing water tubing for heat. The claim is it would only be used in sever cold weather. The bulk of the windows would be on the north. All the images of interior finishing would severely express the1500 AD desert shelters. The rustication in the pictures is so extreme to make one search for the outhouse. But even if this project moves forward it will be far more serious in reducing global warming than other developments in new southwest divisions of Santa Fe.

Some political attempts are being made to integrate new technologies, materials, energy production and transportation. Some counties are using a system called HERS Rating which has some impact on housing energy consumptions, but gives no credit for numerous possible big cuts. The education of the HERS raters is a 9 hour internet course. Green building is an uphill battle, and difficult to think that the current speed forward is adequate to continue civilization for the billions of humans now on the planet.

It might be good to review an older project, already mentioned from the Jimmy Carter era, a bold project by the Massachusetts Office of Energy Resources, under the vague auspices of then Governor Edward King. Over 1200 apartments built by the state in 20 plus communities, mostly for elderly citizens, required increased energy conservation measures and significant solar heating inputs. The energy office and the housing authority were partners in controlling all aspects of these model apartments.

Most of these focused on glazing on south walls with various means of trapping and storing the heat in the building's mass with night insulating of windows. One project used a mass party wall 90 degrees to the glazing to trap heat, a few had extra sheet rock to hold heat longer from Sunny days. The most inventive was to have a wide enough common corridor for folks to gather, with full wall south glazing, apartment entry walls having a window looking back into the corridor, A hot air fan removes excess heat in the corridor, to maintain comfort, blowing it into a mass wall between the units to store it for later will later release into the apartments. When social assets derive from attempts to add solar heating to a building, that otherwise would not have been in the budget, a better building will result. Most public buildings in the USA have double loaded corridors for cost efficiency, corridors which are narrow, bleak, and do not allow social activity. But this project's single loaded south facing corridor provides a pleasant space for the residents to engage.

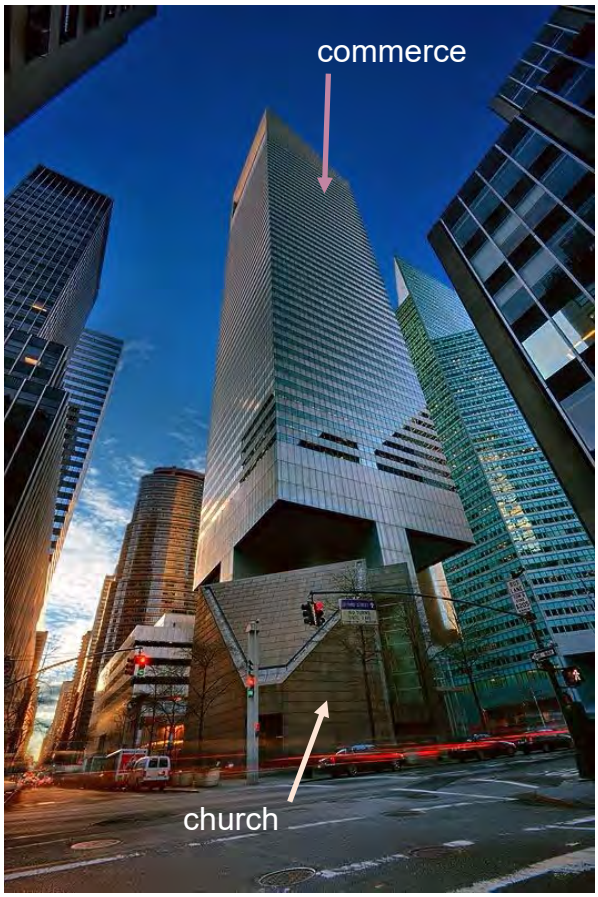
A Boston building of some controversy has a history which reveals political issues where aesthetic change incites battles of budget and revisionism. This is a story of the City Hall building designed by Kallmann, Mckinnel, and Knowles, finished in 1978. It was modeled on Le Corbusier's La Tourette monastery in France. (see page 20) The building was surrounded by a vast plaza on most sides except the corner of former Scollay Square where the nearby famous molasses explosion disaster occurred in 1919. Discontent was focused on the plaza more than the building as it was an inconvenience to access in the winter, the rain, and the distance from the subway, parking garages, or the North End with an extensive stairway. Mayor Tomas Menino hated the building and tried to have it torn down and sell the site to commercial developers, preferring the building of small city halls scattered in the neighborhoods. Fortunately for preservation, this did not happen, and instead some minor modifications to the building and a set of interventions of the plaza over a bunch of years will fill in the plaza.


City Hall

A comparison here would be the medieval cities with their small buildings and markets composing the city with the giant cathedral in its center dominating all, except in this century one would have to remove a large amount of the large scale buildings back from the cathedral. This disparity of building scale is a visual manifestation of the loss of power by the church in favor of the secular powers.

Tearing down City Hall and building large commercial buildings would be the shift of the secular political to a secular business authority. In NYC the City Corp building has a very small elegant, Aalto-esc church tucked into its street corner, most of which is in the basement. The 50-some stories of the bank sore above the church declaring the end of the religious in favor of a capital domination. This is an expression of critical social change embodied in a single building.

Most absurdly, former President Trump wanted all the buildings built by the Federal government to be of Classical Design. This was also the goals of many dictators in the beginning to the twentieth century, such as Hitler, Mussolini, and Stalin. Knowing this, it is preposterous to think that politics have little bearing on architecture. Beware the future. Authoritarians love to tear down symbols that do not resonate with their rule. They long for the power of ancient governments, and so attempt to summon them.



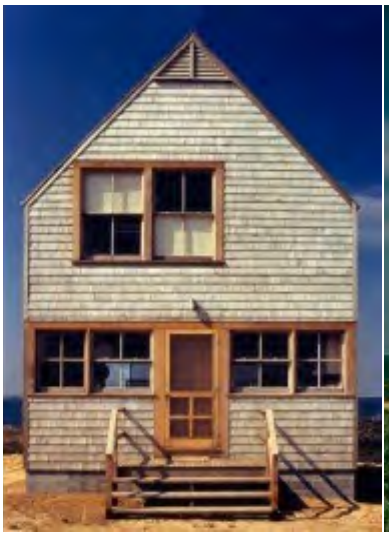
Local Building Codes and "Historical" Review

In 1976 a burnt-out row house on Beacon Hill in Boston was bought and renovated. To spruce up the building's image as a renewal, red paint was used on all the new insulated windows. Unfortunately the apartment opposite this building was owned by a high powered Boston Lawyer whose wife did not like the red windows, claiming that they did not match her décor. They protested to the city Historical Society which had control over color schemes on the Hill. The Society somehow was unaware that the oldest part of the Hill across from the State Capital had trim and doors of primary red. The aspiring architect/builders made a photographic slide show of the reality and showed it to the Society which then included red to be an historical color.


back courtyard side of a Boston row house

One of the same architects, was asked to design a house on Nantucket. Seven presentations to the Historical Commission of the Island, led by a staunch absolutist, were needed to reach approval. The worst limitation was the area restrictions of windows, which was based on that of the 17th century fisherman shacks on the piers. This eliminated the possibility for any solar apertures or grand views of the oceanfront property on two sides of the house. A few years later Robert Venturi was able to build a two-house project on the island which would not have passed approval before, although they compromised the standard style by introducing other historical references and some disruptions of proportions which would not have been built before the latter part of the 20th Century.

The library in Newfane Vermont has a second floor for books and records storage, which the State decided, after a century of operation, that it would have to add an elevator in case some handicapped employee might work there. Only one employee at any given time worked there, and the city had no money for an expensive elevator. So the town shut down the library. Eventually the State rescinded, and a ground- floor addition of a museum, showing important Southern Vermont artists of the recent past, became a valuable asset of that community. The elevator was a problem with no economic solution excluding a large public-contribution which was not available.




Nantucket Houses

But architecture is always in the balance of review decisions. Various communities around the country have established limits on building design for reasons of economics as much as true historical interest. What history do they protect for histories sake and how much is it for economic reasons such as perpetuating economic value? (and property tax)

In 1957 the City of Santa Fe, NM realizing the economic value of tourism, codified the building style known as Santa Fe Style with guidance by architect John Meem. This was successful to the degree that Conde Nast Travel ranked Santa Fe as the number one tourist destination in the USA. The economic reward was, and still is, unaccountably large. People flock to places which have a unique character. It spares them long distance travel if it is in the United States, but seems like it is in another country. This is one reason Disneyland is so popular. The bulk of the housing neighborhoods look like the above image. One could be in Morocco (*below right*) where the domestic architecture of many small cities is made of only locally available materials which then appear similar.

Most of Santa Fe is wood-frame construction with chicken wire stucco, which looks remarkably like Morocco. But it is fake. When the Indians settled the southwest they used the materials available in the area. Wood from Colorado was dragged down to New Mexico for the community of Chaco Canyon. Even the buildings made with stone were covered with local caliche. The early settlers from Spain used those same materials to build their communities. That all changed in the early 20th century, until 1957. Santa Fe tends to have many rounded corners and parapets, small windows, and beams sticking through the walls. The more lumpy the better. The colors are mostly those of local soil except they are now of cement-sand-pigment. This is what may be called style, but no longer the genuine item, and therefore not an architecture of significance.

A studio (casita) in Abique, NM has a steel exterior made in prefabricated pieces. There is an uncanny aspect of it being a modern yet lumpy structure in this desert, perhaps also the crashed alien vessel that so many people imagine to have happened in New Mexico. How different from the all concrete and glass intrusions recently introduced to the desert, (but both would fail the HERS rating.)

The education licensing of architects falls under the auspices of government which has an impact on the quality of future production. To obtain and maintain a license one is mostly exposed to the status quo, not only in design but in the constructional as well. It is in the interest of the construction industry, especially the producers of building materials and systems, to indoctrinate and cajole those who are responsible for specification. These materials producers and contractors have the ear of the governing officials who do not want the apple cart upset. An example, is Vermont which formerly allowed independent study to fulfill the continuing education requirements. This required the state to spend money on those hired to review the study reports. When the state's budget was reduced or refocused most architects acquired their "quota of

"education" from various dedicated articles in a specific architectural magazine online, splitting the screen in two parts: the article and the test. Reading, then completing the test 100% takes about 30 minutes on average, which then is credited as an hour. The serious problem is not only the testing methodology, but rather the motives of the organization writing the sanctioned "continuing education" article. It is the suppliers of construction materials who then indoctrinate the reader with extreme exaggeration of the value of their product.

When questioning this system to the Vermont architectural board, one will be disappointed by a zero response in return. Whether through policy, cahoots, or incompetence, one can never know. But think instead what an onslaught of independent reviewed study might bring to architecture and construction. That is the first part of the process called science.

Possible Future Impacts

To the left is an environmentally responsive community in an advanced climate changed planet. Below that is a flooding planet, At the bottom is a designer cave for the misbegotten. These exaggerated surmises may not be too far off the mark.

We should be building now for an eventual chaotic climate. For last 100.000 years the temperatures and atmospheric chemical content are known from ice cores extracted from the Greenland ice-shelf. Up until approximately 10,000 years ago the weather changes were so chaotic that between glaziers, flooding, and storms, advanced civilization was impossible. After it ended humans could begin serious agriculture and build larger communities and even cites. Population increase and civilization spread across the globe. All of human progress has led to this moment where we face the consequences of our 200 years of industrial development.

Knowing we are on the brink, does not lead to the end results, but it is unlikely that increased storm, fires and heat waves will be averted. How high the oceans will rise is dependent on carbon dioxide increase. But prepare we must !

Blending in to the landscape in the desert

A still from the film “the Expanse”, focuses on the UN building, showing a high sea wall around Manhattan of at least 75 feet. In as much as the film takes place 200 years in the future with an earth population over 15 billion people, it is hard to imagine that ocean rise could have been limited to this amount. Continuing the current living conditions of the average human and not have a 200 foot ocean rise would be miraculous, but not entirely impossible.

All the large and medium size cities have been built and expanded on the edges of water for transportation and agriculture. When industrialization made possible the pumping of water and railroads, the edge-of-water location was never abandoned because occasional flooding was tolerable over the long run, as opposed to packing up everything and heading inland. What now might be tolerable by intervention is very much up in the air.

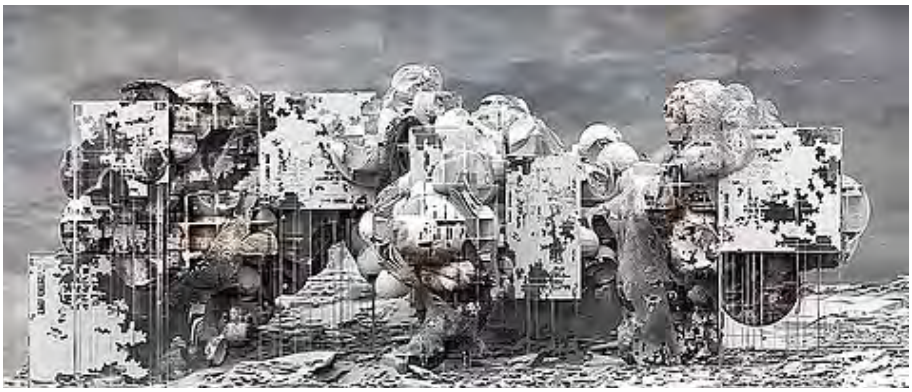
The current investment in world cities is enormous and ever increasing. Abandonment would seem beyond our fiscal abilities if not all other production were to grind to a halt. Many rivers travel inland with marginal increase in height, for example high tide on the Hudson River reaches all the way up to Poughkeepsie New York, so even Albany would be endangered by a not-significant rise. Realistically locations for new dense habitation should be 200 plus feet above current sea level in areas of limited plate tectonics and volcanism. In this scenario what would new architecture be? What can be relocated; what will be left behind?

With certainty at 2 degrees F almost all beachfront property will be gone. Large portions of relatively low land will be a part of the oceans. Without the most massive structural footing in sandbar land, the longevity will not justify the cost.


Beach house


Surfside collapse

What would new cities or sprawls look like? Images at the bottom of this page are various references to possible futures. These seem very unlike the present although all are imply congestion, cob-jobs, or machine-bio environments. It is difficult to imagine how these would be acceptable man-made shelter. When the low lands and all the equatorial forests up to latitudes 45 degrees are no longer viable, area toward the poles would be more inhabitable, however, land in this area replacing trees, especially in present day Canada, Russia, Siberia, and Scandinavia, would undermine oxygen production. Agricultural areas necessary to feed more than approximately one billion people, would eliminate an important source of oxygen, leaving the ocean area to be the dominant source, which also might be too hot for the oxygen generating sea-life to survive. These areas near the poles would have shorter growing seasons, and extinction of insects could undermine necessary pollination.



The stronger the better, The more ideal location the better. That is all we can predict about future impact of global warming on the built environment. However, in the mean time we must do all we can to reduce drastically the amount of carbon in the embedded materials and make energy systems of lowest carbon footprint. This would be much easier if we had half the population.

There are many building materials which have less carbon in their making, Some even are sequestering carbon, such as wood, which otherwise would be only sequestering it for the life of the tree and then releasing it when it decays. Forests in the temperate zone when left alone have about a 100 year cycle. Currently certain tree diseases are on the rise, and if a tree is cut and used as lumber it will avoid an excess of carbon dioxide release. Recent laminating of wood has allowed that material to be used as large structural elements in large and tall buildings. Some additional fire proofing is still required depending on the design, but large pieces of wood do not burn rapidly in a fire, attested to many years ago by the skeleton remnants of burnt barns: all the little stuff up in smoke, the frame still standing but charred.

Some products, like metals can have a very efficient recycling process. Aluminum, which requires significant energy from ore to metal products, uses very little energy to recycle. Glass recycles easily as it is silica, one of the most prevalent materials on the planet. Stone is also plentiful, but is only recycled by grinding it up and combining it with other materials for new use, concrete being its best shot. The story of plastics is more gruesome, not that there is anything intrinsically prohibitive in its use. It can be concocted from fossil fuels or plant based materials. The later is currently beginning largescale demand as a bio-fuel for jest airplanes, and agricultural land is need for food production as its first use priority. Recycled plastics have many uses; one, most popular, is imitation wood for interior floors and exterior decking.

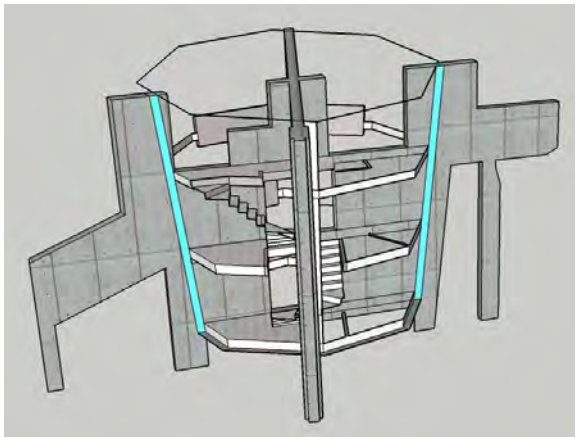
A pleasant promising side story:

Recycled plastic and wood fiber decking products are not all alike. The outside casing that is textured to look like weathered wood is hard, very resistant to abrasion, moisture, and UV, but inside the material tends to resemble the marshmallow-like inside of a candy bar. Several brands, however are intrinsic and therefore can be cut, sanded, even painted similarly to the wood to which hey are attempting resemblance. This allows them to be used as rot-resistant trim, railings mullions, etc. The perfect material, other than some metals, for towel bars, toilet paper holders, window frames, etc.

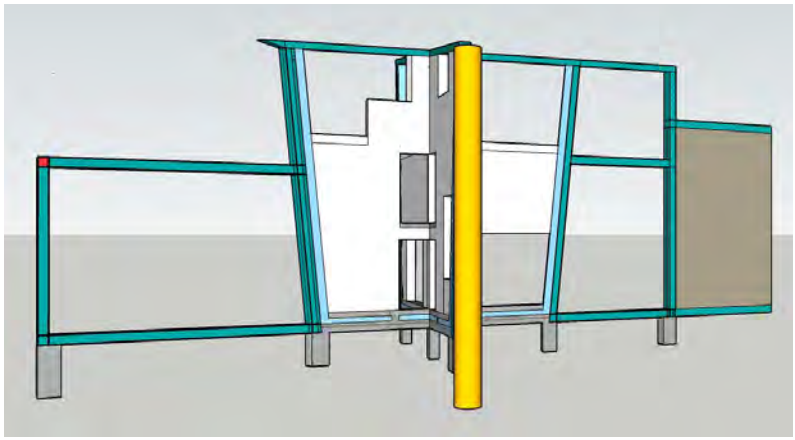
This product could be made in more useful forms, such as sheets of 4'X8" similar to acrylic sheets of varied thickness. And trim board sizes used now for durable. exterior trim. The manufacturers of decking composites are missing the boat. Unfortunately recycling of these materials does not yet exist. We must recycle the recycled endlessly if we are to continue to use plastics. Can you imagine your computer with no plastic parts?

Concrete has the worst impact on the atmosphere, mostly due to the firing of clays to make cement, and a bit from quarrying the aggregate. The Romans were lucky to find a pre-exiting deposit of cement, that probably had resulted from certain volcanic activity. They used it as a mortar with sand and added chunks of stone manually as it was being assemble. Much more like the brick masonry they were used to, but pressed into formwork. The coffered dome of the Pantheon in Rome was the largest spanning structure in the West for a thousand years.

We are not so lucky in finding ready-to-go cement, but one hopes that we may create a different material in the future that serves the same purpose. The ubiquity of this cement-based concrete in highway and building construction is an understandable use based on engineering , but is used excessively as an aesthetic material in the last hundred years due initially to the work of the French Architect, August Perret, followed by the evolving work of le Corbusier. Current architects should think about this dilemma and how to side-track its use.



A house design with an exterior concrete frame



the same project with a steel exterior frame

Concrete Church in Firminy

le Corbusier

steel pavilion in Zurich

Even Le Corbusier could take a break from the “beton-brut” and design with steel. In the near future we might create new materials that require small amounts of energy in their production, utilizing recycled material, which can be easily processed by low energy. The right materials in conjunction with repurposing existing buildings, the initial use of which has become obsolete, will be a dent in the carbon excesses of the present.

If the near future puts us on the path of catastrophic conditions which require enormous efforts to modify human activity, it will require more manufacturing, building, and agricultural change; in other words human work. The laid back, sit at desk, monitor cell phone world will have to shift to more physical engagement, because there will not be enough materials for robotic workforce, and the infrastructure of a revised civilization, also the materials to make the massive amount of green energy to make it.

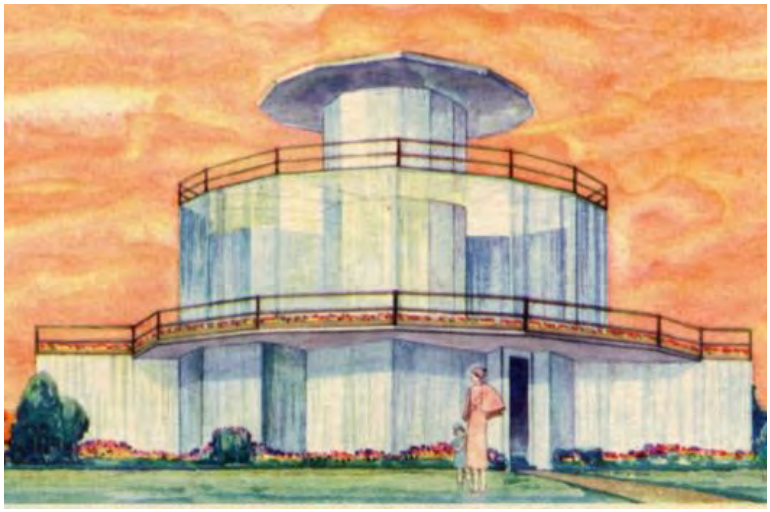
There are numerous paths to energy generation. Bio-fuels will be consumed by jet airplanes, small electric planes will use new denser batteries. Cars, trucks, farm machinery, recycling equipment , machine tools for manufacturing, etc. will all use batteries. But how will we charge those batteries while at the same time using electricity more immediately for lighting, fans, etc. From where will the bulk of electric energy be generated? Currently wind generation, hydro, and photovoltaics are the softest approach, but will there be enough exotic metals and fiberglass components to meet demand. Probably not without help from some form of nuclear power.

The construction of a space elevator would make possible transporting billions of square meters of photovoltaics into orbit. The energy production would take place with 100% sun light for the life of the collectors. They would have to be very UV resistant and able to sustain impacts of cosmic radiation. The arrays could be mobile always in position facing the sun but adjusted to shade certain excessively hot areas of the planet. This would have to be an international effort and heavily protected from attack by radical terrorists of any conviction. The collected energy would be sent by microwave to very tall towers around the planet, and because the earth would be rotating under the arrays all places on the earth could receive the energy.

To create this we need a tensile fabric stronger than spider-web. Heavy research is already underway. With an inexpensive, minimal carbon footprint method of reaching orbit, other production methods requiring vacuum and zero gravity would be possible, as well, as future access to exotic materials from extraterrestrial orbiting rocks.

Evolving new materials for various earth saving reasons, will eventually have an impact on infrastructure, including buildings. Better insulative products, especially for glass or other transparent products, better conductive products for energy transmission, and better tensile and compressive metals, or plastics, could aid the restructuring that will be needed in the near future.

Until we can create enough non fossil-fuel energy to maintain the levels of existence that we decide is adequate-to-good, we need to learn and practice increase conservation. In architecture this is currently a circumstance compelling design priority. The “Super Insulation” strategy (now called Passive House) initially created an almost windowless, dull aesthetic. The expression of high intake, low heat loss, photovoltaic presence strategy presents an aesthetic of active interaction. There are attempts at solar intake as visible components, using them to express the nature of intent. The quantity of glass on various directional facades relative to the less sun exposed sides, is a measure of needed response.

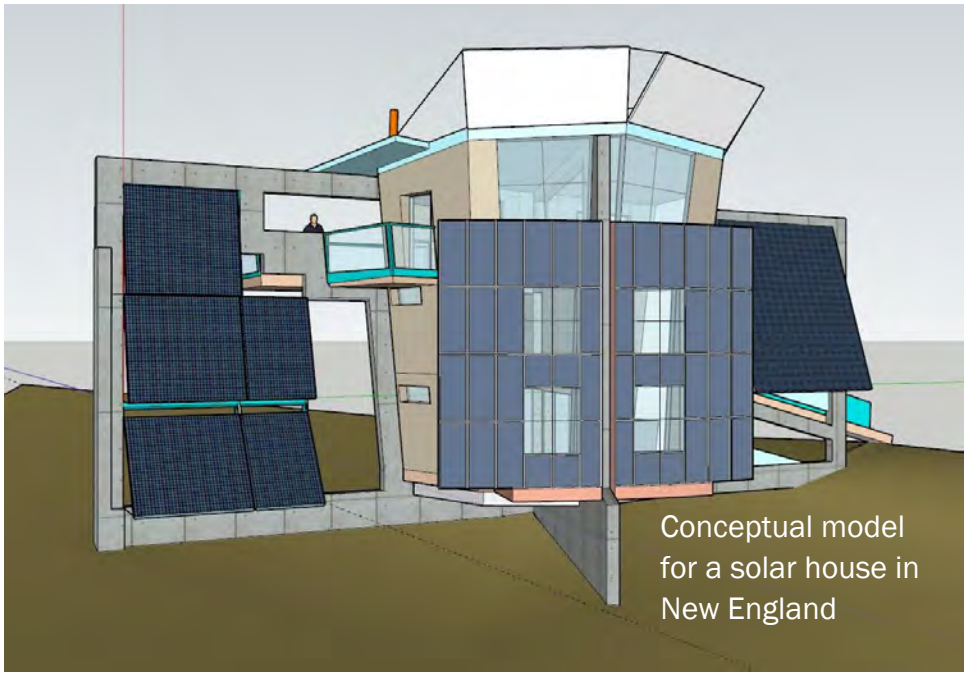


The house above was designed by George Fred Keck in 1933 (and built). It approximates a circular walls of glass on 50% of the plan centered South. There are also some side wings East and West on the ground floor. All the orientation is understood, but it would appear that the heat loss through the glass (insulating glass was not commonly available in 1933) might surpass the gain depending on the climate of the location, and there is no indication in this drawing of insulating curtains or panels. The designer, however, must be remembered as an Avant guard hero of the solar future.

A more current version of the Keck House has become a tower. Because the windows diminish from South to East and West and that there is a large PV array roofward shows its improved understanding of orientation and technology. Most likely the windows are now double or triple glazed. (Thomas Jefferson was the first explorers of insulating glass, discovering that the spaces only worked up to 2 inches apart.)

Below is a house with maximum solar exposures built in 1985 in Vermont. The portion of the left has a sunspace behind the glass with workspaces behind the sunspace. To the right is a combination of vertical glass and a 2 story greenhouse. Roof water used for all but drinking, is stored in 10 thousand gallons capacity in stacked tanks in the center exposed with low-e glazing inside the glazed greenhouse. The masonry walls of the tank are exposed to the rooms, the water temperature in the tanks being higher than room temperature all winter.

Epilogue for Part 1



Conceptual model for a solar house in New England

I am looking to establish by exploration the ways the initial concepts constrain or evolve the smaller parts to some degree of dystopia (relative to classic rules) as the concept, without arbitrary (wow, look at this) ancillary shapes/configurations. Nothing ever derives from the whole automatically, with the exception of minimalist work, and minimalism cannot satisfy the necessary response to the 21st century environmental conditions and demands. The current work of most USA architecture has become either a bland return to mid-century or a fantasy digital-driven flight into structural exhibitionism. (or as the dean of the Yale School of Architecture, Charles Moore, called it: “flagrant shape-making”)

In an article about the architect, Richard Neutra, by Alex Ross in the New Yorker 9/27/2021, he ends with: “No house can be greater than the life lived inside it.” This view of architecture is that it is transient and only important from the view of an initial inhabitant, no matter how short-lived. Many people might live or work in a specific building over numerous years; the people change but the building remains the same as built.

The lives lived are only important to the owners of that life and their families and friends. It is therefore the people that are transient, not the architecture. The former attitude derives from a restrictive view of human culture, as specific to every individual, where as in reality the culture is derived by numerous individuals over long periods of time, tracking a record of evolutionary thinking. Architecture is senescent, not transient.

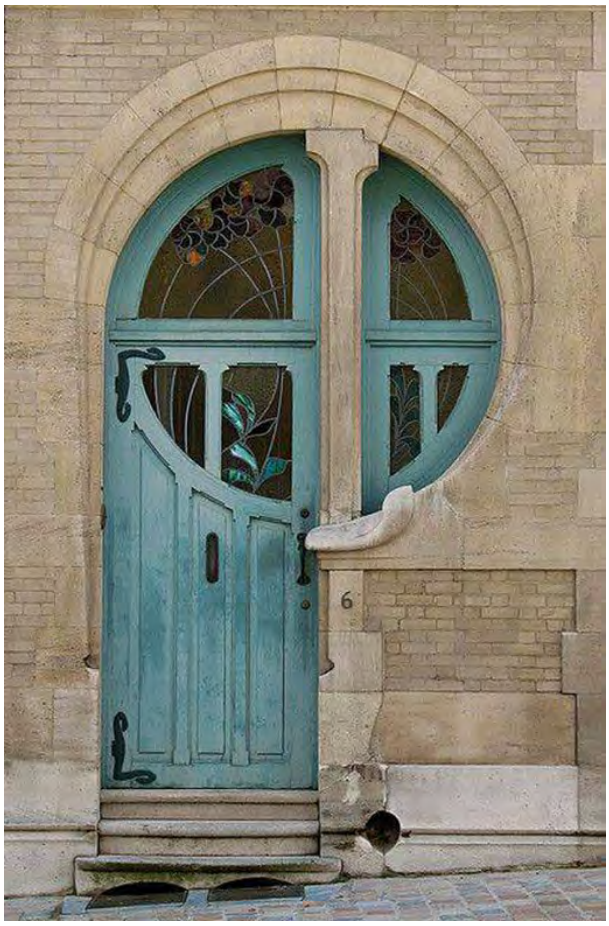
Fictions must make sense, reality not so. From Yuval Harari we have confirmed the pattern of fictions that brought humans out of the savannahs to consume the planet. To believe in fictions is to fall into line behind an authority, which has lined up behind another larger authority, etc. It is how we have been able to congregate millions of humans in cities and control activities over continents. Without fictions we would be a bunch of small groups spread thin. Architecture deals with reality but also includes fictions in many ways. Peeling away the fictions leads to abstractions of, or responses to, reality as it confronts it. Architecture is also, like other human knowledge, a resistance to entropy.

The interest in pre-modern work, may be an aesthetic blockade to a new order of a sustainable, maybe survivable, world. Most of our problems, physical and ideological, are mired by excessive attachment to outmoded aesthetics. However, the past contains numerous surprises where apparent order is broken. That unusual details catch the eye, and proportions are adjusted to challenge those that came before.

Part II

Combing the past for moments of *discontinuity*

This search has similarity to the Star Wars phrase of "a disturbance in the force". If the flow of history exhibits similarities to humanity's force forward, this metaphor has some claim. Robert Venturi's dynamic book " Complexity and Contradiction in Architecture" was a somewhat similar investigation, mostly as a critique of established modernism. A further question is when one discovers disruption, what has caused it? Is it derived from some circumstance, or is it merely a whim of the moment, not tied to any rational examination of circumstances? It must be said that we can never know them fully just by looking.



The entry way depicted to the left is a classic example several configurations which deny normal positioning and proportions. The actual door is a standard size, but is enlarged by the interjection of a circular window, which itself is interrupted by a rectilinear pilaster with an aberrant implied capital. The form of the pilaster is duplicated at a smaller scale twice interrupting the bottom half of the circle. The stone work around the circle is shifted in what appears to be the same if not similar diameter, except that its beginnings and endings compress at the base. A mysterious sculptural stone scoop shape occurs adjacent to the door handle, the purpose of which might be for people to leave a small item which will not fit the metal mail slot located center of the door.

There are smaller scale elements such as the stained, floral patterned glass and some exposure of brick structure at the base. Clearly the main purpose of this design is that no one could ever mistake it with any other doorway in that city. This no doubt an elegant, complex design, somewhat linked to its time-style, but basically a whim of artistic license.

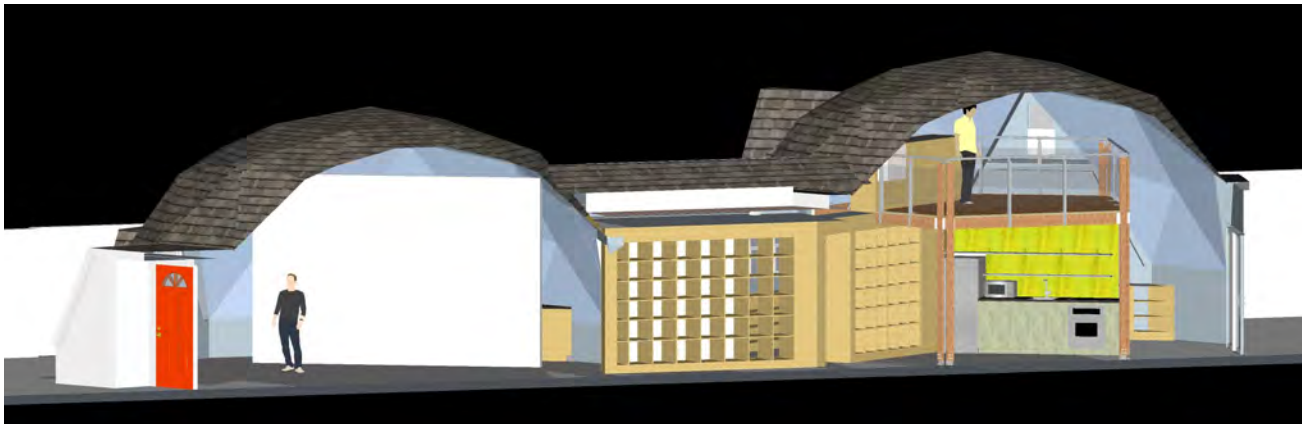
The (hopefully solar side) of the house below is an example of visually mixed metaphors. Not knowing the functions of the spaces behind each of the unrelated shapes, it is hard to imagine what causality existed to make the ensemble. The rectangle on the right is deliberately magical and disturbing in its hidden structure, questioning the visual use of the glass with the smallest mullions possible. The orange box on the left resembles a guardhouse with the space between the rectangles being an entrance.(We can assume the graveled foreground is the driveway.) But the most competing shape is a rollercoaster track being upheld by strips of wall infilled with glass. The house is not only unusual, but awkward. Nonetheless it seem intentional yet whimsical.

Reading and critiquing buildings from one casual glance is not a complete method of evaluation, but its serves a purpose to look at specific ones and discover anomalies. The house on the right is clearly focused on using the sun, There is a large array of PVs on the roof and some shuttered glass doors and windows. It also has the American House shape but puts on an aura of severity. The basic response to achieve a solar dwelling is the principal circumstance added to whatever plan is inside. It has one audacious feature: the flush edge of the roof.

The house below by Frank Lloyd Wright is about seclusion, local materials, horizontality, and moisture protection. But it contains a disruption of 2 fat chimneys breaking through the absolute line of the roof, made of the same materials as the walls under the roof. That immersion makes a richer composition, but leaves an interesting ambiguity as to which is dominant. Further it is tied to the ground, the horizontal lines being simple and severe.

The house by Charles Moore below is also horizontal with low pitched roofs bowing away from the wind, but reading as major pieces being pulled apart, or stretched across the windblown landscape. Also the jumpiness of the pieces to each other are playful and exude an allure to come in and see what is even beyond.

These 2 buildings juxtaposed, both by famous architects of their time, derive from different sense of what a house should be: one dark an serious the other bright and somewhat frivolous. Were these differences based on the circumstantial desires of the clients, or the personal experiences of the architects? One is more holistic, the other wants to differentiate the parts, but not let any of them get away.



An abandoned double geodesic dome structure in New Orleans was retrofitted for an art studio plus a small living space; One dome was reserved for large painting the rest was a storage connection that built up to a 2 story inner structure, independent of the dome. First circumstance is an abandoned building, which most purchasers would have torn down to build something else, discarding a bunch of embedded energy. Second is a program suited to fit the space. The inner structure and the outer structure have no geometric or style relationship, rather a spatial counterpoint, a stand off, the rectilinear meets the triangular (a curved approximation.)

Above is an interstate highway rest area in the southwest desert. The climate is the circumstance that makes this response what it is: a wind and sun shelter in which one can have a picnic and look out at the surrounds. There is a resemblance to wagon trains of weathered wood, linked by ramps and walkways to keep you above the arid sand. This is an unexpected stop, but its architecture is clear in its response to its environment. A memorable variant. The enclosure boxes define the separateness of the picnic table spaces, but in sheltering the people from the sun and weather, they also provide an opportunity for privacy.

To the right is a beach house in Florida, where a secondary attachment of open boxes shades the various spaces inside while looking out to the ocean. The sizes and proportions of the different rectangles, does not necessarily line up precisely with the spaces inside. It is one system apart performing a climate response, with a mysterious set of largely glazed spaces beyond. It's exuberance stems beyond its purpose.

Here are two European housing projects. The first has a two-story base that aligns with the existing streets. Two bluish three-story boxes above, of apartments align 90 degrees to each other, but flush only to one street. The large windows above have woven wood blinds that slide to shade them when needed. The ground floors have smaller slotted windows in the raw concrete. These appear to contain offices following the tradition of European cities: small commerce below with housing above.

The interesting misalignments are disturbing but create a sense of place quite different from the other streets and a clear statement that this is not an historical part of the city. What is starkly disruptive here is the discontinuity of the top and bottom. It is definitely awkward and aggressive with its sharp angled edge at the pedestrian level. Perhaps the use of the building does not need to be such an attention grabber, but it serves the more important role of defining 2 streets with locational memory by its architecture.

Below are 2 images of an elderly housing project which has a physical play of solid and void along the entire façade. This minimalist, abstract composition which resemble boxes stacked on boxes, demonstrates the pretentious nature of bland modernism, and probably was not sociologically researched. To put elderly people in tomb-like rooms references the above ground funerary graveyards of Europe. It is likely that the tenants came from more highly ornamented environments. The disruptions here is in the lives of the residents, not the architecture. This would have perhaps made a good Buddhist monastery.

The 2 museums above have a few small windows in their otherwise massive walls, and one bigger window one side. This is an appropriate response in an art museum, because most of the walls are covered with art and artificial lighting (with few exceptions using diffused sky lighting.) Marcel Breuer's box, unlike the Guggenheim's circles relates to the linearity of the street, but both ignore the standard pattern of Manhattan's street-life window shopping. One question: how many disruptions can one make in the existing fabric of a city before the old has evaporated. The one on the right contradicts its bland container-like skin with a physical sign: a single-story house that has apparently crashed into the edge of the roof and wall, which might slide down precariously onto the street below. This is as big a disruption as one can imagine in a public building, a gimmicky sign, a very radical (but probably not permanent) move.

The two domestic buildings below differ from each other in basic fundamental organization, but both have a number of variations in smaller scale to add vibrancy . Windows are the most prevalent of these, but used differently in each. On the left they are scattered, presumably in response to looking out of specific space at specific vistas, or to light. The cylindrical roof has an abrupt protrusion which is the most noticeable object because of its contradiction of the main geometry. The house on the right is a collection of varied scaled objects, seemingly placed together to form a rough composition. There are a lot of bumps, but most of the fenestration is ordered. The disruption there is the tower of erratic height and the radical intersections of the parts.

Speaking of towers: The three shown on this page are of very different sizes and very different parts of the globe. They all have discontinuities of very different natures. The one common aspect of all is the negation of clearly delineated floor levels and therefore scale.

The left tower is in a dense urban setting where the street front of the building is the building's sign and connection to the outside from inside. The entire façade is an erratic pattern of ornament through which one can find transparency to make that connection. The entire building is a disruption to the existing history of that cities architecture. It is claiming a new (digital?) future by ultimate contrast.

The much smaller tower in the center is not urban with a vessel shaped body wrapped in triangular bonds with a few thicker vertical supports. The structural wrap appears to be bamboo. There is a undulating stripe of dark horizontal bars (the space between the bars apparently open to the interior) sliding upward with the horizontal pieces of the triangulation thickened to reveal what might be floor levels, . The dark stripe is a major disruption of the delicate pattern holding all together. Dark knuckles tying the wooden wrap together are as ornamental as structural creating an additional pattern at another scale.

The third tower is a sculpture writ large. Only a few parts give clues to its scale and those are disruptions of the basic shape. That shape seems unstable and top heavy (poor Vitruvius!) and has a snakeskin outer shell. Another empty undulating glass form creeps up halfway with a mini-building of Cartesian geometry on its top. A cantilevering disk hangs of the very top like a period at the end of a sentence. The whole is a discontinuity of weirdness contradicting the prior history of not only tower construction but of history. It is possible there are circumstances such as wind resistance, wind electrical generation through ports, or helicopter pads, that have generated some of this configuration, but more likely is the sculptural whims of the designers. Corporate image is also a big player in Wow headquarters. (Is Darth Vader in there?)

Here are some examples of total disruption via history run amuck! Small parts can make up the whole or obscure the whole. In all cases the whole is much less important as an entity than an agglomeration of the parts. Nonetheless one must admire the attention to detail. The apartment building on the top right is decorated by triangular balconies which have multiple orientations to the glass wall, their shadows (Somewhat violent) adding volume to their facades. This could be repeatable as a system, whereas the other two buildings, on this page, are too chaotic to be models of change; the human energy and perhaps the economic energy that has formed them is remarkable, but neither seem to have any claim to either repetition or emulation. The gazebo, on the top left, however seems to have enlivened the forms of the research building on page 6, most likely by the similarly erratic geometric organization and the choice of uniform white surfaces hiding any sense of structural materials. Perhaps this is sculptural abstraction rather than architecture. Below might be a house of former parts, fun but more like a roadside amusement park fun-house, similar to the interior of Meow Wolf in Santa Fe.

Other than the Eiffel Tower, this vast sculpture may be one of the most dynamic sculptural buildings in Europe. Its size and geometry are an enormously fun exemption in a dense geometrically consistent city. It is essentially a giant curvilinear sculpture housing occupiable spaces within and a walkway on top. It is an image for Seville like the Opera House is for Sydney. But one is enough. The very inventive method of its construction is another reason for admiration if not a big wow! (see page 8)

This roof top on a very prominent building in Singapore, loses some of its power by being surrounded by new towers, but it's magic and absurdity is the edgeless pool on the roof, a disjunction of the common belief in what is a pool, a beach, or a scary amusement park ride. The idea that a body of water would occupy the roof of a tall building to its edge is just scary. Humans, however like to be briefly scared but not injured, when on vacation.

A ceiling structure run amuck at one end, a series of recessions and procession of rectangles in a curving shell, an old stone wall sheared as though by lightning, and a Samurai helmet hinging apart: these are severe presentations of an initial system second-guessed. All are “wow” buildings, with deliberate attempt to challenge the balance and confidence in the past. And all, in spite of their flagrant shape-making are exciting to behold!

When one starts with a larger scale form and then uses smaller scale elements to contradict the first, a powerful sense of disbelief falls the beholder. It is a method, not a gimmick. But then the hard part is the balance in between. Rarely is this considered common beauty, but maybe we need to redefine that expectation. Maybe beauty has become obsolete in architecture?

Civic Constructions

On a larger scale we can explore the important painting of an imaginary Renaissance civic square showing the lay-out of the variable forms being rectangles, triangles, and circles. Contrast is allowed between the elements, but the whole is geometrically organized. This system is based on the notion of how humans can create a common ground with individual personalities.

Below is an elevation and an aerial view of the Parliament in Canberra. The entrance combines a big curve with smaller rectangles. The layout has 2 immense parabolic curves creating a plan duality. The overall organization is more revealed than the ideal Renaissance city. More rules and the expression of those rules has grown over the centuries between these ideologies.

Other modern civic centers continue this play of geometries at grand scale. This page shows the plan of the 3 major Chandigarh buildings: the Secretariat, the High Court, and the General Assembly. The arrangement of the buildings are asymmetrical and non-classic. There is no apparent meaning or sense of hierarchy to the order. The vastness and grayness of the raw concrete buildings are austere, with only the three colors on the entry portal of the high Court, which seems a statement of power.

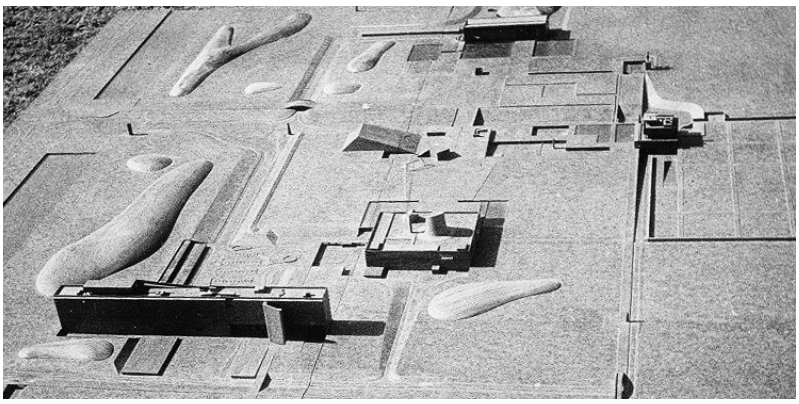
The plaza between the buildings has only one purpose: to create a stage for the buildings and to enlarge them while humbling the poor individual who might have to traverse the expanse on foot. But each of the buildings while clearly related to the others have complex variations of detail.

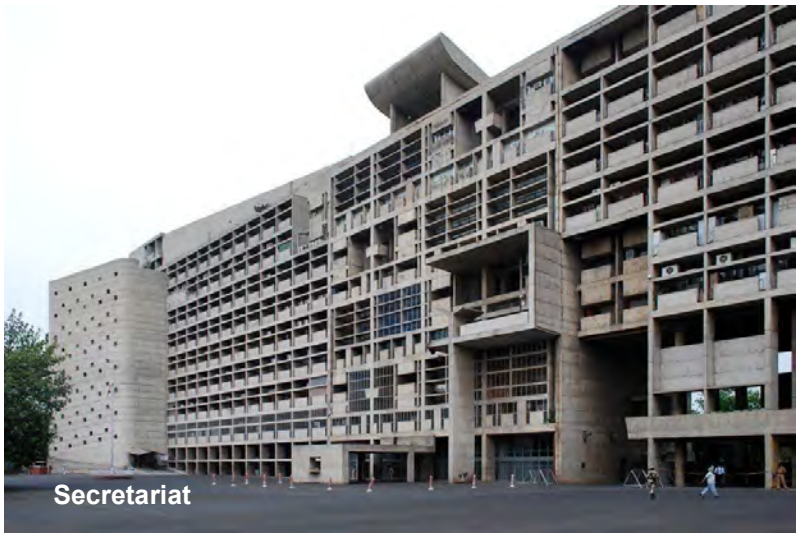
The Secretariat has multiple variation of fenestration at different scales along Its very long façade. The entry is subtle with a large opening at ground level with a rectilinear projection aside and above it.

The front of the Court has walls leaning out in a curve under the high arching canopy of the roof. That patterns is broken asymmetrically where the 3 colored columns herald the entry.

The Assembly is entered in two centered spaces under the massive curving canopy. The eight fin-walls holding have square-like openings near the base except on the center 2 fins, thereby very subtlety indicating entry.

Prior to these Capitals, The government buildings in New Deli by English architect, Edwin Lutyens, in the early 1900s are organized in a more tight and classical pattern. Higher elements flank the center spaces with entrances all clearly accessible by their centrality. Other flanking elements have classical pavilions with classical columns.





Secretariat

Court

Assembly

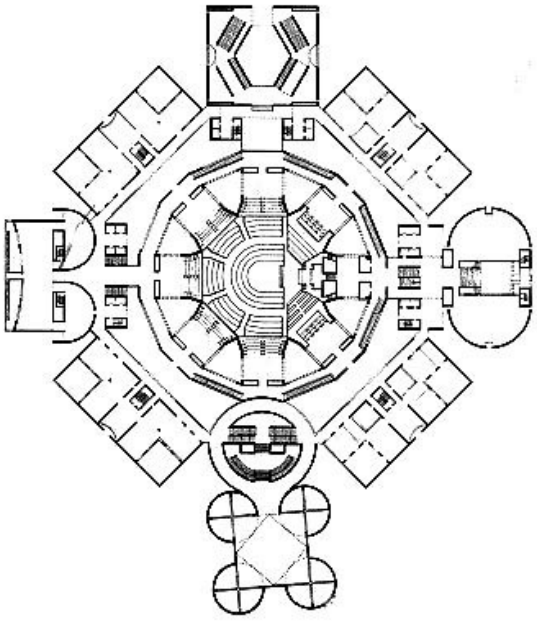
New Delhi Capital next page

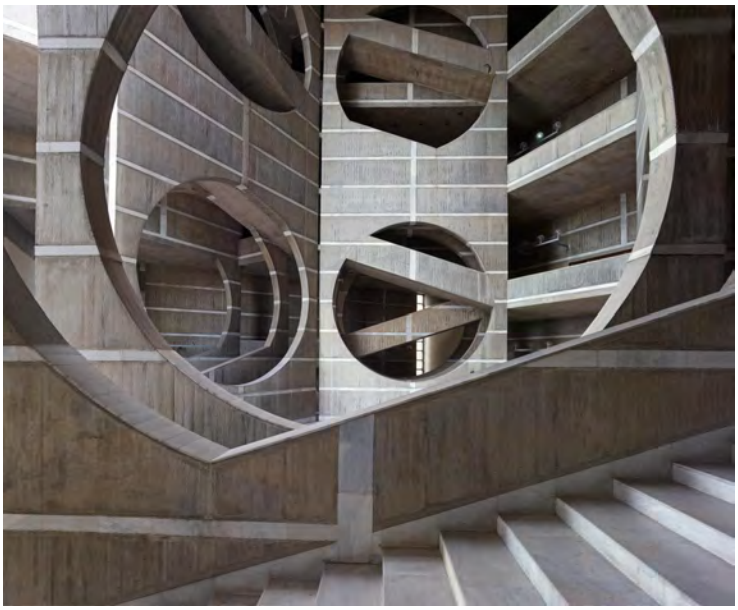
When the British architect, Edwin Lutyens, in the first part of the 20th century, designed the Capital buildings in New Delhi, he used classical planning and building design to image a sense order and history. (a history more tied to the British Empire, than to India) His flanking double-hex columned corners with tiny elevated domes creates the tip of a perspective recess to the central entry, behind which a large rotunda and dome heavily mark the center. Renaissance elements from this mini-temple by Bramante, on the right, are probably a precursor of the style.

1960 Brasília's Capital District was Inaugurated, the design heavily influenced by le Corbusier's plan for Chandigarh. The difference is the buildings in Brasilia being very minimally formed and with little detail, The image is therefore one of immense power, absolutism, and inaccessibility. Everything there has been reduced to the simplest reduction of Cartesian geometries, as sketch of a city that did not evolve and bow to real circumstances when built.

The Assembly in Dhaka is one of the most magnificently complex buildings of the 20th century. Circles Rectangles and triangles intertwine and create odd relationships all based on very understandable circumstances (like ramps, various required spaces, and stairs.) A prominent disjunction is the mosque which in plan is titled slightly off the main axis in order to align it with Mecca.

The interior is even richer in geometric entanglement than the exterior. It would seem that by using these simple Cartesian geometries there would be a more sedate order. Compared to Michelangelo's Laurentian Library which followed his dictate of equal parts of those form, this design has discovered new arrangements. The white strips of marble embed in the concrete at equal intervals of the concrete layers are an ornament, a circumstance marking each pour, horizontally and vertically, the rough and the smooth, thus becoming a conjoined texture, absolute, no matter the various openings in the walls and floors.





This Government Building in China is arranged similarly to the one in India, although somewhat more sever in its very tall, very solid base. The Pavilions at the walls ends have the same purpose as the small domes in Delhi. They are markers to enlarge the scale, and therefore the importance, of the buildings especially when seen at a great distance. The vast space in between can be used for mass gathering or just a statement of the importance and authority of this place.

China's triumph, however, is its Great Wall, the largest building in the world. It is impossible to estimate the amount of manpower over hundreds of years that went into its construction. While its military purpose no longer requires this method of division it continues to stand as a demonstration of potential human intervention in the face of conflict. We should hope to do as well in all the necessary effort to resist the impact of global warming.

Office and apartment

This building type challenges the “norm” of modernism with discontinuities, thus being difficult to analyze with any consensus. The top right and bottom left resemble incessant indecisions. One is like a surface disease descending on a lace gown. The other resembles a bunch of giant building blocks in rotation on a pole, an extreme example of structural exhibitionism . The amount of manufactured material to create these excessive cantilevers is a burden on our attempt to reduce carbon dioxide. Just because we can does not mean we should. For these 2 there seems no circumstantial reason for their demonstrative forms.

Looking bottom right we see 2 sides of a cubic box-building and may assume that the each side has a different texture: one is tinted glass with some scattered vertical white lines, the other side being an densely packed overlay of dumbbell shaped ornament, which presumably is a sunscreen. The shapes of these pieces may be determined by the circumstances of the facades orientation, blocking or receiving certain angles of sunlight.

The top structure satisfies Michelangelo's edict for equal rectangles, circles, and triangles. Here the triangles disrupt the rectangular and cylindrical masses, one bursting out and one cutting in. What circumstances could cause this geometric extravaganza? It seems to be a play between solid and void from interior compression and outward release, (mixing Kahn and Libeskind.)

The center image may in fact be a museum, but the exterior exudes the manipulation of sculpture at a large scale. It bears resemblance to Neolithic rock structure conjoined with glass, but also has an aura of Paul Rudolph's work.

Below an art museum undergoing stretching exercises. The old museum, a red brick palazzo with classical renaissance detail has been overwhelmed by giant structural canopies of unknown purpose, especially the one fanning the old museum. (note: there is a semi-secret supporting column from one canopy that falls in the center of the old museum.) This exhibitionism is a waste of resources. The entry comprises some pitched greenhouse-like surfaces to create a spacious airy pleasant initial experience, with sculptural steel flying all over and under the envelope.

Recent Museums, in order to summon attention, spend an excess of money on dramatic entry spaces, restaurants, and shops, with the art tucked away in traditional sheet-rocked boxes. Some examples are Bilbao, MOMA, DAM, and the Fort Worth Contemporary. Are the architects trying to get as much attention from visitors as the art? These are due to the circumstances of fund raising., and lack of broad interest in art. A new effort

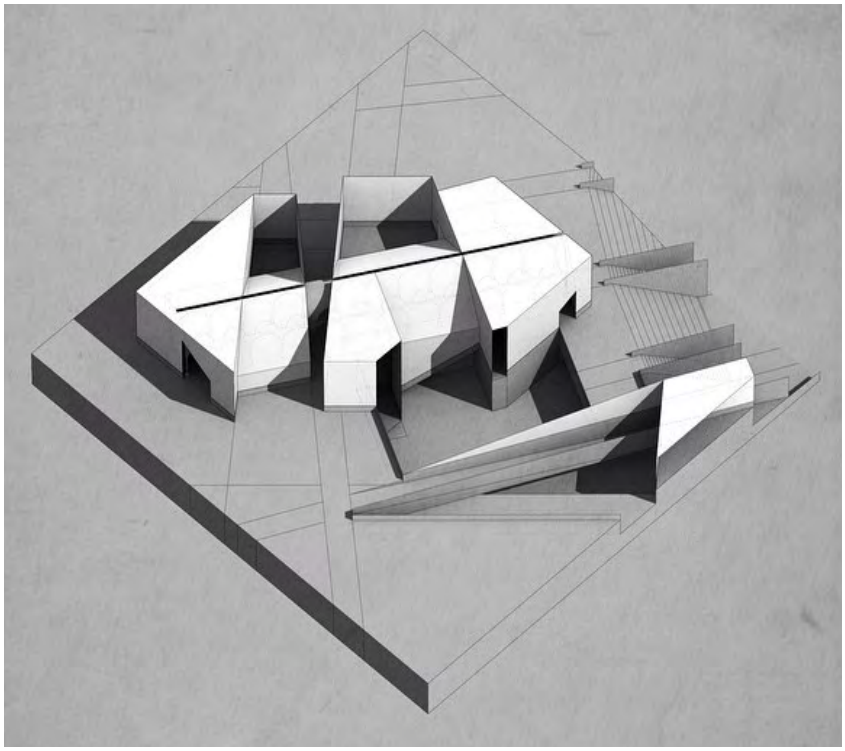
for education in the arts and architecture can initiate a broader understanding and a broader need for engagement. Somehow modernist minimalism set the bar for art having a zero surround, less someone's attention be usurped. Why cannot the art return to its earlier historical settings in full architecture? Think of the Prado, the Uffizi, the NY Guggenheim, the Frick, The Tate, the original Barnes.

Refinement

Response to circumstances of initial concept for construction are intrinsic to the process of all design. After examining all the available circumstances of a project the designer's education and visual proclivities take over, sometimes even negating some of the earlier decisions. A balance at this point between AI thinking and human learned instinct, could be the keystone to making architecture. Two views of a house project below which might have been carved from a block of unknown material. It does what it does without us needing to know why.

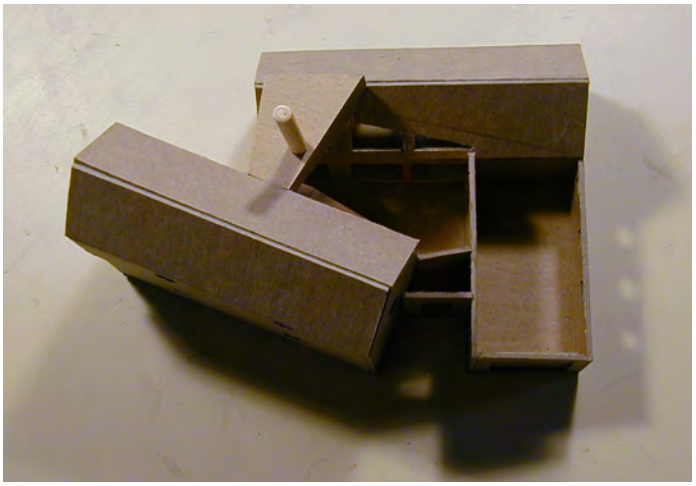
The bottom Middle East project show both an exterior and interior view, the interior softening the sandcastled solidity of the exterior. One image is of refuge and isolation, the other of secret enclosure. All of it says stay away.

In one sense both these projects are cold, abstract and unobtainable, but the counterpoint is that all is well chosen in terms of composition. Unfortunately they are excess energy embodiments in concrete, no matter how elegant or minimal.



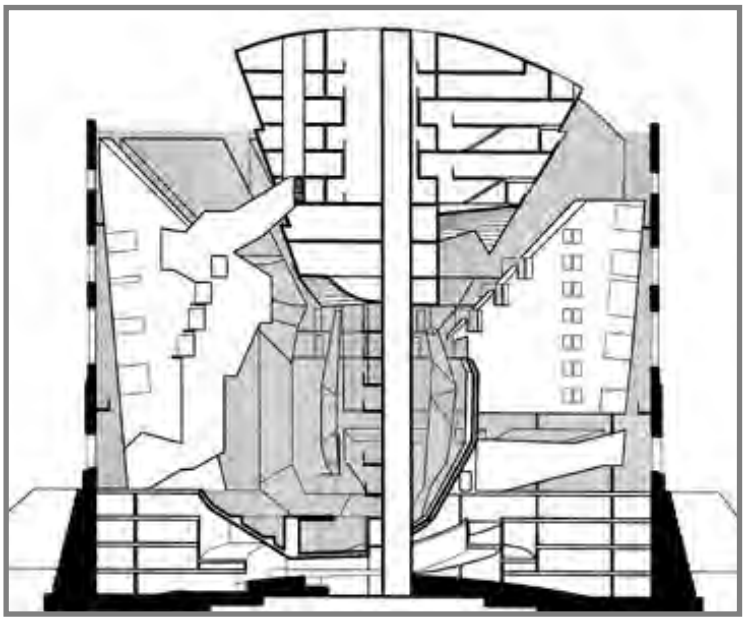
Slicing and triangulating mass seems to be a popular method of organization of the parts, or separations where unexpected, sometimes letting the gaps be fenestration or entries. Triangles are useful approximation of curves and for prefabrication, like the gas station, bottom right. Prefabricated housing parts do not have to be organized rectilinearly, as in the model below. Sometimes mass slicing can get away from you, making whimsical shapes as indents in the façade. Capriciousness can always be a part of some architecture, but needs a where or a why or a how much.

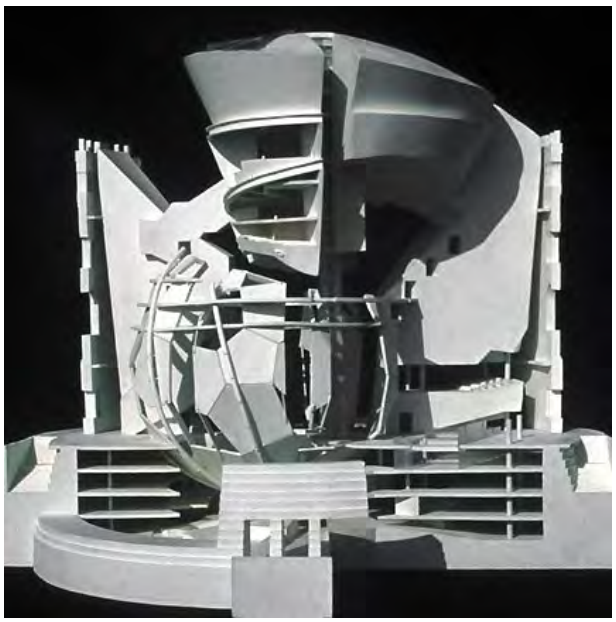
"Good art should elicit a response of 'Huh? Wow!' as opposed to 'Wow! Huh?' " - Ed Ruscha



The TWA terminal in New York was a landmark building of curvilinear concrete. The main structure audaciously split along its upward curve. The inner parts, however, in their awkwardness confuse the elegance of the main structure. Why not use counterpart geometries on the smaller scale parts, such as stairs or ticket counters? Doing so would have helped read the various functions of the different program parts.

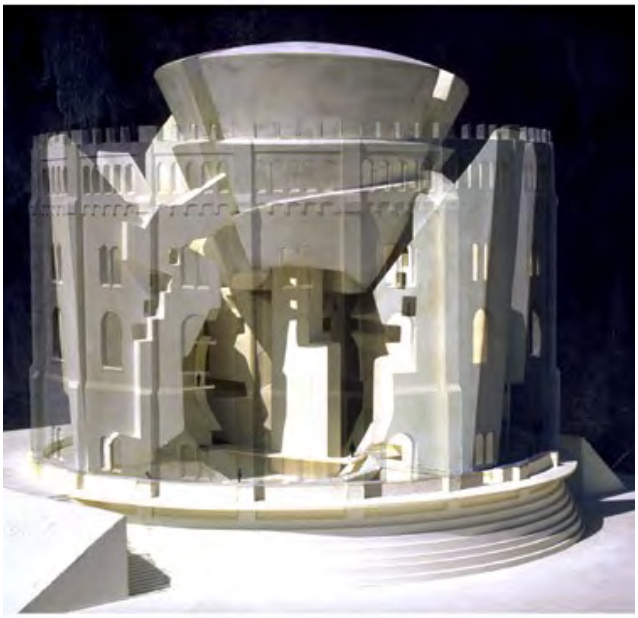
The redo of an enormous gas tank into an apartment complex was the opportunity for such myriad swooping and slicing with many planes horizontal against the outer curved enclosure.





It causes the large divisions to generate varied spaces of varied scale, much of it structural. This a project (perhaps not built) which would be fun to explore. Some light for the interior space would have to be introduced at the top, based on the area of the existing historical windows on the drum. Some apartments would be looking into the large central hall/atrium as well as to the exterior; it would be an exciting place to live.

It is much like the housing project in France, below, where a large common space with ornamented walls in powerful colors contain apartments. A small neo-Greco-Roman temple-like structure at the bottom counters the large scale of the cantilevering walls, hanging out to encompass it. The balustrades in the stairs break down the scale in the walls, so that the walls themselves seem even bigger than they are, with strange patterns that reference history but do not repeat it. From the photograph one is hard pressed to know for certain if this is an interior or exterior space. Best money is on interior because it is so clean, unless this is an exceptional model. This project is disruptive to the flow of history, while simultaneously loving it.

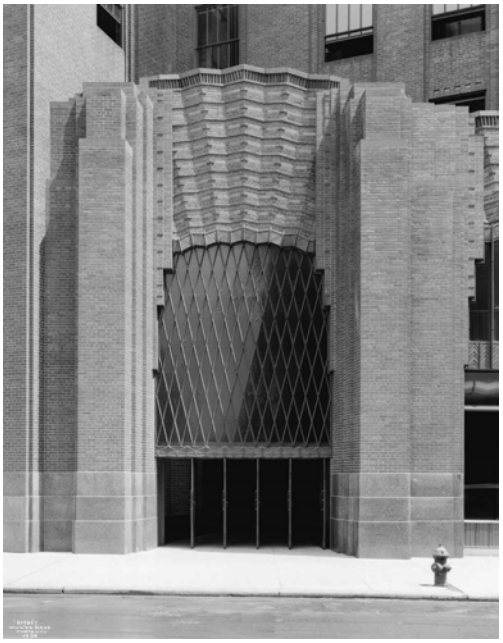


Serious articulations in the surface of lumpy buildings are usually caused by fenestration needs, egress elements, and structural requirements. Top right emphasizes the corner with fenestration slotted expressing an interior stair. Other windows are punched deep into the skin with beveled edges. All the elements have only marginal relationships to each other.

The image below on the right has schisms cut into the thin skin with deep reveals as fenestration, a harsh unique contrast to NYC street facades.

The California mansion is an interpretation of a Mayan Temple with overlapping surfaces of varying height. Bold and scrawny punched rectangular openings have various treatments of masonry textures the surrounds. It seem that interior forces of program are pushing and sliding the walls.

The entry to a famous early skyscraper in NYC has an extraordinary carved and curved entry recess. Above the doors is an enormous glass window with elaborate triangulated mullions, an unexpected entrance for royalty of the business world.



A word about color in architecture. Much of what has been presented so far in this treatise are grayscale structures, or lightly colored. Lots of color is not minimalist, and most stone is demure, as well as concrete, and stainless steel. In Modernist painting, early and expressionist, however, color is what it is all about. On the left are paintings by 2 artist whose well known work is entirely about the effects of color adjacencies. Joseph Albers work spawned a color course taught at several universities. Some architects who were taking the course or hanging around the painting department at various schools eventually were designing buildings and color emerged a bit.

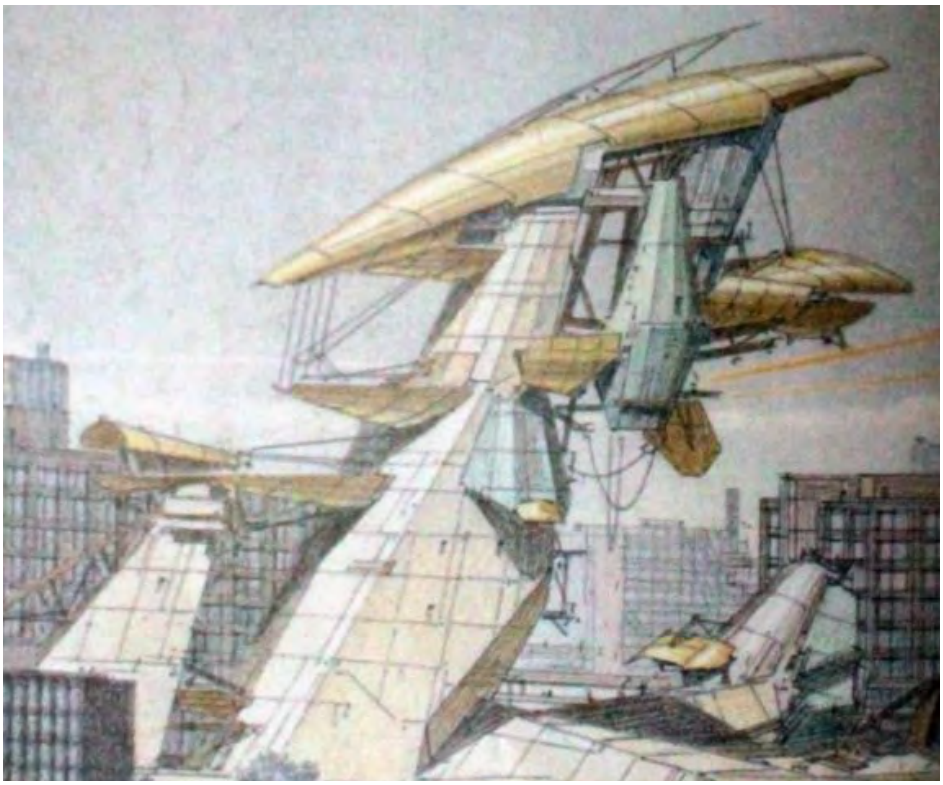
The 2 images of this famous residence in Mexico show the power of color when applied to minimalist buildings; perhaps then that they are no longer minimal. In this project the vegetation plays an important part of not just the natural against the minimal, but the color of the natural as well. Note how the dark green vegetation behind the elongated opening in the heavy pink wall, when reflected in the blueish-tinted water, becomes turquoise. Albers would call it a dark blue with yellow. While these colors certainly have a color combination source in Mexican crafts, their use on constructed walls with abrupt adjacencies is unique. Note also the disruptive vertical slots in the lower image's pink wall.

The contrast of two things is an important aspect of architectural history. Robert Venturi addressed this subject in " Complexity and Contradiction", pointing out that dualities, for example in fenestration, pose a challenge to a sense of balance, requiring a third element to contain it. It is this disruptive effect that has been used in more recent concepts of organization.

The 2 images of a well published house below show the impact of the duality of rectilinear walls and various curved pieces of roof. The undulation and variation of these contenders plays out across the landscape. The detailing of how the curves intersect the block walls is flagrantly and deliberately non– consistent, with an intent to seem arbitrary. Huge sheets of glass at the corners allow the roof pieces to seem magically floating above, and the occasional piece of rectilinear massing has no visible roof at all.

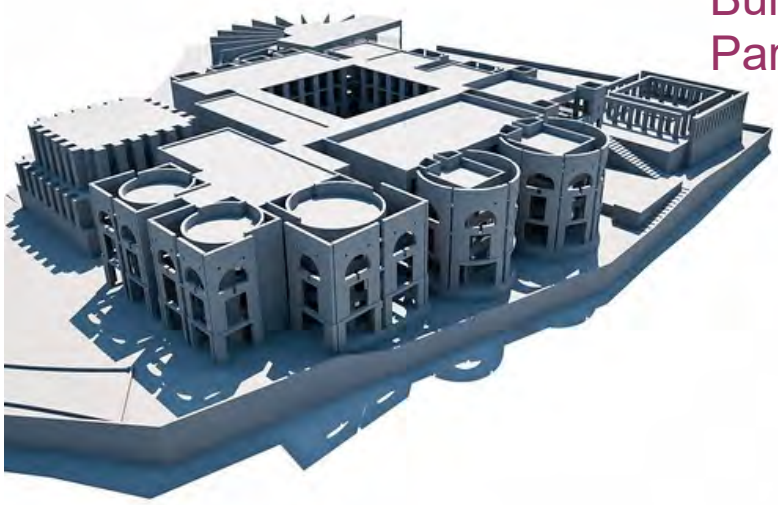
Breaking the corner of the building for windows would have been a big no-no in all of architecture before the 20th century, but at the beginnings of modernism temptation to do so was based on the concept of an inner structure with cantilevering slabs; the outer walls were no longer bearing. This freed up the walls for any punctures the architect wanted, whether based on the circumstances of need for ventilation or vista, or shear whimsy of façade tweeking.

The curved roof on the above house cannot hold a candle to those of Lebbeus Woods who explored the assault of mechanical and biological forms on both modern and historical theory. His drawings portrayed a science fiction incision on existing infrastructure and landscape.



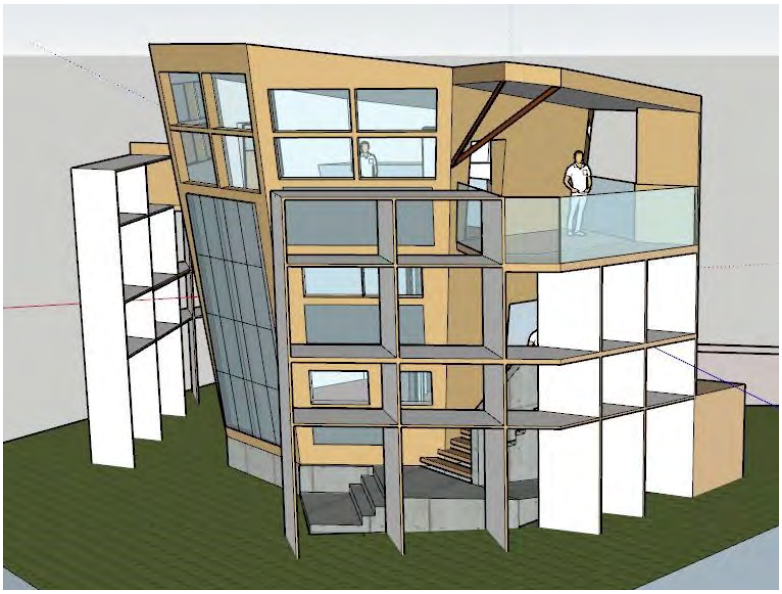
They have inspired the images in 21st Century sci-fi films, for space vehicles, orbitals, robotics, and machine-biotics. Even though there are no clues as to what circumstance has created such images, we must imagine future forces at work, and think about what kind of future we want.

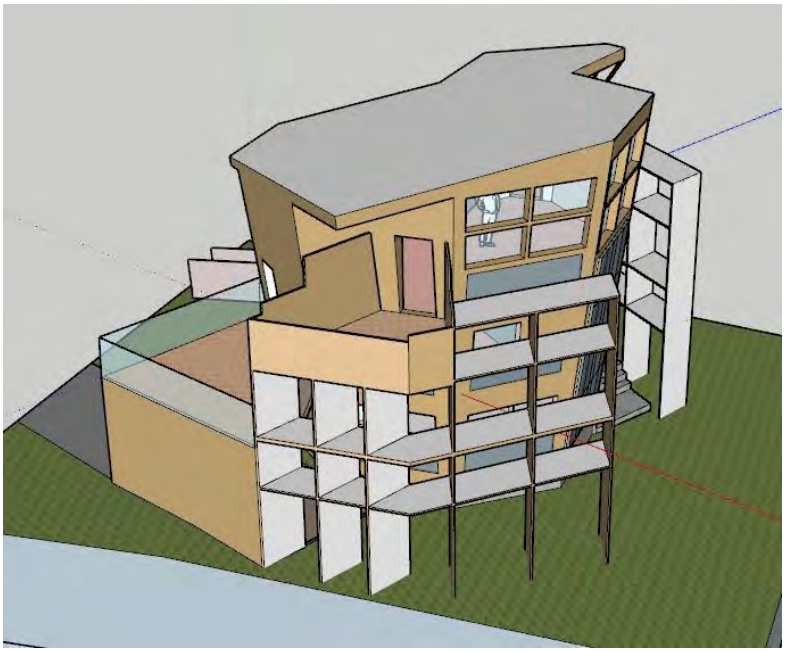
Relation of Building to Building and Parts to Parts



In Louis Kahn's unbuilt portion of the Salk Institute the glass walls of the meeting rooms, some circular and some square, are wrapped by outer walls of the opposite geometry with Roman punched openings. The purpose of this arrangement was to help shade the glass from excess sunlight in the hot Southern California climate.

This has been referred to as wrapping the buildings in ruins. Because openings in both square and circular walls are so absolute regardless of their location and orientation, it is unclear how well this would have worked. Aside from its efficacy, the monumental posture of these forms would have created a palatial stance uniting modernism with ancient history.





The two images to the left are an experiment to demonstrate how wrapping of structure around another would amplify the amount of sun on not only glass surfaces but on the in-between realms, obviously for use in a very cold climate. The brise-soleil used by le Corbusier, and later relentlessly by many followers were intended to block excess sunlight, but positioned differently with reflective material of certain surfaces, the reverse effect could be useful.

The outrigger structures could also contain sheds, garages, outdoor decks, and court enclosures, not to mention structural bracing This example has the main spaces in the center, but various arrangement of uses and interactions could be designed using computational modelling based on local climate data. The visual results of this methodology could be quite dynamic and of significant architectural interest based on multiple circumstances of the environment and varied utility.

On a larger scale the relationship of building to building in cities, or in isolated clusters is arbitrarily arranged in terms of building interaction, except as in the case below where they all wear the same outfits.

If the buildings are spaced apart they may allow light access or vista access. Often the economic constraints are such that space between the buildings is there for parking or fire department access. In the middle image we see a cluster of spaces with only the smallest amount of exterior openings to the outside world, but focusing inward to a central semi-enclosed and planted "courtyard" at each level. Like Kahn's Salk project the forms present themselves as an important entity, by their voluminous shapes (this one seem to be tubes falling outward, about to collapse.) Their intersection with other campus structure is one of contrast, a sculpture against a regimented backdrop.

As for structural failure, below is an example of a structure used inadvertently due to acts of war. Because it has been severed, the overpass is no longer unusable for traffic but provides some safe retreat for massive numbers of people. While it may not be viable for that use after additional bombing, as temporary refuge it has a never-imagined social interaction with the city. This example can summon up the idea of structural interconnection in dense urban sites, not as protection from the insanity of war, but of the insanity of our neglect of our planet, in bracing against intense storms of water and fire.

(Wars, however, might pose a greater threat to our civilization than global warming. Buildings are more easily destroyed by intent than neglect and stupidity.

When two seemingly different buildings or parts of buildings embrace, but are actually one, why are they doing that? The top image has an uncanny similarity to the huge solar furnace project in the western US desert; the taller curve reflecting light of the tube to which it is attached. This all surrounded by cloned rectilinear structures. The first impression is wow, the forms are interacting. Why?

The second image is a science museum. Part of its infrastructure seems to be falling out of the building. Not only is the form escaping, but the materials and method of structure contrasting the two are antithetical. There is nothing unique at all about contrasting materials with contrasting forms, but here, it would seem too violent squishing the very fabric of the building.

How about many identical parts strewn out across the land which implies that there is no raison-d'être for any of the positions of the parts, most likely only limits to the density that is allowed. It implies a non hierarchical aspect to each dwelling, an universal egalitarianism which is a nice concept in this period of exaggerated wealth.

Lebbeus Woods' drawings have Influenced certain forms of enclosure to become the new-norm. Here are 2 more drawings from which we can see similar forms already present in current work It is possible that we are entering into a period of chaotic architecture representing a chaotic period of change. The overwhelming domination of electronic media and especially social networking has elevated gossip above reality.

Ironically the chips of the electronic era are rooted deeply in human science which has been evolving at a geometric pace in the last 150 hundred years. However, that science has produced the increased power of gossip and religiosity over science itself. So then the forms for this new culture are likely to become increasingly arbitrary, their predominate circumstance being whimsy.

The image to the left is of an art museum whose exterior extravagance appears to be a sculpture. How various spaces fit into the interior of these seemingly random shapes would be a discovery of what was what.

The bottom left is an apartment building that appears to go a bit berserk after turning the corner. The tentacle-like columns flailing the pavement form an exterior covered space but mostly convey the sense of immanent collapse.

But the winner in the collapse department would be the image on the bottom right: a health clinic in Las Vegas, perhaps for mentally ill gamblers.

The clinic in Vegas is a severe evolution of the one in Columbus Indiana (below.) It is an interesting use of space in conjunction with the mechanical imagery, much of the floor in subtle ramps, even ramp as waiting spaces. The space is dominated and overlooked by a giant air duct which takes on a robotic aspect. This space goes about as far as would be desired for the feelings of the patients, especially on their first visit, but then its character on subsequent visits may be familiar and more akin to an amusement park aura.

Below are 2 views of "House of the Century", as named by its builders: Ant Farm. It is adjacent to a swamp in Texas. The exterior is as phallic as a building can be, which may explain why it was in *Playboy* as well as winning a *Progressive Architecture* award.

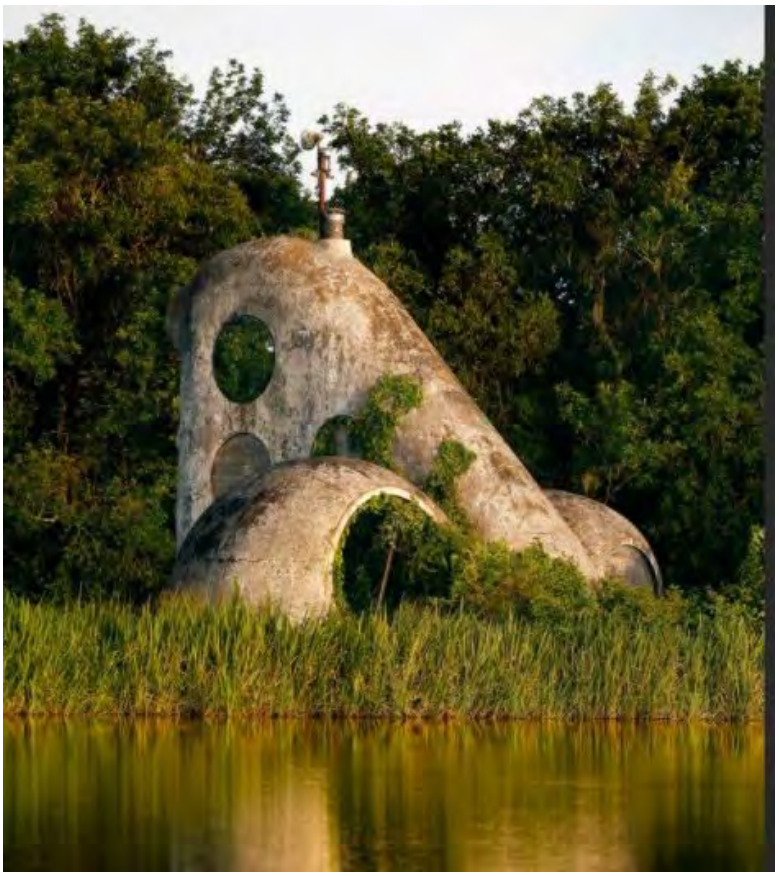
It should be known that these consistent curves were hand built, so its aspect of a future type of domicile is modeled. Future domiciles of this design style would most likely be a result of machine manufacturing. The interior has curved padded walls and ceilings, those two surfaces being as

one. The softness of this tucked into tubular-like folds is very contrasting with the exterior smooth white plaster; so one goes from cold to warm. That warmth is further enhanced by the yellow-tinted kidney -shaped glazing adjacent to the circular windows.

There is a carved conversation pit which serves as a living/ dining space. the bed areas are in the tower accessed by ladder. The bathroom is an exquisite testimonial to the water mechanics of our Century. This cleansing space requires special attention. (next page)

Here there is a large plumbing tower which has an abstract resemblance to a Mickey Mouse robot. The various parts of various purposes all emerge from this sculpture. The sink looks more like a urinal placed too high, and the toilet is fed by a curvaceous transparent water line. The Kitchen is equally unusual, but in a different more organic set of carved wood sculptures holding the sinks, which emerge from the floor. All the wood is highly gloss coated and in some areas makes reference to the swamp by green staining .A strange piece of high-tech plastic cylindrical tower storage unit stands next to the sink, and on the other side is a carved cooking assemblage.

A more current and dystopic picture of this unique house appears that it has been overtaken by the swamp after all the windows, doors, and probably interior parts have been stripped away. The reason this author has devoted so much attention to this project is not only because it is an important land mark, but because there is a cruel lesson of how well humanity preserves its best complex structures.



Some attempts at historic preservation have saved important buildings since it its politically enforced program was begun. But money seems to always have the upper hand. The emperor Caligula Had a magnificent boat which sank in a lake; then Mussolini drained it to extract the boat. Shortly after all this effort, the retreating German army blew it up: thus the futility of saving our cultural artifacts.

. From Ant Farm to further curves, wraps and folds, we enter a realm of fantasy. The two images below, while current, seem to be caught between sculpture, animalism, and large scale machines of the future. The left bottom is either some type of resort or one of the 21st century mega-mansions for corporate giants, or Russian and Arabic oligarchs. It definitely summons up a pile of fetal pigs, as seen in Spanish markets. These forms, however, seem more lively and varied. The 2 bottom right have a certain controlled flow that seems more residential, with the enfolding layers having a very large scale movement.

Bumps and cutouts remain small to embellish rather than confuse the viewer. Also these both have 2 colors at the large scale for an entanglement of color, not just shear formalisms. The designers of these structures should be commended for working in a milieu that is dangerously close to implying a world of combined bio and AI.

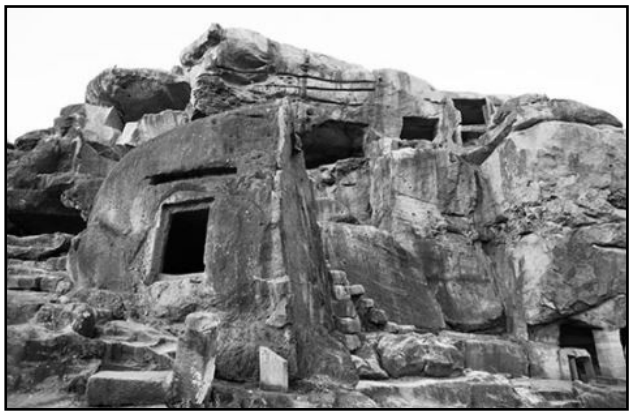
Extraterrestrials on their exoplanets might even find similar dwellings to be the “cat’s pajamas.” Adventures like these are a suggestion of human progress.

Moonhole

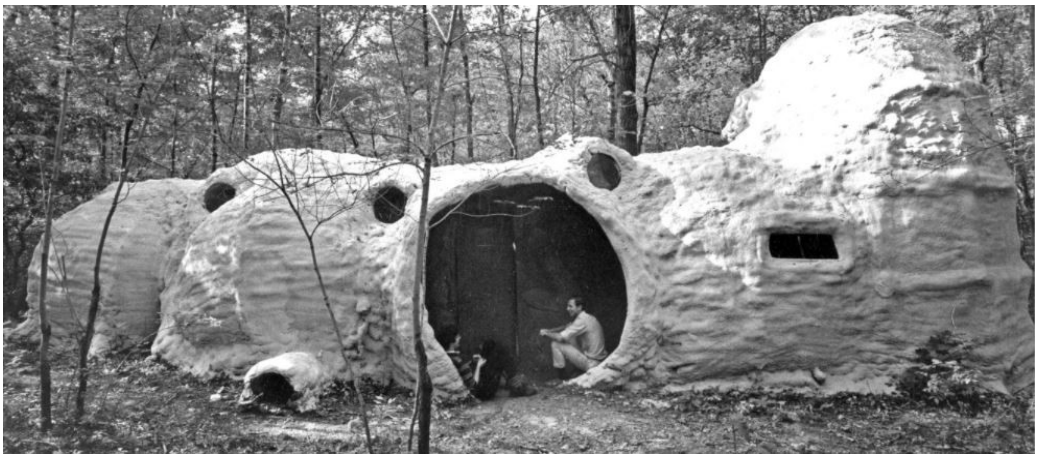
There is something deep in the human genome that warms us to the idea of caves as ideal domiciles, both as shelter from uncomfortable weather and seclusion from the various threats of nature. But in the last several thousand years humans found caves to not be suitable to their more advanced living styles, and so had either to modify them or emulate some aspect of them in completely man-made structures. This is like sculpture: some is additive and some is subtractive. In various parts of the planet soft rock formations, some with eroded openings, were substantially carved into spaces for homes and small work places. A large formation has frequently been modified to be a village. Not all of these have been abandoned.

If a cave is big enough, a regular type of house can be built into it which solves any problems with a leaky roof, only if the caves does not seep water through the cracks. Or as in the house built under an arch in Moonhole discovered, sometimes large pieces of rock fall, making the house unsafe for human (and critter) habitation. The artistic level of cave-carving sometimes leads to even rectilinear openings where one might think that it is a decayed man-made object.

Below is an agglomeration of lumps and shapes, the entrance may be in the front with eroded stair, or up the winding staircase on the left to a higher portal. There are other mysterious aspects to this object, like the steps on the right and an opening way down under a huge bulge with a fat column.



The Yale Architecture School in the 1960's on the edge of the college golf course, made three experimental foam building experiments, using inflated fabric for forms and interior finish onto which was sprayed the structural foam and then a paint-sealer. The irregular surfaces are an exposure of process.



One vision of the future is to take parts of all the now obsolete buildings and machines and create a new urbanism. The above model demonstrates the idea, and perhaps inadvertently the absurdity, or pathos, of the concept.

To the left the trailers are positioned together demonstrating an unexpected use. (In fact it is unclear if this is real or photographically composed.) Nonetheless it contains a better sense of reality as it makes an ad hoc community, a small vertical neighborhood. The structure for this arrangement, however looks very tenuous , collapsible in a heavy wind or earthquake. Not an approved structure (:

The real pileup stacking of housing units was built at the Expo in 1967 in Montreal as a demonstration of an alternate type of housing. After the Expo it continues to this day as a viable community. Some of its features in the arraignment are terraces made by the turned unit underneath, windows for every unit in multiple directions, sound protection by limited number of party walls, and vistas of the river and city. The concrete boxes, however, are heavier and energy more intensive than metal structures. Shipping containers have been converted to dwellings, but have to be reinforced depending on where openings are made in the walls.

In New Haven CT, a low stacked metal project was built as la low income occupancy project, but was unpopular and demolished. The reasons for this demise are unclear. Certainly the Montreal Habitat is a serious, inventive and substantial piece of architecture. The reasons why others like it have not pursued this experimental modern uptake of the Italian or Greek hill towns, are complex. Other developers and architects should step up to the plate.

Students in architecture classes at Williams College had a project to design a specific program in the style of existing known architects, with the resulting models, below, stacked in a row on display. Compare this to the top image.

Now we come back to the beginning: the ruins of Hadrian's Villa. But ruins about 2,000 years old that still tells us what this palace was and how it influenced the architecture of its following centuries. Currently we are not leaving a legacy of architecture for the future generations, or a habitable planet to support it.

This part of the book now ends on an ambiguity which is always disruptive and a bit uncomfortable, that, being a statement by Albert Einstein that contains a complicated flaw. Einstein was the greatest scientist of the 20th Century but was often confused by mystical notions which then blocked, for a while, the progress with the completion of his General Theory of Relativity. The mysticism prevented him a bit when he made the assumption that a God would not play dice with the Universe. We now have evidence that the Universe plays dice with itself. Science should not be inflicted by mysticism and architecture should not be hindered by the suppression of imagination.

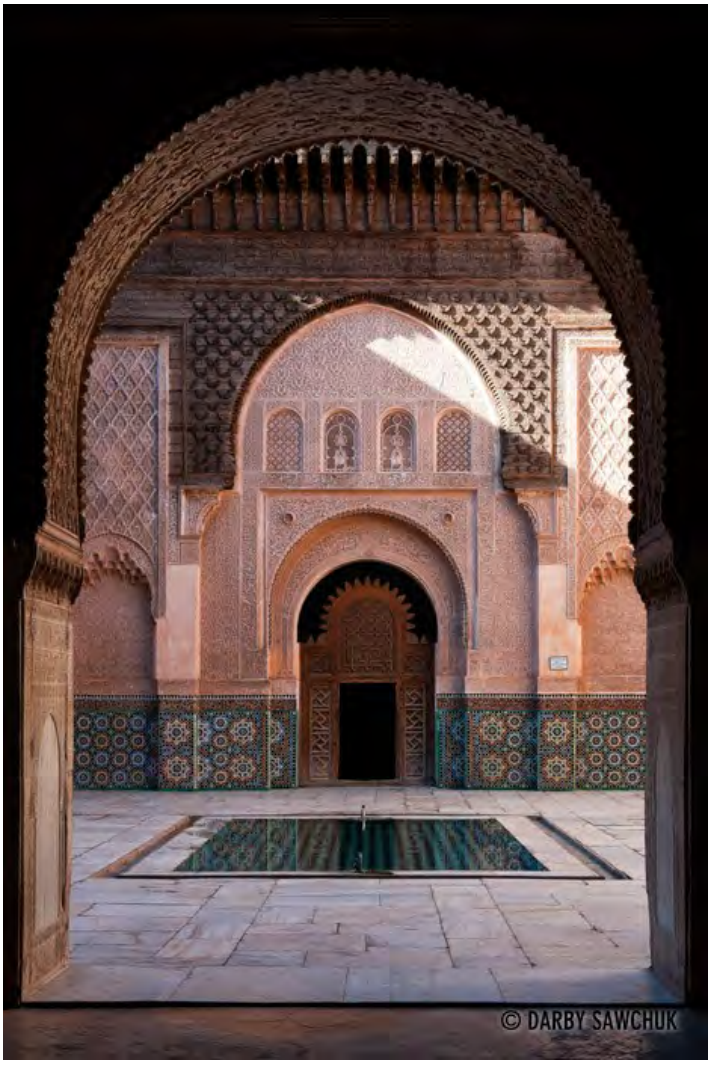
"Imagination is more important than knowledge. For knowledge is limited to all we now know and understand, while imagination embraces the entire world, and all there ever will be to know and understand."

-Albert Einstein

Part III The Details of Deception

Ludwig Mies van der Rohe wrote that “God is in the details.” For a minimalist modernist his details were precise, elegant, and integral to the structure. They were also basically invisible without any revelation of deity. One can always imagine. The Farnsworth house below was, along with the work of le Corbusier, both the conception and initiation of the modern dwelling. By way of comparison: These Middle Eastern courtyards detail every inch of the surfaces to bring out the centrality and thus the importance of entrance.

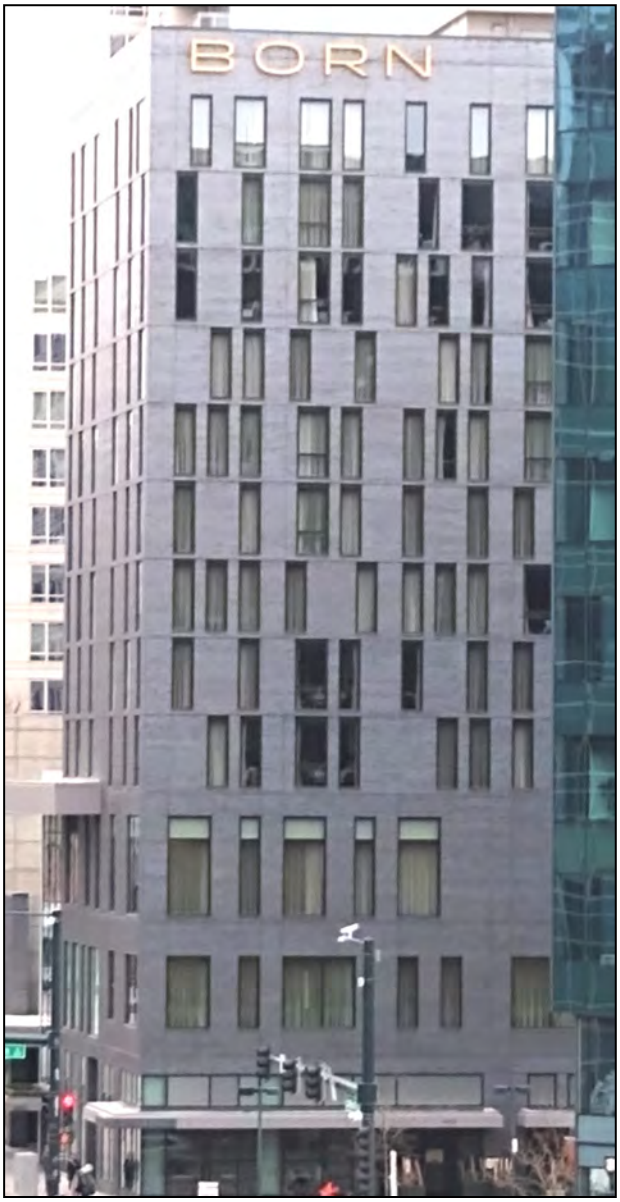
Details are of several types: the visual revelation of the structure, the application of other materials of necessity, and the addition of purposed ornament.



Big building pieces in urban areas, like Denver, are often scaled to that of the structure or fenestration. In dense tower situations (that word implies a certain visual confliction) the majority are minimalist in detail, often with glass division as a pattern applied over the entire elevation and with little regard for orientation (which has less importance where direct sunlight is blocked by adjacent towers.) Often the only way to tell where the windows are is if lights are on after dark revealing the transparent versus the opaque.

The image below on the left appears to be a partial re-wrap of an earlier façade. The varied green metal panels running horizontally play against the concrete encapsulated area, and a small black rectangle is centered in the concrete. This interplay gives the building a sense of more importance to which it probably aspires. Below left there is a fortress of concrete showing all its structural parts. If the little black fence does not say “stay out” the threatening concrete dentals which are only attached to the building at the top will do the job. A bleak and threatening aura is instilled by its details.

On the right is an office block whose punched out windows are spaced in a manner to imply computation. Like an archaic computer card the meaning of the spacing and width of punch is unknown. The front façade is more ordered but does not hold a candle to this more elegantly pattered wall.



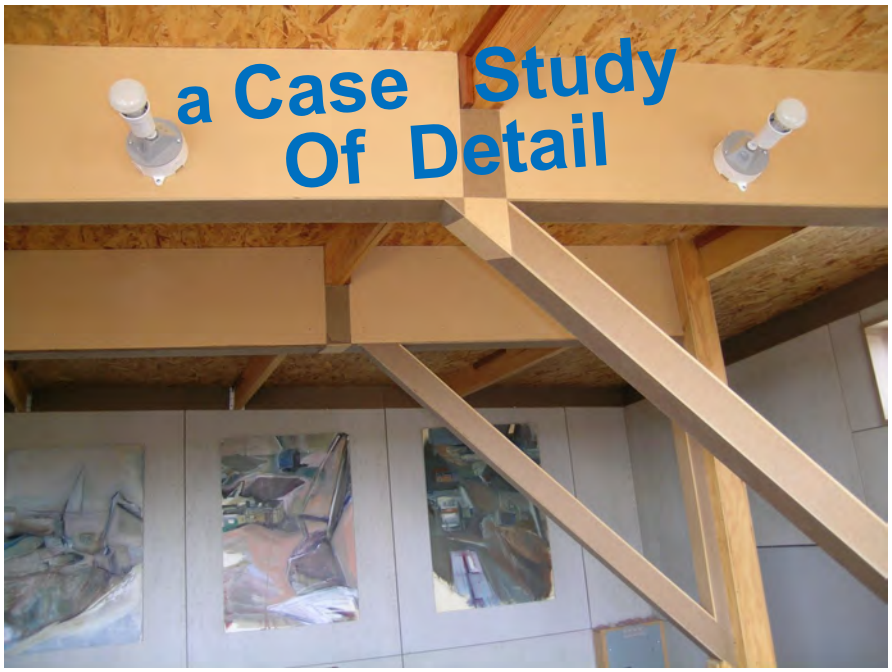
A project for an equipment storage and maintenance shop was created around an existing garage, now painted yellow. Parts have different purposes such as tractor, truck, mower, and repair bays, with storage and charging stations for multiple electric agricultural tools. The 2 end bays are clad in the same 4 colors, the curved roof storage unit facing the incoming traffic is introductory. The much more complicated end has the same colored boards (cut from trees on the property) in the same orientations at much greater density. The whole embodies the triad of rectangle, circle, and triangle.

The story of the board placements is much more complicated. The maintenance shed has 4 corner elements that extend above the roof and capture light at the tops.

Each of the eight wall panels, has a similar rain screen of the boards which have various widths and even subtly different lengths. The most seen side, south, faces the road and is the most dense, with a decrease of material as it goes around to the north. The master carpenter was give a quantity of each color for each wall, but could choose the width and positing of the boards. The image bottom right shows such discrepancy.

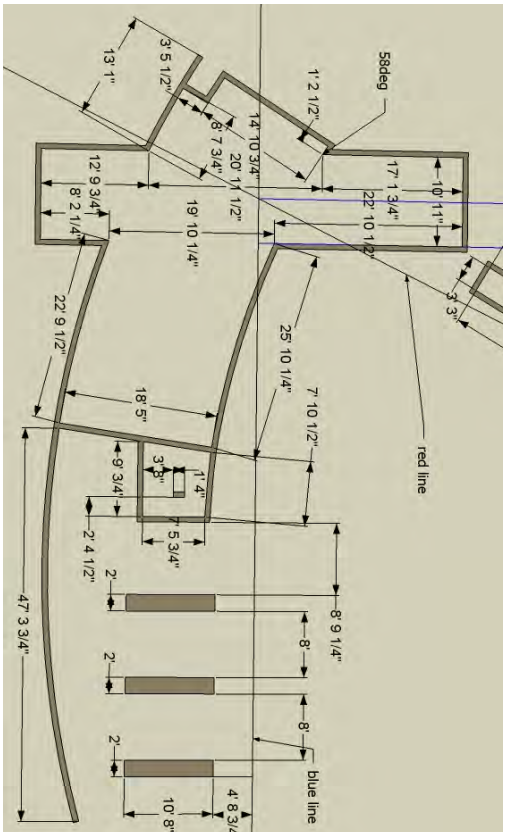
To make matters more complicated the boards could not be tight against another board so that water would not be held in capillary action, with potential damage to the wood over time. This entailed a 1/8” washer at every screw position, made from a composite board which will not rot and does not split when drilled through. These 4,000+ spacers were positioned behind the boards with staples.

This patterning protects the taped plywood sheathing (dark red-orange) from serious water even in heavy rains.



This small dwelling/office has numerous details which are generated by various circumstances. It is made of Sip Panels (R42) sheathed with 3 inches of aerated autoclaved concrete panels (R3) on the exterior, and 1/4 inch backer board panels on the interior of the envelope. The interior is mostly wood. The roof is supported by a central double spine of beams, each with 3 columns and 2 diagonal braces over the high spaced sitting area. Distortion occurs due to the exterior walls being parallel curves, but the bean system is rectilinear, and the end walls are not parallel (see plan below.)

Notice the variation of the 2 color pattern of sheathing on the diagonals where they meet the beams (cowboy shirt colors.) The diagonals are parallel to each other but intersect the beams at different distances to the small crossbeams. The stairs have small insertion of white plastic referencing the marble inserts in the building on page 52, a bow to a great masterpiece. There it smooth marble versus rough concrete, here is is smooth plastic versus the roughest ply-wood available, representing the inner portion of the tree which is its structure. The ply-wood



that sheathes the central columns, and walls that extend outwards as part of the column structure, is the crudest ply-wood available which represents the core of the tree, its prime structure. Contrasting that are thin sheets of wood fiber in varies thickness and other treatments, principally medium-density-fiberboard, masonite, and large scale particle Board. A one-of-a-kind LED light fixture hangs at the edged of the stair body.

Nearby are various veneer ply-woods to contrast with the crude ones. Where beams and sub-beams overlap or abut, the cowboy shirt colors heighten the intersection. The white plastic strip accentuating the 90 degree joint in the structure ply-wood is assaulted by a composite piece of exposed layer ply-wood (bottom right.)

This jibing set of materials occurs at the top of the stair as an event of detail. Under the stair, on the other side from the light fixture, there is a serious of awkward collisions between the structure ply-wood, the masonite, and a mysterious element (bottom left.)

Even the white strip of plastic wants to get in the picture as it ends at a corner. None of these decisions were made in the drawings, but rather ad-hoc by the architect present, vigilant to balancing various elements of finish.

Inside the curving parallel walls there is a liner of a ramp three feet wide. Various book cases create the division from the ramps to the center spaces. Some face inward and others face out. Numerous voids are left for visual connections between spaces, and to allow light into areas which would otherwise be dark. Two views through voids adjacent to the stair show what is seen in a progression down the ramps: changing vistas and heightening the sense of movement, both on the stair and on the ramp.

Safety bars of aluminum spaced according to code, and a handrail interrupt the open spaces in the walls. They create a a sense of the wall that is void, and make seeing and identifying objects in the distance more of a mystery. One does not know everything instantly.

The bottom right image shows a corner of the inside space. The up-ramp behind the wall of shelves is revealed as well as a storage space below the ramp via little windows, borrowing light from the center. It is like a sneak preview of spatial layers and the transmission of light from one space to the next.

The real hardwood floor also contrasts with the MDF Board finish on the shelves, and air vents painted blue-green with shelves of baby blue punctuate the space of in and out boxes and voids.

Continued images of the center space versus the surrounding ramps and shelves, show looking up into the parlor with South facing direct gain windows in the high spaces, and looking down into the lower floor, over the TV-pit, at doors and windows into a bedroom. The shelves have exposed end-grain layers on the cut that are gloss-varnished in contrast to flat-varnishing of the outer surface. This is to emphasize its ply-woodness. Also the parallel layers in the cut contrast with the wavy ripples of the surface wood.

This overview near the top of the up-ramp across a vertical void spanning from a parlor built-in 2 person love-seat to a dinning area cupboard/wall, looks down into the TV-pit and across the stair slot to a “tea-house,” the purpose of which is retreat on a futon with plug-ins for charging one’s devises, and escape from other activities.

This also shows a close-up of the diagonal brace to the overhead beam that visually slices in to the crude plywood columns-wall, and how the aluminum safety bars continue at 90 degrees from the stairs in the dinning area.

Around the corner of the tea-house we see a second sliding door made with secondhand Kalwall translucent plastics, Below it are 2 light-sharing openings: the left one is for the down-ramp and the right one is for the lower half of the stair. The safety materials are different, the aluminum bars clearly belongs to the stair and the polycarbonate one to the ramp,

The floor materials continue the expression of the center (hardwood) versus the ramp-zone. The other side of the room where the up ramp enters and then extends into the kitchen, the same tile is used on the floor. While sometimes vague, the patterns of the uses are the circumstances for detailing decisions.

Below is a piece of the north curving wall with small windows to see the original companion building and the mountains in that direction. To the left is a door leading to an outside deck partially covered by the roof extension, part cantilevered, and part supported by the green post visible through the right window.

The backer board is patterned both to the 4foot incremental curve and the windows which are hung on the outside of the sips panels with extensions, sheltered with the 3 inch AA Concrete panels. There are no wood frames, only foam, so the window trim of composite material is a rigid box with 4 screws into the interior 7/16th inch OSB board . Any cracks are caulked before the finished board surround the inner frames.

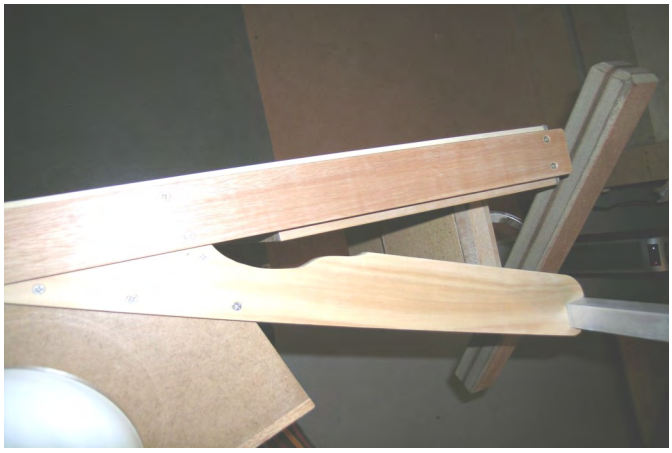
The aluminum L angle strips that fasten the small beams to the walls have a second visual connection to be holding up the cement board wall finish. The door to the left is colored and trimmed differently from the windows as it is a more important element of the wall.

On the west wall in the dinning area, the window wall behind the banquette holds the view of the Jemez mountains, the end of the Sangre de Christa mountains (the Rockies), and the beginning of the Sandia mountains near Albuquerque. It is a very special wall first seen at the top of the stair. Therefor a special finish that emanates from all the lines generated by the windows, the beam intersections, and the banquette, is a patchwork quilt of thin veneer ply-woods of varied colors and textures. Each piece abuts the adjacent pieces with no trim or reveals. Subtle color variation softens the wall so as not to compete with the vista.

The Vista, on the other hand, is only marginally seen when sitting at the table for 7, in order to have conversation dominate over gawking. The only trim is the white of the all fiberglass window frames, as though the vista is a series of paintings, which maybe too beautiful for a whole wall of glass referencing a Japanese aesthetic about viewing Mount Fuji, it being too beautiful to be observed in its entirety. Top left is a door for a large closet full of hot water heater, canning jars, brooms, which jostles with the edge trim at the corner, This is a repetition of the masonite and clear pine trim; a slice becomes part of the corner as a transition from the wall pattern to the door pattern.

Left is another corner detail where multiple materials and a switch join at the intersection of 2 walls and a wainscot.

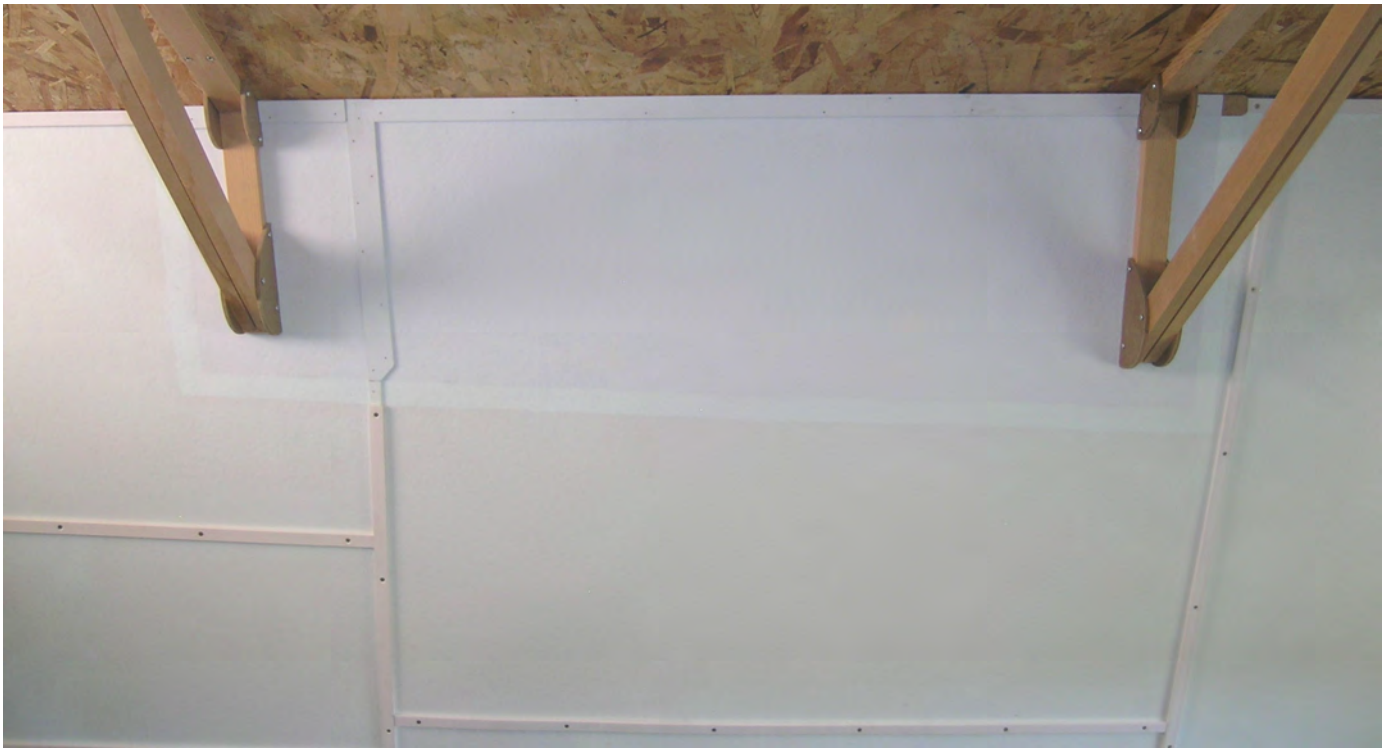
A custom light fixture is attached to a custom clothes hanging unit mounted on the wall of a bedroom/study. Various standard parts of this assembly are from Big Box hardware stores, other parts are made onsite. This physical connection of very different elements is a standard theme in the building. Bellow right is a brace attached to a cabinet which helps stabilize a small hand rail.



Bottom left shows a series of purposeful components: beams intersecting over a column, a ceiling track and stop for the tea-house sliding door, all coming together using eleven different materials. This assembly embellishes basic functional elements.

Below, a view from the central space looking at the cabinet wall behind which is the bottom of the ramp. Various holes in this wall show the angles of the up slope with a rectangular opening at the end where all becomes rectilinear; all, except a short very low pitched ramp leading to the stair.

Varying the materials emphasizes the different elements, like the projections through the back of the wall of the cabinet boxes, or the base boards changing at a level change and then disappearing altogether.



If one looks carefully at the leaning kitchen wall supporting 3 PVs on the other side, one can discern slight color changes in a rectangle and a rectilinear ring around it versus the rest of the wall. This “Kitchen Rothko”, while very subtle, distorts the trim and by playing parallel to the bottom of the trusses its rectangular intention is now distorted. Everyone should have a “kitchen Rothko”, hidden like buried treasure.

Below are 2 ceiling structure in 2 different rooms. Left is half of a roof truss of a composite set of varying boards to shape the minimal material placed in the right configuration to handle shear, compression, and tension. It has a Japanese aspect in its lightness which is possible with the spanning capacity of the sips-panels over 12 feet. Above the roof is a deck of unknown maximum use and therefore maximum load. Following the manufacturer’s instructions these trusses support the joint, even thought the foam already has a tongue and groove interlock as well as built-in metal connections.

Right is a series of beams of various depth and breadth. The ceiling is a pink-tinted thin plywood and the structure are the cowboy-shirt colors of MDF and masonite interweaving and making a big deal of the intersections,

All the interplay can be thought of as the embellishment of the parts as ornament which further enrich the experience of one’s presence..

In the toilet room, the necessary features which are not the toilet or the overhead whisper fan of 50 cfm or the painting on the wall behind the toilet, are combined as an element holding the paper roller and the electrical outlet with its night-lite. The roller is custom-made onsite from a composite of recycled plastics and wood fibers.

Below the shower floor is made of an old-fashion tile pattern and the walls are current experiment of wall tiles. Both have squares within squares as their geometry. The black squares on the floor are surrounded by rectangles of 2 square proportion, shifted to create a directional spin, and therefore asymmetric. The wall tiles are also squares within squares as explained on page 24. They are also asymmetric. Thus the old confronts the new. An abrupt breaking of style requires actual thought of the observer to find the geometry of initial concept.

Page 23 explains the origin of another tile pattern below. The semblance to various Middle Eastern forms has a remote connection to early Native Peoples patterns. This assembly of the individual tiles separates 2 kitchen windows containing a vista to the Jemez mountains.

The beam supports on the right are of standard steel clips painted red overlaid on a patterned grid of cowboy-colored boards, giving a nod to other cowboy paraphernalia, such as belts, and horse gear.

END CASE STUDY

MORE DETAILS

Details that emerge from one conceptual concept throughout a building harken back to the French Beaux Arts, but have also found a place in basic modernism minimalism. This makes for easier drawing and cheaper construction. (but remember Emerson's comment: "a foolish consistency is the hobgoblin of small minds".)

Top right, a ceiling of a lounge in a small inn based on squares that distort into coffers imitating a flat dome. There are 2 of these that support an apartment above. A reveal line is drawn through this pattern with an overlay of 4 dark brown squares at the intersections. The curved south-facing window wall also is divided into squares.

Below left, the interior wall of a room in the same inn contains the door to the hall, the door to the shower and toilet, and the lavatory sink. The light pine trim on the stained reddish-brown plywood sets up a rectangular grid, primarily separating top from bottom with variations within different quadrants. The top portion of the bisected door has sanded polycarbonate windows allowing light to be borrowed in either direction. This is an example of semi-ordering based on trim.

Bottom right, an interior of the house on page 62 with many rectilinear elements which are sized and spaced within the rules of the Golden Rectangle1: (1+√(5)/2.) This tends to unify all the parts. Use of this classical proportional system is most evident when used with right angled forms, but could be more mystical inserted into curves.

"One house in harmony with the environment is something we can all agree on; but when you have to build two billion houses, then you have a problem…" -Paolo Soleri

This Spanish structure has a set of seemingly everlasting curves, and even more reflected by the water. There are implications of biology, with bone-like pieces, but also of spatial enclosure, solid in the middle and fragile as overlay on the exterior. While it might seem at first a difficult structure to build, there are large repetitions of parts, and it is yet distant from CADCAM extremity. Its structural details are bone-like, rugged, yet somehow delicate.

On the other hand, this project which Is assumed to be a student model of serious complexity, and uninhabitable, nonetheless makes a good sculpture with very complex parts tensely imposing on others, and making a series of spaces assembled on a frame. Balance is contradicted by its leaning and stretching. It is its own ornament at the scale shown in the model

It is hard to tell the nature of the material making the roof of this airport terminal. It appears to be a fabric that is draped between supports. The supports extending from the hefty concrete arms hit the roof at it's high points, everything in-between hanging down. The lower walls seems bare, except for some glazing beyond the bland boxes. Ornaments are the signs.

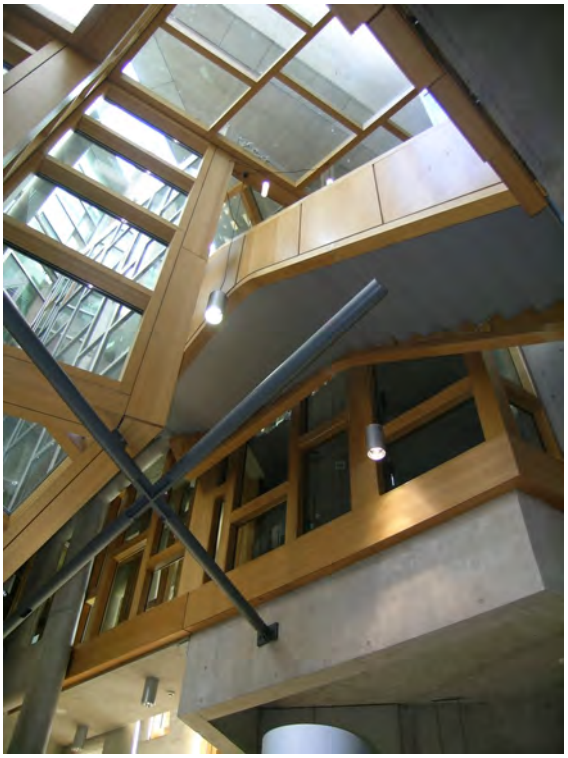
Large scale projects can have exposed details like this railroad bridge with 2 materials, the stone base and the steel trusses. A compelling disruption is what seems to be missing: a section of the bottom chord on the left. It has not fallen down or was forgotten. Tt is just structurally superfluous. Sometimes statics runs counter to our instinctual attempt to understand structures, which is why from the mid 20th century onward many structures seem imbalanced if not impossible.

This large building enclosing, clearly, a large space, seems like a cardboard model. Where various triangulated glazed openings allow light and wonderings eyes to pass through this seemingly solid mass to reveal its lack of solidity, the intersection sometimes are folds between surfaces, a small scaled grid overlaying the whole, whose joints line up across the folds and ignore the change of materials underneath. It is hard to understand the reasons for any of this, but it is not magic. Detail here is the drawing of lines over the surface.

The choice of materials and the detailing of the composition in this largely glass block house in Paris has been documented in depth. Its industrial aura is balanced by the choice of positing various materials. An almost transparent bookcase is a railing for the stairs, one of countless surprises, including moving walls rotating surfaces and a intertwined plan of house and medical office.

Some images from Scotland. The left 3 are the Glasgow School of Art. The original building by Charles Rene Macintosh and 2 interiors of the addition across the street which has irregular spacing of different materials and geometries. The geometries are in keeping with those of Macintosh, but the materials are limited to white plaster, wood, and greenish glass, the details being more minimal.

Below are 2 interior images of the Scottish Parliament Building by Enric Miralles. The framing of the structure is complex with different gray materials which serves as a backdrop for wood interventions. The angles are sporadic and the parts seem disconnected, in much the same way as the composition of the Macintosh façade. The frantic nature of these spaces is appropriate to the freneticism of political rule. (exteriors of the Parliament are on the following page.)

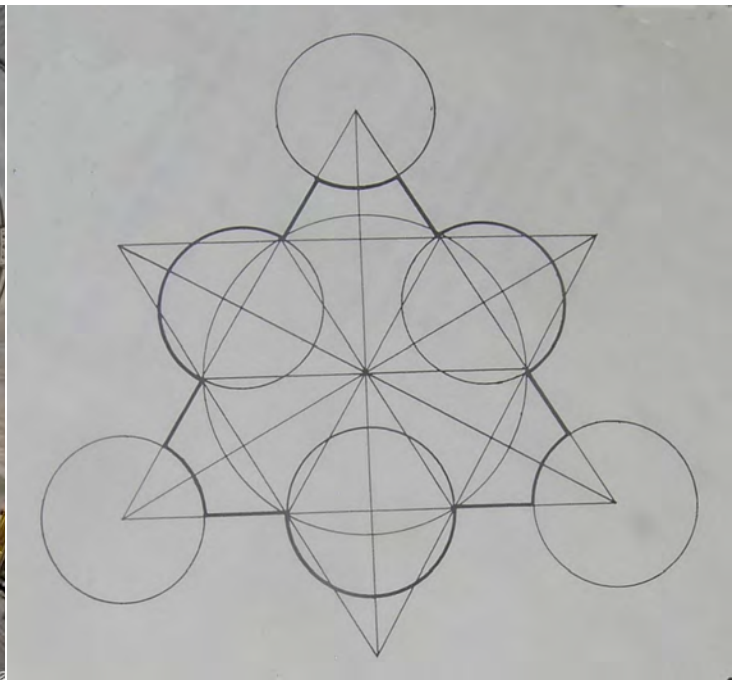


Igualada Cemetery, one of Miralles' early projects, hints to the complex geometric boldness of his later work.

Below the Scottish Parliament from different sides showing elaborate variations and heavy ornamentation as well. His work is one of disjunction of the rules and predilections of the past.

IN SUMMATION

ROME 1660 AD



Borromini understood Michelangelo's concept that all good works should contain some circlers, rectangles, and triangles . In this church, Ivo Della Sapienza, in Rome, he drew the above diagram to compose the plan and dome above. (if you are looking for the rectangles you can draw four more lines) Most of the walls are rectangles. What seems so mystical, when one enters, is derived from fundamental geometry, the whole intended to be an intimation of heaven.

Two domes invented by Buckminster Fuller below are geodesic, 3 sizes of equilateral triangles where each point touches an imaginary sphere. Thousands of them inhabit the modern world. They seem to be magical in the small amount of material needed to make one to span large spaces, but basically they are a scientific discovery with minimal detail and maximum efficiency for our techno dominant future.

MONTREAL 1970 AD

OMAHA 2013 AD

I believe architecture is lacking a certain “existential sincerity.” Instead of rooting us as human beings, emancipating and empowering us, I think our buildings tie us to a materialist, techno-economic machine. -Juhani Pallasmaa

Postscript

I hope my intentions are now clear as an overall view of the variety of human enclosures, starting with animal furs, holes in the ground, caves, and ending with extruded plastic concoctions. It is all raw and wild. There are, of course, underlying similarities, but not steadfast rules that survive the changes in human civilizations. Humans are whimsical and unpredictable in their ontologies and aesthetics. The one thing that stands outside of those attributes is science. Architecture requires an understanding of all that we are. The Future is unknown, but let us not revert.

The opinions in this book are those of the author. This book is published by the Fourth Corner Foundation www.theFourthCornerFoundation.org and is available in print and as a pdf. Books donated to educational institutions are free of charge and sold to others by the Foundation at cost.

Only deceased architects' names are mentioned, so as not to offend or encourage the living.