

CR REGIONALISM



- find
- finding local relevance in modern architecture around the world.
- transforming the modern
- Regional bodies of work.
- search for local inspiration.
- Conflicting issues that arose around the concept of a universal modern architecture in its diffusion around the world to places such as Brazil, NZ, & India.
- that it denied the values of local cultures, contexts and climates.
- 'Critical Regionalism' emerging 1970's systematically sought to find local relevance.
- not intended to denote the vernacular, once spontaneously produced by the combinations of climate, culture, myth and craft. But to rather, identify those recent regional schools whose primary aim has been to reflect & serve the limited constituencies in which they are grounded.
- there are bodies of work in which distinctiveness can be detected that arises from local interactions.
- AUSTRALIA - Allen Newcraft
- Modern architecture being adapted to suit local conditions.
- also turned to traditional Australian architecture:
 - both Aboriginal & PtoC outback pioneer work.
- Responded to Aust. landscape by visually disconnecting his architecture from it (as with Mies' Farnsworth house)
- Carefully designing with the climate in mind. in terms of sun & wind movement.

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Influence of New Materials & Construction Methods.

Architecture and the Industrial revolution:

- development of mass-produced industrial materials:
glass, iron, steel, reinforced concrete.
- the potential this had for an architecture of the modern age.
- Mechanisation of construction.
- End of 19th C, the industrial revolution brought about significant & irreversible changes to human societies every where - first in Britain, then Europe & North America, & rest of the world → process of colonisation.
- Key Shift: Craft production to mass industrial production - which in turn lowered costs of consumer goods for an emerging mass consumer society.
- Demanded raw materials to drive industry -
coal, iron, ore
- and transport to move materials from the source to centres of production. (18th C = canals, 19th C = railway)

IRON & STEEL

2 materials essential to industrial revolution, and for building railways.

Iron been in use for 1000's of years, - what changed in 19th C was the MASS PRODUCTION of iron & later steel with the invention of the Bessemer process in 1855.

Problem with Iron → Strong in compression, but brittle & weak in tension.

WROUGHT IRON → heat treated adds tensile strength.

STEEL - Alloy with low carbon content, has high tensile strength

1st use of cast iron as a construction material was in the Coalbrookdale bridge of 1779 by Abraham Darby, T.F. Pritchard, England, 30.5 m.

World's first railway line was laid in 1825 between Stockton and Darlington, UK, ~~and by~~

REINFORCED CONCRETE IS ANOTHER CONSTRUCTION MATERIAL OF LATE 19th C.

- Concrete an ancient material - used in Roman Architecture.
no tensile strength,
- by adding steel bars to the concrete it increases the tensile strength
an invention by Hennibique in 1882

CASE STUDY 1 'CRYSTAL PALACE' Great Exhibition, London, 1851

Idea of Great Exhibition to put on show the machinery & manufactured products. processes previously done by hand.

Joseph Paxton gardener - greenhouses

- Glass as cladding material - new technology of sheet glass.
- Prefabrication of elements offsite and assembly on site.
- Railway transportation
- Steam powered hoisting and milling machines

Structure -

- Hollow cast iron columns,
- Wrought iron beams
- Laminated timber

Glass - 300 000 panes

New Materials (3)

Case Study 2: Steel Frames. Invention of Skyscrapers 1880s

Chicago - Centre of vast agricultural region → Prairies.
- also large steel & agricultural machine industries.
Linked to East Coast Markets by railways & via ports of NY to Europe.

Chicago fire destroyed 18000 buildings.

Rapidly rebuilt, creating opportunity for architectural innovation

- High land values
- New Regulation: → fire proof (Masonry) materials.
- Need for close proximity for communication

Solution: Build Up.

Needed 1st to resolve 2 problems:

1) Vertical transportation → elevator • OTIS, 1853

2) Structural systems for tall buildings

↓
2 key technical solutions; • Steel frame structures
• Non-load bearing facades.
• FACADES → applied to surface structure; so didn't bear weight.

LOUIS SULLIVAN -

Trabeated Construction Frames.

Use of steel in 19th C, created new possibilities, allowing building to be built much higher than before.

- start of 19th C ⇒ 4-5 storeys
- turn of 19th C ⇒ up to 15 storeys
- slowly 20th C ⇒ 30 stories
- Now ⇒ 100+.

use of iron & steel to form a structural framework.

- development of structural steel frame systems, allowed higher building.
- Facades attached to the structural frame at each floor level, thus could be made lighter, eliminating the need for external masonry to wall supporting the building.

William
Le Baron Jenney, Fair Street, Chicago 1890.

Bridges → Crutten Bridge

Concrete as a plastic material: Can be cast in moulds to take on complex form beyond simply used as a material for a treated ~~system~~ construction system.

LOUIS KAHN ①

- Re validating classical architecture: monumental historic form.
- explicit Rational Design Method: 'Binary Grids'
- 'servant' & 'served' spaces: FORM AND SPACE
- Appreciation of Monumentality of Classical world rejected by Modern World in drive towards abstraction
- Appreciated Mies' rational approach.

Servant & Served Spaces - Richards Laboratories Uof Penn. 1957

expression of 'service' element rather than structure of Mies / Le Corb.

seen in Thomas Building, Biological Sciences, UoA, 1968

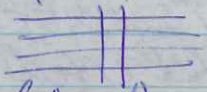
TRENTON BATH HOUSE, 1957.

Binary / 'tartan' grid.

'generator' of rational form and space.

Ground floor plan shows use of 'binary grid' in a rational design method.

Le Corb ⇒ Rational Plan (Grid) - 'Functional Free Plan / Free Facade'



MIES ⇒ Rational Plan (Grid) - 'Structural Expression Primary'

LOUIS KAHN ⇒ Rational Plan (Binary Grid) - EXPRESSION OF FORM



Where Mies had always given priority to the direct expression of the structural frame

Kahn (& Johnson) concealed the frame, at least externally, placing their particular emphasis on the monumentality of what might be considered as 'secondary' components, such as walls, floors and ceilings.

- Structure & surface fused (Unlike Mies' Farnsworth house where structure is explicitly expressed)
- Asymmetry and circular forms → introd to the plan.
- Structural system: very clear to plan, but not visible in form of building.
- 'Secondary' elements (floors, walls, ceilings) dominating the architectural expression.
- Modern movement opened a fissure between 2 dominant & opposing concepts:
 - Organic Expression
 - Normative & Standardised.

The opposition between 'functionalism' & 'Rationalism', central to discourse at Bauhaus.

TRENTON BATH HOUSE, 1957

Ordered by grid. → Binary or 'Tantum' grid.

- Binary grid establishes a fixed hierarchy of spaces;
 - narrow spaces (servant spaces)
 - and • larger spaces (served spaces)
- Repeatable forms, no functional determinants;
 - spaces are 'flexible' within the concept, although contained within the predetermined form.
 - (any of the spaces could accommodate 'any' function)

LOUIS KAHN (3)

Louis Kahn extends the notion to use the grid to make form the primary element, rather than structure in the case of Mies, or function determined by 'free plan' of Le Corb.

- He revalidates Modern Architecture that can form as a primary element, drawing on classical roots similar to Mies.

- Important to both is using classical sources as typological sources of ideas.

- Not reverting to reproduction of classicism in stylistic ways.

Colquhoun says Kahn's contribution to the Modern movement as being:

'How to achieve an architecture that would be absolutely new, but at the same time would reaffirm timeless architectural truths.'

- Of even more significance was derived from his distinction between 'servant' and 'served' spaces.

- During 60's greater demands on buildings to have longer life spans, rapid changes of functional usage etc.

- Kahn's concept of 'servant spaces' was reconceived to be a network of linked spaces accommodating the services within buildings that could be replaced & upgraded over the life-span of the building. (water, power, telecommunications etc)

- These 'Servant Spaces' supported functions in the 'served' spaces, which over the life of the building could also be changed.

Seen in Richard's laboratories at Uof Penn (1957) among others.

Mies Van der Rohe

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- Connecting mechanisation with classical formalism
- lightness airiness and clarity of work
- Glass facade
- Co-option of the glass skyscraper for corporate branding.

concerned about the idea of architectural "truth."

- nothing should be built that is not clearly constructed. - Berlage

key influences:

- Dutch architect Berlage
- Frank Lloyd Wright: Prairie Architecture
- Constructivist visions of Russian architecture. avant garde.

appreciated Open plan of F.L. Wright. & writings of Le Corbusier
also engaged in the functionalist-rationalist debate.

Bruno Taut's 'Glass Pavilion' Werkbund exhibition 1914.

- Suggests glass could be used for its reflective properties (as opposed to its transparency) by fragmenting the surface in a crystal-like way.

- It was his association with the Bauhaus that resolved for Mies the conflict between functionalism and rationalism.

- the method of achieving industrial production was to employ a rational design process pioneered by the architect Van Doesberg at the Bauhaus.

- What Van Doesberg developed was the conceptualisation of space determined only by the interplay of planes and the spaces in an abstract manner.

abstraction conceptualisation of architectural space

- o defined rooms, only interrelated sets of spaces of varying dimensions. created by planes created by brick walls, moreover just as it visually extends his internal spaces into the exterior, so Mies was the same by extension of the walls into the landscape.

In the German Pavilion, Barcelona (1929)

- Mies develops his plan idea with space defined by wall planes of marble, and clear and tinted glass.

The support is provided by a symmetrically (& formally) arranged columns organised on a grid (not the walls which are partitions) fabricated from standard steel angle sections with stainless steel covers.

Emigrated to USA in 1937. continued to develop his space and form making ideas,

- more importantly developed ways of fabricating the surface of his buildings from steel sections and glass.
- The Forsyth House exhibits the wall planes of his pavilions, but the external skin formed by the exposed steel structure (columns and beams) with the glass as transparent panels.
- The entire building is also raised above the ground, negating what has always been significant in architecture: firm connection with the landform.

CORPORATE RATIONALITY: Steel and Glass.

- Colquhoun suggest the greatest achievement of American architecture after WW2 was the establishment of the modern corporate office tower building as a type, reproduced world-wide.
- Technological possibilities of the steel structural frame.
x the idea of the glass curtain wall anticipated by Mies
- the ineliminable elements of roof, beam, column and wall. Caught consistently between 'space' and 'structure', Mies consistently sought to express simultaneously, both transparency and corporeality.
- Mies revealed itself most sublimely in his attitude to glass which used in ~~a way~~ such a way as to allow it to change under light.

Mies (3)

from the appearance of as reflective surface into pure transparency; on the one hand. the appearance of nothing (as in the Farnsworth House) on the other hand, an evident need for support.

- these ideas explored also in Seagram Building in NY (1958) signified an increasing rationalist approach to design.

the growth of global corporations and corporate culture also found synergy with the abstract universality of such an architecture, not demanding local references or contextual responses.

- Glass skyscrapers following Mies' model were ultimately co-opted by corporate business as a symbol of being modern and progressive.

- the economy of his day, makes rationalism and standardisation imperative in rental housing.

- On the other hand the increased complexity of our requirements demands flexibility.

Mies picked up on Le Corbusier's 5 pts of Arch. But said you can make the apartments individual.

- Dilemma between form and space, const

- Rational Solution - the orthogonal grid.

Farnsworth House - 1946

- Simple house, 2 horizontal planes, flat roof, glass screen runs continuously around the edge.

- ~~how he over~~ - Spaces running all the way around the edge up to the pane of glass. so nothing up against the glass.

- Construction all built out of steel.

- floor and roof are welded to the outside supporting beam.
- Absolute minimal piece of architecture.
- How to create an ~~absolute~~ inhabitable space using the bare minimal materials.
- Mies refused to design curtains, was subsequently not paid.

Compared with Le Corb's Villa Savoy

- Both organized with strict proportions - golden mean employed.
- Strict geometric governing systems.
- Both raised above the ground, floating illusion
- Both have flat roofs
- Corb's focuses on solidity ^{vs} whereas Mies' transparency

Connecting Rational design methods with classical formalism.

* Kitchens and bathrooms because of plumbing as a fixed core so all other spaces may be partitioned by means of moveable walls.

- Authority of trabeated architecture as it had been inherited from the ancient world, the implacable elements of roof, beam, column and wall.

Hennebique.

JONES MAIN PTS OF MERITS WORTH & INFLUENCE ETC

- Horizontality of Frank Lloyd.
- reworking industrialization Vs quality design.
- Solidity & transparency.
- Clarity of Construction - Burlage 'Truth'
- minimal design.
- no need for ornamentation.
- exposure of raw materials.
- Glass skin - steel structure, - concrete slabs.
- Open space plan - Frank Lloyd.
- No separate rooms
- Plumbing only fixed parts.

CLASSICAL MODERNISM

- Trabeated Authority: inplacable elements of roof, column, beam, & wall
- Glass curtain - free facade - separate: nothing against glass.
- rental housing - economy: rational mass production imperative.
- Can be freedom in Rational / Plans
- Influence of Classical Rationalists.
Schiwile art museum.