

Steel Frame of the Fair Store, Chicago, from *Industrial Chicago*

- Chicago= site of new high rise architecture that harnessed the elevator & the steel frame
- Compared to New York, where a literal clothing of the steel frame w/gothic or art-deco wrapping, these skyscrapers did not clothe themselves w/stylistic wrapping (next slide: New York example)
- On the one hand, truthful to the modern technology w/the logic of repetition of the skeletal structure, and on the other hand, tries to find a figurative expression beyond the literal manifestation of the construction system

- The Utilitarian requirements of a giant purchasing warehouse were submitted to the rigors of a symmetrical and hierarchal plan and dominant sculptural idea
- The internal construction followed that of the typical elevator building w/cast iron columns carrying floors and roof, & wrought-iron beams increasing the structural spans
- But the exterior was made from weight-bearing walls in sandstone resting on a rough granite base
- The block as a whole was treated as a single monolith into which a dignified row of arches was cut

*The Marshall Field Wholesale Store, 1885-7*

*Chicago (demolished)*

- The combination of an exterior masonry armature and interior shelves of floors was expressed deftly in the spandrels & horizontals of the fenestration system
- Two entirely different technologies & ideas of construction, stone arch, trabeated metal frame –one old, the other new – reached a point of tense coexistence and equilibrium
- It stood midway b/t the age of the machine and the age of craft

*The Marshall Field Wholesale Store, 1885-7*

*Chicago (demolished)*

*The Reliance Building, 1891-4*

*Chicago*

Burnham and Co.

- The steel frame broke free of masonry traditions altogether
- It opened up an entirely new world of delicate transparency and reflective planes
- The floors were not grouped in a hierarchy but expressed as a uniform series
- Vertical emphasis is gone
- The repetitive stacks of bay windows replace the verticality that was emphasized in other skyscrapers
- Instead of masonry covering, it is faced entirely w/terracotta tiles to achieve the effect of lightness
- The proportion of the windows and the dimensions of glazing mullions – lightness
- Approaching to the ideal of spanning windows from column to column & of providing maximum daylight (next slide)

*Wainwright Building, 1890-2*

St. Louis

Adler and Sullivan

- Sullivan's first steel-framed skyscraper
- Treat the whole façade as a single order of attenuated piers, w/the bottom stories forming a solid sandstone plinth & the top (service) storey an entablature
- The adoption of strongly marked corner pilasters
- A tripartite division like a classical order
- The emphasis on verticality in the composition of the middle part of the façade

- His essay “The Tall Office Building Artistically Considered” (1896)
- Sullivan explained this articulation as the expression of interior function
- the base containing the public commercial spaces, the entablature the mechanical plant and water tanks, and the intervening grill of piers and windows a honeycomb of offices ‘all look[ing] alike because they are all alike’
  
- This functional analysis – partly obscures its classical origin

-A group of young architects gathered around him in the closing years of the 19<sup>th</sup> century.

-They were called the Chicago School

-One of them was Frank Lloyd Wright, who was once Sullivan's chief draftsman.

-They presented the idea of 'pure design'

-'Pure design': fundamental ahistorical – or trans-historical – principles of architectural composition

## Frank Lloyd Wright

-One of the most universally acclaimed & admired out of all American architects

- His father, William Russell Cary Wright, was a lawyer w/qualifications in music and the ministry.

- A widower w/young children, he married Anna Lloyd Jones, a young teacher from a local Welsh Unitarian pioneer farming family.

- The marriage was not happy, ending in divorce in 1885.

- Wright was the first child and only son of Anna's family of three children.

-Wright became the special object of his mother's devotion, acquiring from her the tenacious determination of her pioneering background.

## *Froebel Kindergarten Blocks*

- She fervently believed that her son would be a great architect.
- She let him play with the geometric Froebel kindergarten blocks
- Wright derived great delight from arranging these simple geometrical shapes into formal patterns that matched his intuitive compositional sense
- to his father he owed his artistic gifts & lifelong love of music
- He briefly studied engineering at the University of Wisconsin, Madison
- In 1887, he went to Chicago to look for a job
- From early 1888 to mid 1893, he served as chief draftsman for Adler & Sullivan
- In 1891, Wright began to design houses in his spare time and as this practice was not authorized by his contract, his employment was terminated in 1893

- Formality of the house is evident
- The main façade is entirely symmetrical about the front door
- The second level is set back and textured in dark terracotta
- Overhanging roof w/deep eaves
- At the front the chimney is visible above the center of the house
- The fireplace as the emblem of the morally upright home

*Winslow House*

1893-4

Frank Lloyd Wright

# Prairie House

Frank Lloyd Wright, *Ward Willits House (1902)*, Chicago

Frank Lloyd  
Wright, *Ward*  
*Willits House*  
(1902), Chicago

- The plan shows an additive system of simple volumes interlocking or relating freely to each other.
- In a way, the house resembles the Arts & Crafts movement, but goes beyond the movement in terms of creating continuity b/t rooms
- The plan develops based upon the two orthogonal axes
- They cross each other at a central hearth and reach out into the surrounding landscape
- Simultaneously, at the micro scale there are carefully controlled local symmetries and sub-axes

- Interior—the rooms are unified by low cornices at door-head level, having the effect of compressing the vertical dimension, producing a primitive, cave-like sensation. A geometrical stylization of ornament

## The Prairie House

- Set on projecting masonry platforms or podiums built of brick, stone or wood frame
  - Basement is eliminated (benefit of removing a damp space from the house and of adapting the profile of the house to the leveled Mid-Western landscape)
  - Outside walls rise from a podium to the lower edge of the first floor windows
  - Except for the fireplace and the chimney, the character of the design was horizontal, which Wright likened to the leveled character of the Midwestern prairie
  - The exterior further had grouped casement windows and widely overhanging hipped or flat roof
  - The complex exterior massing of these houses echoed the irregularity of their interior plans and volumes
- Spatial characteristic: asymmetrically organized rooms of contrasting shapes opening into each other. The spatial flow becomes accentuated by long diagonal views that often continued outside on to wide porches.

The Prairie House

-Fireplace

Arts and crafts Movement (see, Red House)

Also the symbolism of the fireplace based upon Semper's theory of the Primitive Hut

*The Red House* (1859)

Philip Webb (for William Morris)

Bexley Heath, England

Frank Lloyd Wright, *Robbie House*,  
Chicago

- among the clearest of Wright's expressions of the Prairie House ideal
- Mr. Robie was a bicycle manufacturer, who was only 27 when he employed Wright to design a home on a corner site in south Chicago
- The client required a servant's wing and a billiard room, as well as the usual dining and living rooms, bedrooms, kitchen and bathrooms

Frank Lloyd Wright, *Robbie House*,  
Chicago

- Wright used the roof as an ingenious environmental device capable of being a heating cushion in winter or an extra flue (shading) in summer
- The overhangs extended dramatically into the setting, the longest span supported w/the help of a steel beam ordered from a shipyard
- The roof reinforces the feeling of shelter, protecting the windows from rain, snow and glare, released the edges of the building from any great structural load (permitting the extensive screen-windows) and mediated b/t the outside and inside

- He arranged the building as two bands, sliding alongside one another with some degrees of overlap between
- The rear band: contained in the garage, the boiler room, laundry and entrance on the ground floor, servant's rooms, the kitchen and a guest room on the first level
- The other strip: more prominent & arranged w/chimney and stairs as a unit passing up through the center
- The billiard room & children's room were in the semi-basement, while the living and dining rooms were on the first level

- This main living area of the first floor was not so much two rooms as one—a single space partially divided by the chimney piece, detailed so as to give the effect that the ceiling hovered above it as a single, continuous element running from one end to the other.
- The window seats in a prow-like protrusions reinforces the sense of the longitudinal axis
- It also echoes the triangular forms of the pitched roofs above
- The result of all these devices together was the antithesis of the closed box

- The rim set even lower than the ceiling in the main interior reinforced the character of enclosure and accentuated the horizontality of the room
- But it also served a number of functions
- For instance, small 'Japanese' globe lights were attached to the rim
- In addition, electrical wires were concealed w/in it
- So were ducts and vents for moving air

- Interior—ornamental unity, a version of the total work of art, in this case, whose elements are produced by the machine, not by the craftsman
- Gesamkunstwerk* of T-square (Colquhoun)

Frank Lloyd Wright, *Larkin Building*, Buffalo, New York

- The site was almost completely surrounded by railroads w/factories in the background and a gasworks nearby
- An inward-looking, hermetically sealed solution seemed advisable
- The stairs & ventilating equipment were set in tall towers to the corners
- These gave a massive & monumental character to the exterior
- They also provided vertical emphases sufficient to unify the smaller parts & to make the overall form coherent
- The walls, floors, and roof of this build. were supported by a cage of steel beams

- From the Prairie house vocabulary, Wright adopted the theme of trays slung from vertical piers around a high, top-lit atrium space
- The central work space rose through five office floors treated as galleries
- The galleries looked into this central space over solid balustrades slightly set back from the faces of full-height, internal brick piers w/deep, ornate capitals
- The work place was naturally lit by roof lights & the galleries by continuous windows above built-in filing cabinets

- Airy, nave-like interior – a cathedral of work, moralistic mottoes suggesting the religious value of labor (next slide)
- This building received lavish praise from European designers for its spatial quality that fits the era of the machine production, its rationality

Conques, St. Foy, int. looking east  
(1050-1120)

Unity Temple, Oak Park (1905-08)

- According to Wright, a church must be a dignified space “in which to study man himself for his God’s sake”
- He started with a square-shaped room for worship, probably b/c of its unity, wholeness & security
- Its auditorium conceived as a cube of space surrounded on three sides by two levels of balconies and on the fourth by the chancel
- Another element of the composition is provided by corner staircases, derived from the Larkin Building, each housed in its own vertical block
- He endowed the room with a numinous character through the subtle control of proportion and the filtering of light (The central space is transfused w/mellow light filtering down through the translucent art glass roof-lights overhead)

- The central space expands horizontally into the subsidiary spaces
- At the top of the auditorium it follows the underside of the ceiling through stained-glass windows, continuing outside as the soffit of the overhanging roof

- The church also needed a children's Sunday School and a meeting hall for get-togethers
- Wright placed these in a lateral oblong.
- He set it with its short axis aligned to the square
- The entrance hall to both spaces was placed as a 'neck' b/t them and was reached from the street up some steps on to a terrace

- The presence of the main auditorium was directly felt on the exterior through the straightforward expression of the building's geometry and hierarchy of supports
- The exterior consists of planes, rectangular masses, ornamental piers and projecting roof overhangs that express the interconnected spatial units of the interior
- The exterior concrete surfaces, although lightly textured w/an exposed pebble aggregate, are largely unadorned, except for the ornamental piers and flower boxes
- A church of reinforced concrete—an extremely bold step for someone to take in 1905, especially for a religious building, the more so b/c he decided to leave the material bare on the exterior

# Machine and Architectural Creation

*Robbie House*

Chicago

Frank Lloyd Wright

*Larkin Building*

Buffalo, New York

Frank Lloyd Wright

“The Art and Craft of the Machine,” lecture delivered in 1901

-Wright came early on to the conclusion that mass production was necessary if good design was to be democratically enjoyed.

-The alienation of the craftsman due to machine production would be outweighed by the artist’s ability to create beauty with the machine

-Simple geometrical forms could most easily be turned out by machine  
saws

## Influence of Wright's architecture on European modern movement

1. Wright's machine aesthetics was taken up by Deutscher Werkbund in its support of machine work as opposed to handwork. His advocacy of the machine production added to his architecture progressive image (but, Wright himself – along with this forward-looking stance, also emphasized rootedness of architecture in the American mid-West soil and the American political ideal of democracy)
2. In 1910, Wright's works were published in Germany by Wasmuth, and impressed European avant-garde architects including Mies van der Rohe, Le Corbusier and Walter Gropius, contributed to the formation of the De Stijl movement. Interpreting planes and abstract masses.

Mies van der Rohe  
Brick Country House, 1923  
Plan

*Axonomic Drawing*  
*of Hotel Particulier*  
(1923)

Theo van Doesburg and  
Cornelius van Eesteren

*Counter-Construction*

(1924)

Theo van Doesburg

## Frank Lloyd Wright after 1930s

-1920s was a difficult time for Wright.

-He once fled to Europe with the wife of his client (Mrs. Cheney) and came back to open in 1911 Taliesin East (Spring Green, WI), his studio.

-But, not long before it was opened, in 1914, a deranged maid set fire on the studio and killed people including his second wife.

-This had a long psychological effect upon Wright until the end of the 1920s.

-His extravagant expenditure also put him to a financial difficulty during the period.

-The 1930s gave him a new stability partly because of his marriage with Olgivanna, his third wife, (1927) and further solved his financial problems with the help of the Taliesin foundation – a sort of rural retreat and architectural school in which young men took care of the farm and the estate, assisted with food preparation and other chores, while learning the basics of Wright's organic philosophy

Frank Lloyd Wright, Taliesin West (1938), Arizona

- in 1938, Wright began to build a second Taliesin in the Arizona desert north-east of Phoenix
- called Taliesin West
- the activities of the Taliesin Fellowship were thereafter split seasonally between the two centers

- Wright built Taliesin west with sloping walls of what he called “desert concrete,” natural desert stones laid in concrete
- The building echoed the colours, texture and forms of the surrounding desert. The walls also supported shed roofs framed in timber. The roof was covered with stretched canvas which served to flood the interiors with diffused desert sunlight

“There is suggestion in the strata and character in the formations. . . .  
For in the stony bone-work of the Earth, the principles that shaped  
stone as it lies, or as it rises and remains to be sculptured by winds  
and tide – there sleep forms and styles enough for all the ages of  
man”

Wright, in Curtis, p. 200

Jacobs House  
(1936)

Frank Lloyd  
Wright

## Usonian Houses (USONIA – United States of North America)

-a low-cost house prototype

-this word was drawn from Samuel Butler's term for the United States in his Utopian novel *Erewhon* of 1872

-Wright designed a kit of parts including a concrete-slab foundation floated on a drained bed of cinders and sand, into which radiating hot-water pipes were inserted (floor-heating system)

-The roof was a simple insulated slab containing a ventilation system and was made to overhang the edges of the dwelling to throw water clear, to give a sense of shelter, to protect from glare and to provide a horizontal related to the earth plane

-the walls were prefabricated from three layers of board and two of tar-paper

-No formal dining room or drawing room. It was abolished in favor of an alcove with a table in it, a space blending kitchen and living areas together

-this was a response to the servantless clients who would be expected to buy Usonian houses and to the pre-First World War formality in American life in general

-response to the housing need of the emergent sub-urban middle-class

Falling Water (1936)

Client: Edgar J.

Kaufmann

Bear

Run, Pennsylvania

- built for Edgar J. Kaufmann
- culminating example for his  
opposition to box architecture and  
for his organic architecture

- a series of horizontal trays placed in response to the steep topographical condition dominated by rock strata and a fall.
- It creates a compositional ensemble with the surrounding forests of verticality and the water tumbling down
- the building was placed above a waterfall
- it was formed from cantilevered concrete trays rooted to a core embedded in the boulders
- its horizontal layers soared free of apparent support over the cascades and pool of the stream
- Walls were avoided almost entirely as a way of creating continuity with the outside nature

- the sense of shelter was formed by the overhangs and by screen-like windows detailed to enhance the vertical and horizontal rhythms
- the chimney core was made from local stone laid rough, in contrast to the smooth finish of the concrete balconies
- the effects of dappled light, surrounding foliage and tumbling water, and the feeling of the horizontal expansion in all directions from the interiors: integration of architecture and nature

-Entrance sequence: crossing a bridge (next slide), going through a street covered with a pergola (the following slide), small entrance, a flight of steps, and the openness of a living room towards the nature outside

-a major part of the interior space was given over to a large living-room, suitable to the function of a weekend house

-the opening of the corner to emphasize the continuity

Frank Lloyd Wright

From An American  
Architecture

Frank Lloyd Wright

From An American  
Architecture

Singleton House, Los Angeles, 1959  
Richard Neutra

### Wright's organic architecture

“ . . . now you are released by way of glass and the cantilever and the sense of space which becomes operative. Now you are related to the landscape. . . You are as much part of it as the trees, the flowers, the ground. . . You are now free to become a natural feature of your environment and that, I believe, was intended by your maker.”

Wright, in Curtis, p. 200

## Characteristics and Criticisms of Organic architecture by Wright

1. idealized relationship bt. the human being and nature
2. the determination of the architectural form by the features of the site to a certain degree, which might disregard the tension bt. the site specificity and the universality of the construction system especially in modern period
3. picturesque dimension of his organic architecture
4. emphasis upon visual continuity, which is more or less literal, a version of continuity in architecture

Karuizawa Summer House,  
1933  
Antonin Raymond

Frank Lloyd Wright, The Administration Center of Johnson Wax in Racine,  
1936, Racine, Wisconsin

The Administration center of  
Johnson Wax in Racine,  
Wisconsin (1936)

Frank Lloyd Wright community  
which would foster  
togetherness while mirroring  
the hierarchy of the firm  
-the administration building was  
designed as a large window-  
less rectangle covered in brick,  
lit from above, with trays  
suspended inwards from its  
edges looking into a hypostyle  
hall two storeys high to the  
core  
-this space was articulated by a  
grid of slender mushroom  
supports in concrete.  
-The supports were joined  
together at four spots and the  
space between supports was  
glazed

- the atmosphere of underwater world
- this mushroom support system was developed by Wright intuitively.
- Wright proved to the nervous client that the slender columns could support the anticipated loads by building a mock-up and piling heavy weights on it
- the exterior of the Johnson Wax building had curved corners and a streamlined character
- later, in the extension for the laboratory Tower, he adopted “tree-trunk” structure.
- A series of trays cantilevered from a central spine of reinforced concrete

- the exterior of the Johnson Wax building had curved corners and a streamlined character
- a contrast between the low, spread base and the tall tower

- later, in the extension for the laboratory Tower, he adopted “tree-trunk” structure.
- A series of trays cantilevered from a central spine of reinforced concrete

Guggenheim Museum (1944-1957)

New York, New York

Frank Lloyd Wright

-By the end of the war, he was nearly 70 and involved in the design of the Guggenheim Museum

- the site was on a corner opposite to the Central Park in Manhattan
- the building was to house an extensive collection of non-objective art
- the shape of the building is based upon the organic spiral form
- ancillary volumes containing offices and the director's apartment are fashioned in the same smooth, curved layers, and from the outside the building is a complete antidote to the grid of the city and the prevalent box-frame architecture
- the construction material is concrete treated smooth and without texture

-translation of the organic metaphor for the cause of the architectural theme  
“continuity”

-the spiral form also combined centrality and procession, equilibrium and movement, and an inherent sense of growth and aspiration

-the building is organized around an expanding spiral ramp which arises around central volume in ever wider bands-one passes through a low zone of transition and comes into a stunning space with light coming in from the top

- one passes through a low zone of transition and comes into a stunning space with light coming in from the top
- One starts a journey through a spiraling ramp to the top where one can come down through an elevator
- The journey could take place the other way around: one goes up to the top story with an elevator and comes down gradually to the ground level

“Here for the first time architecture appears plastic, one floor flowing into another (more like sculpture) instead of the usual superimposition of stratified layers cutting and butting into each other by way of post and beam construction.

The whole building, cast in concrete, is more like an egg shell – in form a great simplicity . . . The light concrete flesh is rendered strong enough everywhere to do its work by embedded filaments of steel either separate or in mesh. The structural calculations are thus those of the cantilever and continuity rather than the post and beam. The net result of such construction is a greater repose, the atmosphere of the quiet unbroken wave: no meeting of the eye with abrupt changes of form.”  
(Curtis, p. 268)

*Larkin Building*

Buffalo, New York

Frank Lloyd Wright