Chapter 6: CHICAGO SCHOOL (1875 to 1910)

6.1 HISTORY

It is the Parallel developments in **Chicago**, **United states** to the European **Modernism.** After the great fire of 1871, Chicago witnessed a tremendous expansion in a short period that resulted in **shift** in **Agricultural** production; from hand labour to **Industrialization** result of **Industrial revolution.** It resulted in the **Mass migration** to cities and i**ncreased Land prices** due to the increase in population and scarcity of land.

Introduction of **steel** and **concrete** in construction

Structures rose to great height- rise of tall commercial buildings, "**skyscraper"**

Chicago is the 3rd largest city in the United States - with a population of nearly 3 million and its skyline is among the world tallest. It is one of largest cities and greatest collections of tall commercial buildings, "skyscraper"

Chicago stood upon swamp and thus was special problem for construction of the buildings. Architects of this time designed various types of foundations; - separate foundation ending in broad pad for each vertical element of building, raft foundation etc.

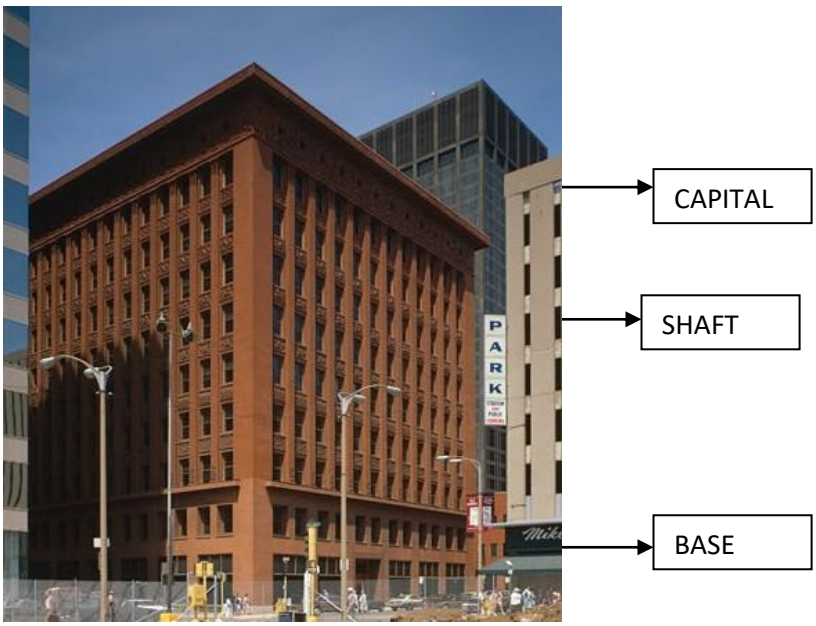
6.2 FEATURES

1. Architectonic expression of the structure
2. First to promote new technologies of **steel-frame** construction in commercial buildings which had two prerequisites;

   - **Elevator,** which was available, invented by **Elisha Graves Otis** in1853

   - **Appropriate construction system**, which would at once allow construction to great height, **optimize space** and be **fire proof.** Use of **Steel skeleton** (by **William Le Baron Jenney**), in contrast to the cast iron type, proved not only reliable under **stress** but also under **strain** and formed a completely rigid structural system clad with masonry to make it more **heat-resistant**

3. Usually **Terra Cotta** masonry cladding
4. **Large window areas** and **limited exterior ornamentation**
5. Developed a **spatial aesthetic**Sometimes used elements of **neoclassical** architecture in skyscrapers based on three parts of a classical column; first few floors functions as **the base**, the middle stories with little ornamental detail act as **the shaft** of the column, and the last floors represent **the capital** with more ornamental detail and capped with a cornice.



Wainwright Building[1] (1883-1885)

The "**Chicago window**" originated in this school. It is a **three-part window** consisting of a **large fixed center panel** flanked by **two smaller double-hung sash windows**.[2]

- Arrangement of windows on facade typically creates a grid pattern, with some projecting out from facade forming bay windows
- Combined need for light-gathering and natural ventilation; a single central pane was usually fixed, while 2 surrounding panes were operable
- Often deployed in bays, known as oriel windows that projected out over street

Chicago window[3]

[1] https://upload.wikimedia.org/wikipedia/commons/thumb/3/34/Wainwright_building_st_louis_USA.jpg/250px-Wainwright_building_st_louis_USA.jpg

[2] https://en.wikipedia.org/wiki/Chicago_window

[3] https://upload.wikimedia.org/wikipedia/commons/thumb/9/90/2006-03-30_2240x1680_chicago_school_windows.jpg/220px-2006-03-30_2240x1680_chicago_school_windows.jpg

6.3 ASSOCIATED ARCHITECTS AND THEIR WORKS

- William W. Boyington (1818-1898)
- William Le Baron Jenney (1832-1907)
- Henry Hobson Richardson (1838-1886)
- Dankmar Adler (1844-1900)
- Daniel Hudson Burnham (1846-1912)
- John Wellborn Root (1850-1891)
- Solon S. Beman (1853-1914)
- William Holabird (1854-1923)
- Martin Roche (1855-1927)
- Louis Sullivan (1856-1924)
- Irving Kane Pond (1857-1939)
- Allen B. Pond (1858-1929)
- George Maher (1864-1926)
- Richard Ernest Schmidt (1865-1958)
- Edgar D. Martin (1871-1951)
- Mackie Gorden Garden (1873-1961)
- Walter Burley Griffin (1876-1937)
- Frank Lloyd Wright started in firm of Adler and Sullivan but created his own Prairie Style of Architecture
- Ludwig Mies van der Rohe, who had run Bauhaus in Germany before coming to Chicago, is sometimes credited with rise of second "Chicago school" between 1939 and 1975

6.3.1 **HENRY HOBSON RICHARDSON** (1838–1886)

- American Architect studied in Paris at the **Ecole des Beaux-Arts** and worked under **Henry Labrouste**.
- Known as Sullivan's predecessor
- Designed buildings in a purified/ powerful **neo-Romanesque style**
- Buildings display a **unifying density**
- It looked conservative, with traditional **masonry construction** and **cast iron** and **wooden columns** for supports; however the visual expression was advanced and pointed in a new direction.

Marshall Field store (1885-1887)

Large single **integrated unit** with textured monochromatic surface of the granite and brownstone masonry.

Chamfered at the corners, it has **enriched terminal cornice**.

The interior has **open loft** and uninterrupted rhythm of arcades; the great round-arched windows dominate the exterior.

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Marshall Field store[4]

6.3.2 **WILLIAM LE BARON JENNEY** (1832-1907)

- Innovative construction methods earned the title, "Father of the Skyscraper"
- Constructed world's 1st completely iron-and-steel-framed building in 1880s - Home Insurance Company Building
- 1853 - enrolled in Paris's École Centrale des Arts et Manufactures (Classmate - Gustave Eiffel)

[4] https://upload.wikimedia.org/wikipedia/commons/thumb/2/28/Marshall_Field_Warehouse_Store.jpg/220px-Marshall_Field_Warehouse_Store.jpg

- Served as engineer in union army during American Civil War(1861-65)
- After war, settled in Chicago - practiced and taught architecture at University of Michigan, Ann Arbor (1876-80)
- In 1868 established office - training ground for number of leading architects - Martin Roche, William Holabird, and Louis Sullivan

WORKS

- **Leiter Building I** (1879, enlarged 1888, later demolished)

- Constructed 1879, enlarged 1888, later demolished
- Expression of the framed structure

- **Home Insurance Company Building** (1884-85, enlarged 1891, demolished 1931)
  - Built 1884-85, Enlarged 1891,
  - Demolished 1931
  - Location: Chicago, Illinois, USA
  - Stories: 10, Height: 138 ft (42 m)
  - Structure: Steel frame
  - Facing Material: Brick
  - 1st building entirely supported by light exposed steel frame – considered the 1st skyscraper
  - Steel frame liberated exterior walls from supporting building, walls instead thin curtain wall
  - Weighed only 1/3 as much as a stone building
  - Fire proof well lit office building

Home Insurance Company Building[5]

- **Manhattan Building**(1889-90)

- **The Leiter Building II** (1889-90)

- Built: 1889-1890
- Location: 403 south state st., Chicago

[5]https://upload.wikimedia.org/wikipedia/commons/thumb/3/38/Home_Insurance_Building.JPG/220px-Home_Insurance_Building.JPG

- Stories: 8
- Structure: Cast Iron frame
- Also known as Sears Building
- One of most important buildings in history of American Architecture
- 1st commercial building to have metal skeletal frame

• **Ludington Building** (1891)

6.3.3 **LOUIS SULLIVAN, HENRY (1856-1924)**

• Regarded as spiritual father of modern US Architecture and identified with early skyscraper design

• Came to Chicago in 1873, where he worked briefly for William Le Baron Jenney

• In 1879, joined firm of Dank man Adler (1844-1900)

• "Form follows function"

WORKS

• **Auditorium Building** (completed in 1889, restored 1967)

- Built: 1889, Restored 1967
- Stories: 10 (17 storey tower)
- Structure: Load Bearing Masonry Wall
- Exterior partly based on H.H. Richardson's Marshall Field Warehouse
- Most innovative features was massive raft foundation
- Exterior features - 2-storey, roughhewn granite base topped by floor of rusticated limestone & above, a smooth-faced limestone that created flat wall plane from 4th floor to tower
- 4,300 seat auditorium, 136 offices and 400-room hotel

Auditorium Building[6]

[6] https://upload.wikimedia.org/wikipedia/commons/e/e5/Auditorium_Building_Chicago.jpg

- **Wainwright Building** (1883-1885)

6.3.4 **Holabird & Root**

- Founded in 1881 by William Holabird (1854-1923) and Martin Roche (1855-1927), who met while working in the architectural office of William Le Baron Jenney
- Influential in development of early skyscraper - "Chicago School"

WORKS

- **Tacoma Building** (1889,demolished 1929)

- Built:1889
- Demolished 1929
- Storey:12
- Structure of cast-iron columns and wrought-iron beams as well as brickwork and concrete and steel
- Whole clad in terracotta and glass

- **The Old Colony Building** (1894)

- Built : 1894-1895
- Located: 140 S. Dearborn St.
- Structure: Steel frame, Stories: 17
- Rises 16 stories, covered with brown brick & terra cotta
- In 1950 decorative cornice was removed to add a 17th floor
- Facade clearly reveals its underlying structure with broad windows set in framework of narrow piers and spandrels
- Open and well-lit interior layout, built around a central light court, significantly influenced design of modern high-rise commercial structures

The Marquette Building[7] (1894-5)

[7] https://s3.amazonaws.com/architecture-org/files/modules/marquette-building-tripartite-ear-3.jpg

6.3.5 **Burnham & Root**

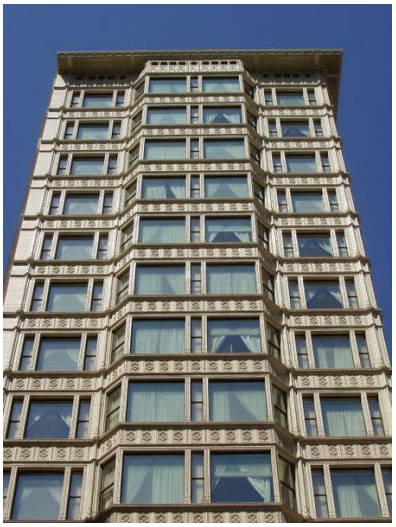
- **Monadnock Building (1891)**

- **Sixteen-storey** block with **cast**
- **Iron** and **wrought iron** framing for window spandrels and the internal frame; **Bay windows** elegantly subdivide the façade.
- Traditional **masonry construction** adapted to a new conception of form. One of the tallest load bearing structure in the world.

6.3.6 Charles B. Atwood

Reliance Building (1890)

- **Fourteen-storey** building; Exposed steel frame for the first time, Light / floating skeletal & **glass,** Riveted **steel-frame structure,** Hollow-tile flooring on steel joists, plaster fireproofing, Perimeter bay windows filled with **plate glass**
- Narrow horizontal terracotta bands and steel trussed wind bracing, anticipated the aesthetic of the mid-20th century.
- Extremely narrow piers, mullions, & spandrels, covered with cream-colored terra cotta decorated with Gothic-style tracery.



Reliance Building[8]

Sources

https://en.wikipedia.org/wiki/Chicago_school_(architecture)

https://en.wikipedia.org/wiki/Louis_Sullivan

https://en.wikipedia.org/wiki/William_Le_Baron_Jenney

https://en.wikipedia.org/wiki/Holabird_%26_Root

[8] https://upload.wikimedia.org/wikipedia/commons/thumb/d/d4/Reliance_Building_%28Burnham_Hotel%29_-_Chicago%2C_Illinois.JPG/170px-Reliance_Building_%28Burnham_Hotel%29_-_Chicago%2C_Illinois.JPG