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The Office Building Architecture of the Early 20th Century in New York

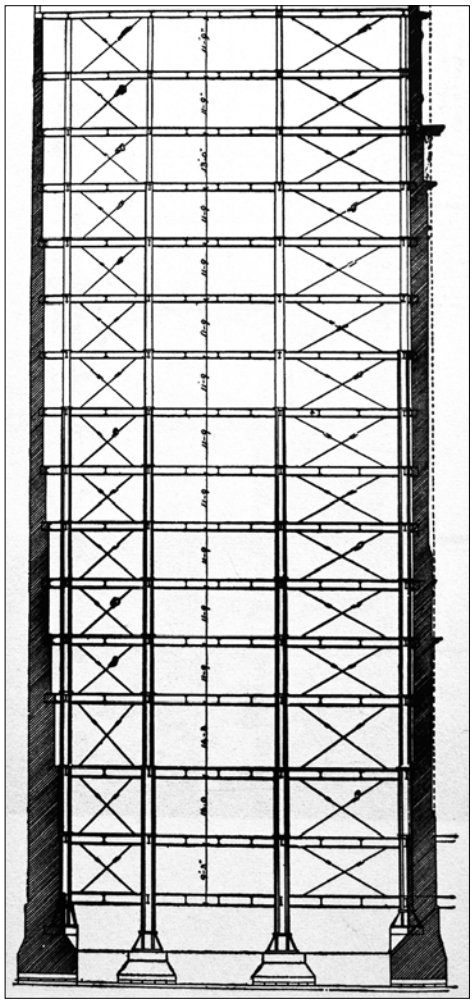

Figure 1: Structural diagram from Landau & Condit, Rise of the New York Skyscraper, p. 165

This brief account must start with the fact that the technology for skyscrapers originated at the same time in New York as in Chicago. This was brought to modern attention by my retired colleague, Sarah Bradford Landau who enlarged and corrected the work of her predecessor, Carl Condit, in the book, *The Rise of the New York Skyscraper,* which they published together in 1996. To qualify as a skyscraper, the building had to have a (Fig. 1) *skeleton frame* that carried both the floors and the outer surface. It had to be *taller than wide*. *Wind-bracing* had to be provided, often done through the floors. To get people upstairs, the building needed an *elevator with safety brakes*. *Water pumps* were required to get water to the roof for use in washrooms and water fountains or to power hydraulic elevators. Materials had to be as *fireproof* as possible, and fireproofing material was developed to surround the steel columns because fire-fighting equipment could not reach the top of these buildings. The first elevator office building (Fig. 2) was the Equitable Life Insurance Building in New York, of 1868–70 by Gilman & Kendall with George B. Post, though it had a masonry frame. Post also designed New York's first building to use large-scale skeleton construction, the Produce Exchange of 1883, although it was not used for the entire building (Fig. 3). William LeBaron Jenney's Home Insurance Building in Chicago finished two years later was both entirely skeleton-framed, and vertical. Two years after that, in 1887, Bradford Lee Gilbert designed the Tower Building in New York, an early example of effective wind-bracing in which the weight of walls and floors was transmitted to the foundation by metal posts and beams (Fig. 4).

By 1900, tall buildings proliferated in the business district of the city, widely known as Wall Street, in southern Manhattan. That had become the business district because it was close to the docks, warehouses, shipping companies, and freight companies. Related facilities were on its outer borders, and a freight railroad reached to the western edge of the area.

The years before the First World War saw an enormous increase in the number and height and width of these office buildings. Citizens complained about crowded streets and

Figure 2: Equitable Building, New York City, by Gilman & Kendall with George B. Post, 1870

Figure 3: Home Insurance Building, Chicago, William LeBaron Jenney, 1885

Figure 4: Tower Building, New York City, Bradford Lee Gilbert, 1887

sidewalks because twice as many people worked in ten storey buildings as in five storey buildings. Doctors worried about the lack of sunlight and ventilating breezes, or about mental problems that they thought could be traced to overcrowding. The danger of fires beyond the reach of fire engine hoses troubled many people. Aesthetes lamented the end of classical proportions that were no longer possible because of the stretched vertical shape of the new buildings, and they were also concerned about the appearance of a crowded city.

The most famous aesthetic response was by Louis Sullivan of Chicago during the 1890s, who worked with the German-born engineer, Dankmar Adler. Their tall office buildings in St. Louis in the Midwest (Fig. 5), and Buffalo in western New York State at the end of the Great Lakes emphasized height, bringing forward the vertical lines of the supporting steel and adding intermediate verticals to make the buildings into what Sullivan saw as "proud and soaring thing[s]." He may have derived inspiration from the Tower building's vertical elements. Other architects preferred to pile small elements on top of each other, or to imitate Romanesque architecture – often German Romanesque – in which tall arches embraced several floors. Often, skyscraper designs reflected training in classical and Renaissance architecture, in which there was an element of a base, a shaft, and a capital even if the building details were in one of the medieval styles – Romanesque or Gothic. One of a few exceptions (Fig. 6) is the Woolworth Building, the tallest building in the world between 1913, when it was finished, and 1931 when the Empire State Building was finished. Covered in terra cotta plaques that can be washed clean, the Woolworth Building is Gothic in style, emphasizing vertical lines, small-scale decoration, and pointed spires. It soon acquired

Figure 5: Wainwright Building, St. Louis MO, by Adler & Sullivan, 1891

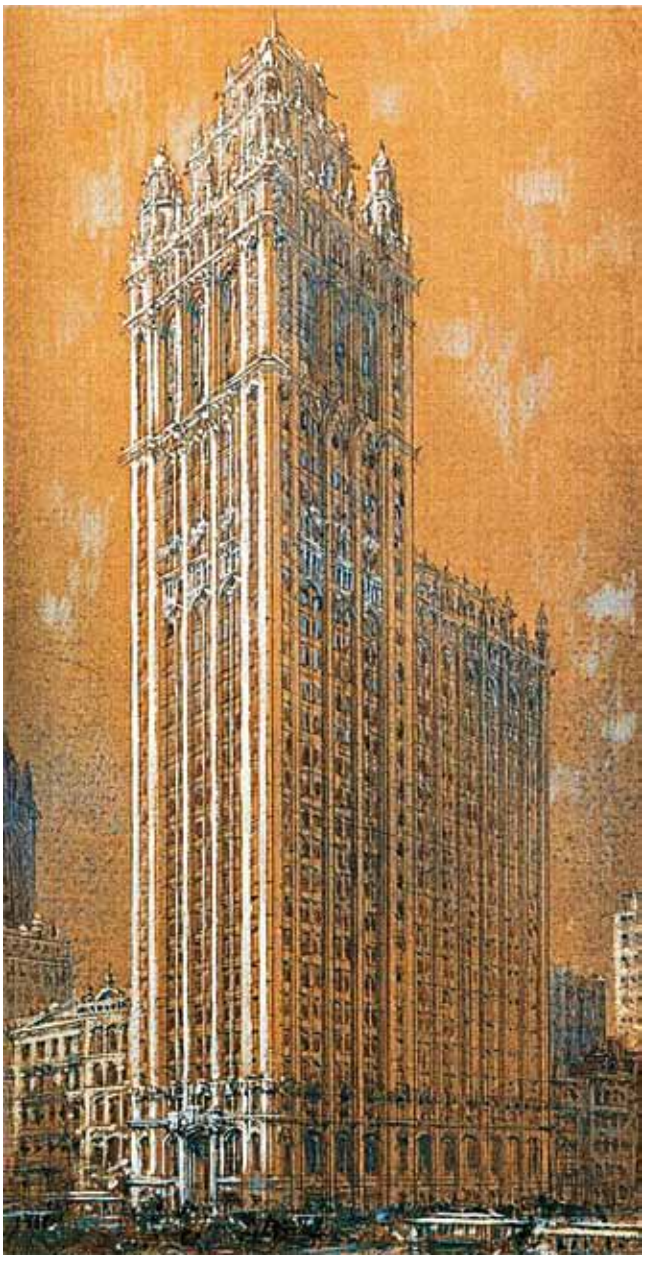

Figure 6: Woolworth Building, New York City, by Cass Gilbert, 1913

the nickname "Cathedral of Commerce." True, its tower was so narrow that only small companies could rent offices there, but in those days, many companies were still small. Besides, the tower was built for prestige, not only for income. The demolished Singer Tower of 1906–8 by Ernest Flagg was similarly a box with a tower. Other early 20th century buildings were simply tall square towers (Fig. 7) such as those for the Metropolitan Life Insurance Company (1907–09 by Pierre Lebrun) and Bankers Trust Company on Wall Street by Trowbridge & Livingston, 1910–12. But most early high-rises such as the Equitable insurance company's second building finished in 1915 by Graham, Burnham & Co. were bulky, so as to squeeze the most profit from the building site.

In 1916 came a change in architectural form. Aesthetics and public well-being were not the only reasons. Enlightened architects, government leaders, property owners, and civic observers understood that in time, the early skyscrapers could ruin each other financially. The first skyscraper on a block would benefit from air, sunlight, and prestige, but a second one built next to it would cut off 25% of the light, air, and visibility. Three more skyscrapers built around it would reduce the value of the first building, especially as the newer ones were, well, newer and perhaps had better water pumps, faster elevators, and more modern design. If that happened, city property tax revenues would fall because each building would be worth less, and therefore would pay less tax. Architects were interested in beauty, civic observers were interested in logic and urban amenity, the government was interested in a predictable and reliable tax base, and building owners wanted to maintain their buildings' value. They gathered from 1913 to 1916 to find ways to regulate the growth of skyscrapers. One problem was that no legislature would restrict what private property owners could do with their land because they were afraid that building owners would insure their defeat in the next election. So the civic leaders instituted changes through a resolution, a legal statement, by the City Council which had the force of law, even if it was not actually a law. The rules governed what one could build in a given district, and how much of it could be built: low houses here, high-rise office buildings there. The areas for high buildings were set around Wall Street and in the center of Manhattan, between Third and Eighth Avenues, from 34th Street (where the Empire State Building is) to 59th Street, just south of Central Park.

Figure 7: Metropolitan Life Insurance Building, New York City by Pierre Lebrun, 1907–09

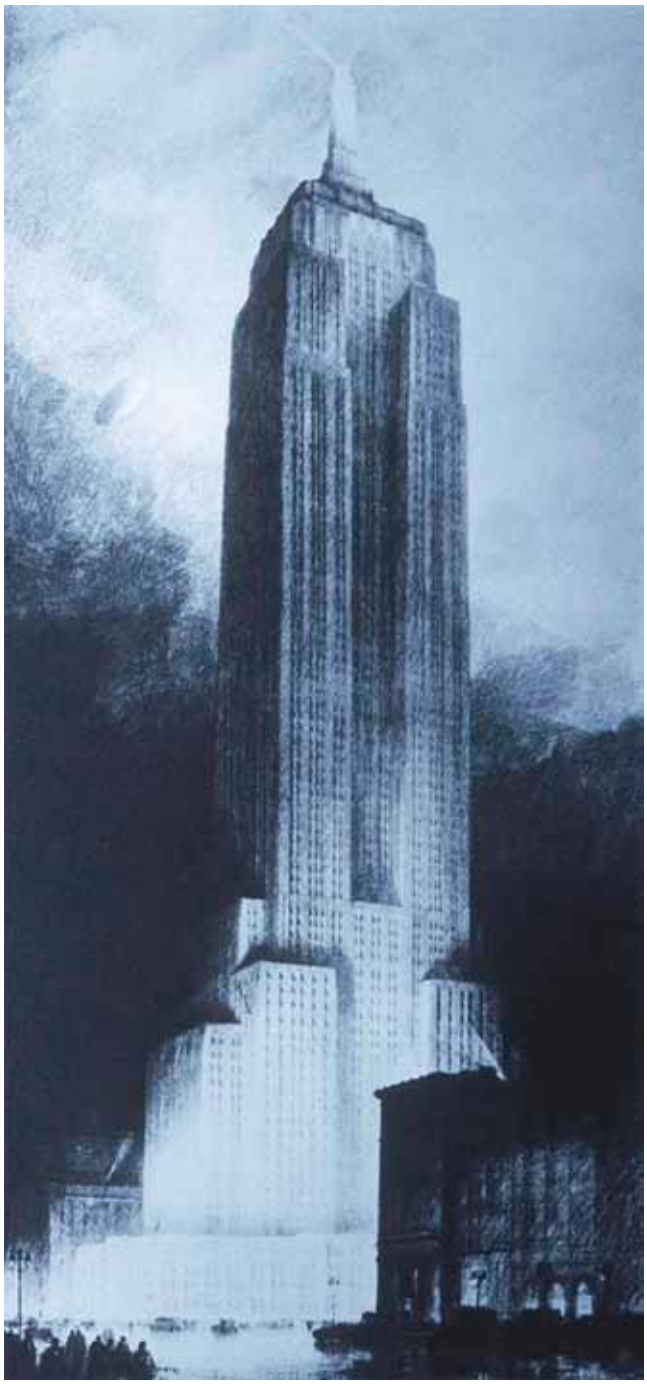

Figure 8: Hugh Ferriss, zoning possibilities, drawing

Instead of having a building rise straight up, covering the entire site, now buildings had to follow rules that allowed straight-up buildings to be only fairly low. If a building occupied the whole site, it could only rise straight up for a few floors, depending upon the width of the street. The wider the street, the higher the building could rise straight up (Fig. 8). After that limit, the building would have to set back under a sloping line drawn from the center of the street to the first height limit. Then all other floors would have to fit under that slope until the building set back to only 25 percent of the site. From that point, a tower could rise to any height, as this image shows. This explains the design of the Chrysler (Fig. 9) and Empire State Buildings. They are on sites large enough to make towers worth building, because the 25 % towers are wide enough to contain fairly large offices. In any case, their sponsors were interested in prestige, not only in rentable square meters.

Therefore, buildings did look different after 1916, or rather, after 1922 when large-scale building began again after the War. But the change did not affect building owners' profits as much as you might think. That's because before air-conditioning, a big square building included a lot of space that could not be rented. The reason is that people did not want to work more than nine meters from a window. If a building was fifty meters wide and about 30 meters deep, with only one indentation for light, that meant a lot of space that could not be used. And if it could not be used, it could not be rented profitably. The lower floors used some of the space in the middle for elevators which need no air or light. But higher up, fewer elevators are needed so it was all right to set the building back to reflect the loss of elevators.

As for architectural style, architects realized that they could no longer build Renaissance or Romanesque buildings under the new rules. The emphasis on vertical elements to suggest height received new attention (Fig. 10). A model for the new buildings came from Eliel Saarinen's second prize entry of 1922 for the Chicago Tribune newspaper building

Figure 9: Chrysler Building, New York City, William van Alen, 1931

Figure 10: 2nd Prize Entry for the Chicago Tribune Building competition, Eliel Saarinen,1922

competition. His design showed vertical lines that in some cases terminated in sculptural figures. This surely inspired designers in New York after 1922 such as the Graybar Building adjacent to Grand Central Terminal. Other designers left out the figures, since few people believed in the allegories that various naked and clothed figures were supposed to represent. They used plant forms or exotic decorations taken from Asia or from the Paris Exposition International des Arts Industriels et Decoratifs to embellish the vertical lines that emphasized the steel frames underneath. Most office buildings focused decoration at the entrance where it would be seen by passers-by, and on the tops, as at the Chrysler or the McGraw-Hill Publishing Company on West 42nd Street, built in 1930–31 by Raymond Hood. Tops would be distinctive and visible from a distance. The designs could be more or less classical, simply geometric, as on the Empire State Building, Assyrian because of the ziggurat building shape, as on the Fred F. French Building on 5th Avenue, designed by

Figure 11: Lever House, New York City, Gordon Bunshaft for Skidmore Owings & Merrill, 1949–52

Figure 12: Seagram Building, L. Mies van der Rohe with Philip Johnson

Sloan & Robertson and Douglas Ives, finished in 1927. They could be faintly plantlike as at the top of Rockefeller Center, although the doorways there have elaborate classically-based figure compositions, because the conservative owner agreed that art enhanced the value of an office building. Spiky decorations could suggest industry, as on the General Electric, formerly Radio Corporation Building by Cross & Cross, finished in 1931 on Lexington Avenue, which has a top that suggests electrical currents zigzagging through the air. None of this was profound or entirely serious; the designs were meant to capture public attention and to make the building attractive to tenants. Part of the reason for the abundant art and the huge Christmas tree at Rockefeller Center was to make it a great monument for future rental, because when it was built in the 1930s, few businesses needed new office space and fewer wanted to move. Incidentally, the plan of Rockefeller Center with some high and some low buildings, is almost entirely related to zoning rules, as I have explained elsewhere.

The rules remained in place until 1961. By that time, business companies had grown and wanted all employees on one floor. Most setback buildings could not accommodate them in their narrow towers. Tenants wanted air-conditioning but very few of the setback buildings were air-conditioned. People admired Lever House by Skidmore Owings & Merrill (Fig. 11) and the Seagram Building by Ludwig Mies van der Rohe with Philip Johnson. They have open plazas, and citizens wanted more plazas. So the city changed its zoning rules, and that is why the famous setback skyscrapers are confined to the years 1916–1961.

Abstract

Bürohausarchitektur des frühen 20. Jahrhunderts in New York City

New York und Chicago entwickelten die technischen Elemente des Wolkenkratzers zur gleichen Zeit, vornehmlich in den 1880ern. Hierzu gehörten Stahlgerüste (später mit feuerfestem Material verkleidet), Vorhangfassaden, Windsicherungen, Fahrstühle mit Sicherheitsbremsen und Wasserbehälter auf den Dächern. Die Architekten verfeinerten die technischen Elemente und erprobten viele künstlerische Lösungen für diese neue architektonische Form. Im Jahre 1916 führte New York Baugesetze ein, die vorschrieben, dass Gebäude um ein im Verhältnis zur Straßenbreite bestimmtes Maß zurück versetzt werden mussten. Dieses führte zur Entstehung von besonderen Hochhausgebieten wie auch zu den pyramidenartig zurückgesetzten Wolkenkratzern, wie z. B. das Chrysler Building und das Empire State Building.

Die Regeln förderten nicht-historische, exotische oder geometrisch-modernistische Dekorstile, meistens gepaart mit der kommerziellen Absicht, Aufmerksamkeit zu erregen. Diese Regeln galten bis 1961, als neue technische und kommerzielle Anforderungen weitere Änderungen in der Gestaltung von Bürohäusern erforderlich machten.

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Sources of illustrations

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