The Negative Impact of Modernist Architecture

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Introduction:

For more than a century, modernism has plagued the field of architecture. Architectural historians typically argue that the style of modernism ended in the mid 1970s and cite the backlash against the destructive results of modernist Urban Renewal projects as giving rise to Postmodernism.[1] While this is a convenient explanation of the stylistic modifications that occurred during the 1970s, it ignores the fact that the vast majority of architecture produced in the late twentieth and early twenty-first century still exhibits the fundamental traits of modernism.[2] These traits go deeper than stylistic characteristics and have to do with the basic ideals of modernist theory.[3] Specifically, the modernists called for a complete rejection of architectural tradition and thus created anti-traditional design methods and forms. While its interpretation has exhibited variation over the past four decades, modernism, as an anti-traditional approach to design, has continued to dominate mainstream architecture. Encompassed in this anti-traditional approach are the modernist values of novelty, originality and unfailing faith in technology that still drive the majority of contemporary architectural design today. The reason modernism has maintained control of the architectural field is largely due to the radical nature of modernist philosophy.

At the beginning of the twentieth century, political and economic turmoil combined with massive industrialization led many architects and artists to question the traditional approach to

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[1] Amundson, Jhennifer and Christopher C. Miller. "Classicism." *Encyclopedia of 20th-Century Architecture: Volume 1, A-F*. Chicago: Fitzroy Dearborn Pub, 2004. Web. Accessed 2 April 2013. 270. Specifically, the 1972 demolition of the housing project Pruitt-Igoe is often considered "the end" of Modernism.

[2] Semes, Steven W. *The Future of the Past: A Conservation Ethic for Architecture, Urbanism, and Historic Preservation.* New York: W. W. Norton and Company Inc., 2009. 31.

[3] Gelernter, Mark. "Making Room for Traditional Architecture." *Traditional Building.* Feb 2013. Web. Accessed 1 March 2013.

design.[4] In light of the cataclysmic devastation of World War I combined with massive industrialization, this group of early modernists determined a break with the past was the only way to move forward.[5] According to their reasoning, architecture should reflect this break by rejecting classical tradition and instead draw inspiration from technological development.[6] In this new aesthetic inspiration, the modernists embraced industrial materials and building techniques such as reinforced concrete, steel-framing, and glass curtain walls. Spreading their progressive ideas through their manifestoes, the modernists criticized the architectural establishment for continuing to utilize traditional design believing technological advancement had made historical precedent irrelevant.[7] When the European modernists immigrated to the United States prior to the Second World War, they transformed the traditional curricula of architecture schools and began to take over the architectural establishment.[8] As the postwar building boom escalated, modernism transformed the landscape of American cities and became the dominant architectural style.[9]

As modernist philosophy required the abandonment of architectural tradition, the modernists developed vague design principles in reaction to those that characterize traditional architecture. Having proved their merits over the centuries, these traditional principles have their roots in antiquity and guided architectural design prior to modernism.[10] By turning their backs

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[4] Gelernter, Mark. "Making Room for Traditional Architecture."
[5] Gelernter, Mark. "Making Room for Traditional Architecture."
[6] Le Corbusier. *Toward an Architecture*. Los Angeles: Getty Publications, 2007. 85. Le Corbusier referred to this as the "engineer's aesthetic."
[7] Pai, Hyungmin. *The Portfolio and the Diagram: Architecture, Discourse, and Modernity in America*. Cambridge: Massachusetts Institute of Technology, 2002. 109.
[8] Amundson and Miller, 270.
[9] Alofsin, Anthony. *The Struggle for Modernism: Architecture, Landscape Architecture, and City Planning*. New York: W.W. Norton & Company, 2002. 196.
[10] Westfall, Carroll William. "What Are the Preservationists Preserving?" *Traditional Building*. July/August 2004. 225.

on these time-tested premises, the modernists created an architecture that completely disregarded the knowledge and experience of the past twenty-five hundred years. Because the modernists embrace the newest industrial materials that are comparably inexpensive to produce and assemble, this anti-traditional approach has been able to maintain authority in the architectural establishment. However, due to the fundamental flaws of modernist design exhibited in its architectural products of the last century, this style has failed to prove itself as a better alternative to traditional architecture.

This thesis will argue that the modernists negatively transformed the field of architecture by rejecting traditional design principles, methods, and materials. After examining the reasons and the manner by which the modernists dominated mainstream architecture, I will argue that the principles and practices that defined architectural tradition prior to modernism should once again be utilized.

Chapter 1:

The Modernist Takeover: A Break with the Past and the Path to Mainstream Dominance

In the view of the modernist theorists and practitioners, the architects of the nineteenth century had failed to develop a unique style. Instead, a series of stylistic revivals had characterized the century's architectural products.[11] This revivalism was spread through newly founded architecture schools in Western Europe, and later in the United States, the most prestigious being the École des Beaux-Arts in Paris.[12] Founded as the Académie Royale d'Architecture in 1671 by Jean-Baptiste Colbert, the finance minister to Louis XIV, the École was originally conceived "as a place that would create the talent necessary for the king's complex building program."[13] This talent would be cultivated through an education in the Roman architecture of antiquity, as the Académie's mission statement expressed calling for the "retablissement de la belle architecture."[14] Although the Académie was closed after the French Revolution and the École, as it was renamed, did not gain international distinction until the latter half of the nineteenth century, the original commitment to generally Roman classicism was certainly maintained.

Following the Revolution, the Académie des Beaux Arts was reopened as a state-sponsored art school and continued to teach classicism. After it was reestablished as the École Imperiale et Speciale des Beaux-Arts under the Second Empire, the architectural curriculum encouraged a more innovative and exuberant classicism as part of Napoleon III's efforts to

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[11] Hitchcock, Henry Russell and Philip Johnson. *The International Style.* New York: W.W. Norton & Company, 1999. 35.
[12] Calloway, Stephen. *The Elements of Style: An Encyclopedia of Domestic Architectural Detail*. Buffalo: Firefly Books, 2012. 384.
[13] Ching, Francis D. K., Mark Jarzombek, Vikramaditya Prakash. *A Global History of Architecture.* Hoboken: John Wiley & Sons, Inc., 2011. 668.
[14] Cret, Paul P. "The Ecole des Beaux-Arts and Architectural Education" *The Journal of the American Society of Architectural Historians* Vol. 1. No. 2. 1941. 7.

redesign Paris based on the model of Imperial Rome.[15] Though the Second Empire ended in 1871, by the 1880s the École had become the most prestigious architecture school in the world.[16] The success of the École inspired the creation of numerous architecture schools in the United States that utilized the Beaux-Arts curriculum.[17] While lectures were held at the École, they were voluntary and most of the students' education took place outside the classroom in the atelier.[18] In the atelier, students learned design principles from "senior members of the field" through their employment as essentially cheap labor.[19] Among these design principles, the ability to read, understand, and create an appropriate "précis" or program was crucial.[20] To test the students on such design principles, there were monthly competitions "in composition, construction, perspective, and mathematics."[21] The most prestigious competition was the annual Prix de Rome, which consisted of many stages and lasted three months.[22] The winner was permitted to spend five years studying at the Villa Medici in Rome.[23] While spending five years

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[15] Grifflin, Laura. "Architects of the State: Rise and Fall of the State." *My French Life.* 24 Oct 2012. Web. 7 Feb 2013.
[16] Ching, et al. 668.
[17] Calloway, 384. The first academic American architecture programs were founded in 1867 at the Massachusetts Institute of Technology and the University of Illinois. As Calloway explains, "newly founded architectural schools in the United States adopted Beaux Arts practices and were often staffed by Beaux Arts alumni."
[18] Ching, 668.
[19] Ching, 668.
[20] Moffett, Marian and Michael W. Fazio. *World History of Architecture*. London: Lawrence King Publishing Ltd, 2003. 429. Through the program the hierarchical relationships of the building's spaces were organized, "symmetrically along first major, then minor, axes, with an emphasis…on movement through the spaces," in an effort to achieve optimum functionality. (Moffett, 431)
[21] Ching, 668.
[22] Ching, 668.
[23] Ching, 668.

in Rome was considered the ultimate prize, there was significant opposition to the emphasis the École placed on Roman Classicism.[24]

The first significant instance of rebellion against the École's classical aesthetic occurred in 1863 with the appointment by Napoleon III of Eugène-Emmanuel Viollet-le-Duc as professor of history of art and aesthetics.[25] Viollet-le-Duc was considered controversial for his criticism of the school for disregarding the Gothic architecture of its native country, and his belief that it was absolutely worthy of incorporation into the curriculum.[26] Unlike many of his École contemporaries in his acceptance of the Gothic style, Viollet-le-Duc also encouraged the use of modern materials, such as iron, in new construction.[27] To many students, his appointment indicated that the École was adopting a more liberal approach in its architectural understanding which was met with great protest and resulted in the professor leaving the École.[28] Though Viollet-le-Duc's criticisms of the École were not well received, the architects of the École eventually began to incorporate modern materials in their constructions while maintaining the classical aesthetic.[29]

Nevertheless, with the end of the Second Empire, the reasons for using this aesthetic were no longer easily explained, and the École failed to clearly communicate the importance of continuing classicism. While the École encouraged the inclusion of modern technology in new construction, it failed to justify its decision to mask this new technology in traditional stylistic elements. As architectural historian Hyungmin Pai explains, the proponents of the Beaux-Arts "argued that by incorporating modern methods of construction and dealing successfully with

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[24] Ching, 668.
[25] Ching, 668.
[26] Cret, 10.
[27] Ching, 668.
[28] Ching, 668.
[29] Calloway, 382.

complex building programs, they more than met the needs of modern society," however, "this logic denied any rational system in which the use of historical style could be justified."[30] Thus when the use of traditional design was challenged by the modernists who argued that it was merely historical imitation and served no legitimate function, the École could not convincingly defend the emphasis its curriculum placed on the classical aesthetic.[31] The École's acceptance of classicism as a "province of convention" could simply not stand up against the opposing forces it encountered in the twentieth century.[32]

As the Industrial Revolution swept across Europe and the United States, the mass production of new materials led to great advances in engineering, leading many architects and theorists to question the appropriate relationship between the developing field of civil engineering and architecture in this new age of industry.[33] One of the most influential members of this group was Viollet-le-Duc, who argued that architecture of the new age should be "based on engineering accomplishments that would have the integrity of form and detail found in medieval works."[34] In his theoretical writings he stressed "the importance of rationality of design" as an honest reflection of constructive processes.[35] The emphasis Viollet-le-Duc placed on rationalism and his belief that a building should be "truthful" significantly influenced the modernists of the twentieth century.[36] While Viollet-le-Duc encouraged the use of the Gothic-Revival style, other French architects of a generation later believed the technological

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[30] Pai, 109.
[31] Ironically, École architects placed much greater emphasis on the functionality of their designs by their well though out programs, mentioned above.
[32] Pai, 109.
[33] Giedion, Siefried. *Space, Time, and Architecture.* Cambridge: Harvard University Press, 1966. 213.
[34] Moffett, 429.
[35] Moffett, 430.
[36] Moffett, 431.

advancements of the Industrial Age should encourage an altogether new aesthetic which would come to be known as Art Nouveau.[37] In their designs, these architects attempted to create a new style "not based on the eclecticism of the École-des-Beaux-Arts, characterized by traditional motifs from the history of architecture repeated in various combinations," but one that openly mixed modern materials with traditional materials in an exuberant, asymmetrical manner.[38] While Viollet-le-duc and the Art Nouveau movement were indicative of a significant opposition to the École that began in the mid-nineteenth century, it was not until the turn of the century that a radical movement against the aesthetic principles of the establishment truly began to take form.[39] At the same time that this radical movement began to develop, the École was becoming increasingly vulnerable to opposition, due to its failure to adequately justify the use and importance of the traditional design principles. When this architectural revolution began to take form in Germany, the École was unable to defend its dominant role in architectural education.

Between the last decade of the nineteenth century and the first of the twentieth century, Germany rapidly transformed from an agricultural society into the European leader in industrialization.[40] Not only did its foreign trade double during this period, but by 1913 Germany had exceeded Great Britain in world production.[41] In this new role, urban officials under the imperial government attempted "to promote and glorify German production" through special exhibitions as had been done in England and France for decades.[42] Unlike these countries, however, Germany had never implemented the Beaux-Arts system, thus the architecture that was

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[37] Hanser, David A. *Architecture of France.* Westport: Greenwood Press, 2006. 133.
[38] Hanser, 133.
[39] Alofsin, 52.
[40] Ching, 703.
[41] Ching, 703.
[42] Ching, 703.

displayed at these exhibitions was noticeably different from its predecessors in that it did not place the same emphasis on traditional design.[43]

The leading architect of these first exhibits was Peter Behrens, whose increasingly abstract and geometric designs showcased the most innovative technologies such as glass, steel, and concrete.[44] Gaining prestige for his unorthodox use of new materials, Behrens was approached in 1907 by one of the top German industrialists, Emil Rathenau, the president of the General Electric Company, to act "as artistic supervisor of everything from trade-mark of the company to the design of street lamps and the erection of new plants."[45] According to modernist architectural critic Siegfried Giedion, in this role the relationship between the engineer and architect that had long been debated was aligned.[46] This "alignment" was considered a positive development by modernists who believed that "true" architectural principles should "naturally" evolve out of "technological function and materials."[47] Yet Behrens' work was criticized by Giedion for displaying such traditional characteristics as the "classical severity and Cyclopean walls" in his works.[48] For modernists such as Giedion, the idea that these "forms of which the motivation [was] primarily aesthetic" could also be "the consequence of technological necessity" was unimaginable.[49] Despite Behrens' incorporation of classical design elements, his attempt to transform the factory "into a dignified place a work" through the use of advanced engineering materials led Giedion to assert that Behrens "epitomizes German architecture at the start of the

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[43] Ching, 703.
[44] Ching, 703.
[45] Giedion, 479
[46] Giedion, 479.
[47] Watkins, David. *Morality and Architecture*. Chicago: University of Chicago Press, 1982, 27. While Watkins is discussing Viollet-le-Duc, he points out elsewhere that the later modernists maintained this emphasis on functionalism, see page 40-41.
[48] Giedion, 479.
[49] Watkins, 28.

twentieth century."[50] How exactly the use of these advanced technologies actually transformed the factory into "a dignified place of work," is not explained by Giedion. Nevertheless, Behrens' rejection of historical precedent and the fervor for modern technology he passed on to his atelier, that included Mies van der Rohe, Walter Gropius, and Le Corbusier, make Behrens a significant figure in the development of modernism.[51]

Although Behrens played a crucial role as a leader in the promotion of modernism, many "foreign architects were invited to build on an equal footing with their German colleagues," making Germany what Giedion called "the country most hospitable to foreign ideas" in the first decades of the twentieth century.[52] The "foreign ideas" which Giedion refers to were the developing revolutionary theories that called for an architecture reflective of modernity. To advance their foreign ideas, these architects established the Deutsche Werkbund in 1907 with the mission to pursue "the refinement of workmanship and the enhancement of the quality of production."[53] This federation of architects varied not only in their countries of origin but their levels of experience, and at their first exhibition, the Werkbund Exhibition in Cologne in 1914, the work of the youthful newcomers was displayed beside those of their seasoned colleagues.[54] While members of the older generation such as Peter Behrens, Joseph Hoffman, and Henri van de Velde contributed to the exhibit, the buildings considered most notable were designed by the younger generation, such as Bruno Taut's glass house and Walter Gropius' office building which

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[50] Giedion, 478.
[51] Giedion, 479. These three architects would all attempt to completely remove all remnants of classicism from their designs
[52] Giedion, 478.
[53] Giedion, 480.
[54] Giedion, 480.

received special attention from modernists (Plates 1 and 2).[55] Not only was this office building "the work most discussed at the exhibition," it was also believed to embody "the most seeds for future development".[56]

In its flat roof, liberal use of glass and hidden supports, the office building was designed to challenge the viewer's traditional understanding of "the relation between load and support."[57] Because the human desire to see projecting parts supported by structural elements was considered a negative trait, Gropius' refusal to satisfy this desire was highly praised.[58] This work admired by modernists was not his first, however, as Gropius had already established his reputation in such circles with his redesign of the Fagus shoe last factory in 1911.[59]

After working in the office of Peter Behrens from 1907 to 1910, Gropius opened his own offices and in 1910 received his first commission which was the redesign of the exterior of the Fagus shoe-last factory (Plate 3).[60] Similar to his office building at the Werkbund Exhibition, his reinterpretation of the Fagus works was exalted by modernists for its complete disregard for the "classical solemnity" seen in Behrens' work.[61] The walls of the shoe factory consisting of only glass panels and steel framework sheathed in brick were designed not to look like structural supports but curtains demonstrating "the new conception of space, with its urge toward freely hovering parts and surfaces."[62] Described by architectural historian Henry-Russell Hitchcock as "the most advanced piece of architecture built before the war," the exterior of the Fagus works

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[55] Giedion, 480. For the value modernists place on novelty, it is no surprise that the younger generation was considered the most promising.
[56] Giedion, 480.
[57] Giedion, 484.
[58] Giedion, 484.
[59] Giedion, 482.
[60] Giedion, 482.
[61] Giedion, 482 The author's description of the walls as curtains; quotation found in Giedion, 484-485.
[62] Giedion, 482.

illustrated the new aesthetic understanding in which "architectonic and constructional means contribute equally to a unified expression."[63] This expression was dependent on the use of the newest building technologies and materials such as glass, iron, steel and concrete which were believed to exude "architectonic honesty" in their lack of ornamentation.[64] While the Fagus works was considered the first building to fully embody the new aesthetic, this concept of restricting ornament was originally explored by Adolf Loos in his 1908 essay, "Ornament and Crime."

In this essay, Austrian architect Adolf Loos argues that the world has evolved beyond applied decoration.[65] Conforming to Jean-Jacques Rousseau's narrow understanding of civilization, Loos insinuates that European cultures are more advanced than tribal societies where ornament is a necessary form of communication.[66] According to Loos, as cultures have evolved over time, ornament has become increasingly unnecessary in utilitarian objects because man can assert his individuality in other ways.[67] In the industrialized world, where the designer is supposedly the machine, applied ornament is useless and merely makes reference to the "less-advanced" cultures of history.[68] Loos still holds that unornamented objects are beautiful, however, for the natural characteristics of their materials.[69] This prejudice against applied decoration articulated by Loos in 1908 was spread throughout the artistic and architectural circles of Europe over the following years and received architectural expression in Gropius'

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[63] Giedion, 483.
[64] Giedion, 482. Author uses the phrase, "architectonic honesty" on 497. While concrete had been used in architecture since antiquity, with the development of steel concrete could now be reinforced and used in a new way.
[65] Loos, Adolf. "1908, Adolf Loos: Ornament and Crime." *George Washington University.* Web. 20 Feb 2013. 24.
[66] Ching, 701.
[67] Loos, 24.
[68] Loos, 22.
[69] Loos, 21.

redesign of the Fagus Works. Here, Gropius applied minimal detailing, believing the Fagus works could thereby reflect the technological advancement of society in its liberal use of modern materials. Completed in 1914 at the onset of the First World War, the timing of the redesign of the Fagus shoe-last factory prevented it from "[making its] influence felt at the moment."[70] It was not until after the War, that Gropius would significantly impact the world of architecture.

In 1919 Gropius united the Weimar Republic's two art schools to form the Bauhaus and began to fill the professorial positions the war had left vacant.[71] As head of this newly combined art school, Gropius was able to exert a much greater influence on the next generation of artists and architects by controlling the direction of the school's curriculum. According to Giedion, the Bauhaus was intended not as a place to explore "the question of how to make things," but "how to perceive and experience things."[72] For the modernists, simply disregarding traditional design principles was not enough, the entire perception and experience of a building as it had been understood for centuries must also be rejected. Thus Gropius employed some of the leading abstractionist painters of the time, including Johannes Itten, Paul Klee, and Lyonel Feininger, to promote their unconventional understanding of planes, textures, and space.[73] Their radical ideas of abstraction had a direct influence on the school's architectural products and modernist architecture as a whole which would maintain this abstract style throughout its development.[74] As Giedion explains, "at the Bauhaus under Gropius the effort was made to unite art and industry, art and daily life, using architecture as intermediary," thus "the work of the Bauhaus

[70] Giedion, 485.
[71] Giedion, 487.
[72] Ching, 718.
[73] Ching, 718.
[74] Giedion, 489.

can be grasped only when the conception behind modern painting has been understood."[75] In order to appreciate and create modernist buildings, students had to completely alter their understanding of architecture. As it provided the modernists an opportunity to indoctrinate the next generation of architects, the Bauhaus was extremely important in promoting modernist architecture. When a reduction in city funding forced the Bauhaus to move from the artistic center of Weimar to Dessau in 1924, Gropius was able to design a new campus as a realization of his revolutionary understanding of architecture.[76]

As the first true expression of the aesthetic that had been developed at the Bauhaus, the Dessau campus demonstrated how this "new space conception" manifested itself in architecture. (Plate 4-5)[77] To accommodate the many requirements of the Bauhaus, such as the School of Design, the trade school, administrative offices, studio space, a stage, a dining hall, student dormitories, and instructors' housing, Gropius created a program of buildings "divided into two major elements separated by a road and connected by a bridge."[78] This program essentially consisted of juxtaposed and interrelated cubes of varying sizes intended to look as if they were floating.[79] The School of Design, considered "the nucleus of the whole," had a skeleton of reinforced concrete interrupted only by "horizontal ribbons of white curtain walls at the top and bottom of the building."[80] Similar to the Fagus works, the supports were flush with the glass walls to shock the onlooker who naturally expected visible load-bearing devices.[81] The other structures maintain the use of glass and concrete with subtle variations, for example the students'

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[75] Giedion, 489.
[76] Ching, 718.
[77] Giedion, 496.
[78] Ching, 719.
[79] Giedion, 496.
[80] Giedion, 493.
[81] Giedion, 493.

dormitory-studio spaces each had their own balcony consisting of a projecting concrete slab.[82] While Gropius' reliance on minimally-ornamented, modern materials and advanced engineering practices was highly praised by modernists and considered a "complete crystallization of the new space conception," its unadorned regularity also created an arguably austere campus environment.[83] Opening in 1926, the Bauhaus at Dessau would become the leader in modernist indoctrination and the promotion of "architectonic honesty."[84]

Although this new campus only served the functions of the Bauhaus for seven years, this short period of time would be considered its most productive.[85] When the school reopened, it welcomed many new professors, some former students, such as Josef Albers, Marcel Breuer, and Herbert Bayer.[86] This new generation was well informed about the most recent developments in both construction technology and anti-establishment artistic circles allowing them to further the goal of the Bauhaus to promote new architectural principles.[87] Led by Gropius, Le Corbusier, and Ludwig Mies van der Rohe, this new generation formulated their ideologies through debates concerning what constituted the "internal ethos of industrial production" and how it should be expressed through architecture.[88]

As the Bauhaus became the chief center of modernist design, it was met with a great deal of criticism not only from the traditional establishment but other modernists as well.[89] While the proponents of tradition opposed the Bauhaus' promotion of ideas antithetical to traditional design

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[82] Giedion, 491.
[83] Giedion, 497.
[84] Ching, 718. Author describes the Bauhaus as "the leading school of modernist design." Giedion, 497 Author uses the phrase, "architectonic honesty."
[85] Ching, 719.
[86] Giedion, 488.
[87] Giedion, 496.
[88] Quotation in Ching, 718. Giedion, 496 discusses the leaders of the new generation.
[89] Giedion, 489.

principles, many modernists did not believe that their doctrine could be taught in an academic setting.[90] When Gropius stepped down as the head of the school in 1928 and appointed Hannes Meyer as his successor, Meyer's Marxist political allegiances complicated the Bauhaus' relationship with the government as the Nazi Party came to power.[91] Although Mies van der Rohe was able to stabilize the conflict when he assumed the position in 1930, the Nazi regime closed the school in 1933.[92] While its years of operation were short, the Bauhaus was extremely important in spreading the modernist doctrine.[93] Although the Bauhaus served as the European center of modernism, developments in the dissemination of modernist ideals were not restricted to Germany.[94]

Paralleling the progression of the movement in Germany, a Swiss-born architect, Charles-Édouard Jeanneret-Gris, or Le Corbusier as he is more commonly known, was attempting to advance and promote the new concepts of "architectonic expression" in France.[95] Having studied watch engraving, art, and architecture in his native city of La Chaux-de-Fonds, Switzerland, Le Corbusier began his architectural career in 1905, working mainly in the Arts and Crafts style.[96] From 1909 to 1910 he worked in the office of Auguste Perret, who was "the first to recognize how to employ reinforced concrete as a means of architectural expression."[97] During this experience, as well as the two years he spent in the design practice of Peter Behrens, alongside Gropius and Mies van der Rohe, Le Corbusier was introduced to the developing anti-

[90] Giedion, 489.
[91] Ching, 719.
[92] Ching, 719.
[93] Ching, 719.
[94] Ching, 719.
[95] Ching, 720.
[96] Ching, 720.
[97] Giedion, 328.

classical theories of modernist architecture.[98] Following his time in Berlin, he traveled to Greece, Turkey, Italy and other parts of southeastern Europe, sketching and painting the cities of antiquity.[99] According to Giedion, this voyage allowed Le Corbusier "to see the relation of the structures of a specific period to the period's contemporary life," leading him to view architecture not as an artistic creation but an embodiment of the culture that produced it.[100]

Upon his return to La Chaux-de-fonds, Le Corbusier continued to develop his artistic and architectural style.[101] Specifically interested in prehistoric and modern painting, he would often venture to Paris to study the prints at the Bibliothèque Nationale.[102] Like Gropius, Le Corbusier believed "architecture and painting were merely two different instruments through which he expressed the same conception."[103] While this conception was communicated in his paintings through abstract forms, Le Corbusier, significantly influenced by his experience with Perret, believed reinforced concrete could convey this idea in architecture.[104] The nature of this new conception had not yet been explicitly defined, but it certainly required that traditional artistic and architectural understanding be completely rejected. When he moved to Paris in 1917, he continued to explore both means of expression, exhibiting his paintings and opening an architectural studio.[105] In 1920, he started the magazine, *L'Esprit nouveau,* with painter Amedee

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[98] "Peter Behrens: Hamburg 1868-Berline 1940" *Art Directory.* Web. Accessed. 14 Feb 2013.
[99] Foundation Le Corbusier. "Biography." *Foundation Le Corbusier*. Web. Accessed 14 Feb 2013.
[100] Giedion, 520.
[101] Foundation Le Corbusier. During this time he exhibited ten water colors, "Le langage des Pierres" at the Salon d'Automne in Paris and worked on his manuscript "La construction des villes." To see his architectural works during this period refer to plates (6-8) of villa Jeanneret-Perret (1912), Villa Favre-Jacot (1912), and villa Schwob (1916).
[102] Foundation Le Corbusier. "Biography."
[103] Giedion, 525.
[104] Giedion, 522. See his "Still Life" (plate 9)
[105] Foundation Le Corbusier. "Biography."

Ozenfant and publicist Paul Dermee.[106] Under his nom de guerre, Le Corbusier wrote on a variety of topics, including painting, cinematography, and psychoanalysis.[107] It was his essays on architecture, however, later compiled in his 1923 *Vers une architecture* that would be his most widely read contributions to the publication.[108]

Considered "the most significant summary statements of the ideals of the modernist movement to appear since World War I," *Vers une architecture* was one of Le Corbusier's greatest contributions to the spread of modernism.[109] Translated into English in 1927 as *Towards a New Architecture,* in this work Le Corbusier attempted to convince the public that a completely new architecture must be created that reflected the technological advancement of the modern, common man.[110] Similar to Adolf Loos in "Ornament and Crime," Le Corbusier assumes that cultural evolution and industrialization have brought mankind to its most advanced state, and a new spirit and a new aesthetic have emerged as a result.[111] To incorporate decorative elements of historical styles in contemporary design would be dishonest, for they are merely "remnants of a past age" and indicative of an oppressive elite.[112] In the current era, the past must be disregarded as Le Corbusier clearly states: "we are forced to the conclusion that the old architectural code, with its mass of rules and regulations evolved during 4,000 years, is no longer of any interest; it no longer concerns us: all the values have been revised; there has been a revolution in the conception of what Architecture is."[113] According to Le Corbusier, this

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[106] Cohen, Jean-Louis. Introduction to *Toward an Architecture*. Los Angeles: Getty Publications, 2007. 1.
[107] Cohen, 2.
[108] Cohen, 2.
[109] Ching, 720.
[110] Le Corbusier, *Toward a New Architecture.* 84.
[111] Le Corbusier, *Toward a New Architecture.* 147.
[112] Le Corbusier, *Toward a New Architecture.* 150.
[113] Semes, 92. Quoting Le Corbusier, *Towards a New Architecture.*

revolutionary aesthetic was thus derived not from historical precedent but from modern industry and therefore constituted a completely new architecture.[114] Le Corbusier failed to explain how exactly this architecture was devoid of any elements of the past, however, he maintained that the machine and its functional capabilities should inspire architectural design, and that the house for the "common man" specifically should be treated as "a machine for living."[115] *Towards a New Architecture* offers an extensive explanation of the modernist doctrine, a more concise description of this modernist aesthetic according to Le Corbusier is found in his 1926 essay, "Five Points Toward a New Architecture."[116]

These five points, suggested in *Towards a New Architecture* and explicitly stated in this essay, were "based on the structural properties of reinforced concrete as well as the increasing availability of mass-produced architectural elements."[117] In addition to these influences, Corbusier's points were also developed in reaction to the principles that had characterized architecture since antiquity. These five points were the piloti, the free plan, the free façade, the strip window, and the roof terrace.[118] The pilotis or pillars elevate the first floor of a building off the ground and are intended to leave the land unobstructed.[119] These pillars also support the weight of the structure "through the girders of the framework."[120] Bearing the entire load, the pilotis make the second principle of a free plan possible.[121] Because the walls are not structural elements, the plan is a flexible unit, and interior partition walls can manipulate space in

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[114] Semes, 93.
[115] Le Corbusier, *Toward a New Architecture.* 151.
[116] Le Corbusier. "Five points towards a new architecture: 1926." *Programs and Manifestoes on 20th-Century Architecture.* Ed. Conrads, Ulrich. Cambridge: MIT Press, 1971. 99.
[117] Ching, 720.
[118] Giedion, 524-525.
[119] Fazio and Moffett. 511.
[120] Giedion summarizing Le Corbusier, 524.
[121] Giedion, 524.

unconventional ways.[122] Similarly, the exterior walls of the façade, which are also independent of the structural skeleton, are able to remain bare of any indications of the interior plan."[123] The plainness of the exterior is interrupted only by horizontal windows that span from support to support, designed to let in light evenly throughout the interior.[124] Finally, to protect the entire construction, the flat roof can be treated as a garden to soak up rainwater with the help of interior drainage pipes.[125] Each of these points reveals the way the modernist aesthetic challenged the traditional elements of design. These traditional elements developed over the centuries and their merits have long been proven, include incorporation of a ground floor, load-bearing walls, an ornamented façade, vertical-aperture windows, and a pitched roof. According to Le Corbusier, the modern materials and methods of construction had made such precedents irrelevant.[126] The new age in which technology reigned required a completely new architecture devoid of architectural tradition.[127]

The Weissenhof Housing Settlement of 1927 served as an important step in the advancement of modernism in that it provided not only Le Corbusier but many othercontemporary modernist architects, with their first opportunity to apply their radical principles to architecture on a significant scale.[128] By the late 1920s, Germany was beginning to recover from the inflationary crisis of 1923, thus the state and municipal governments were able to support the construction of housing projects.[129] Following this trend, the Deutscher Werkbund

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[122] Giedion, 524.
[123] Fazio and Moffett, 511.
[124] Fazio and Moffett, 511.
[125] Le Corbusier. "Five points towards a new architecture: 1926."
[126] Le Corbusier, *Toward a New Architecture.* 151.
[127] Semes, 93.
[128] Ching, 729.
[129] Ching, 728.

sponsored the Weissenhof Settlement in the politically progressive region of Stuttgart.[130] Organized by the Werkbund's vice president, Ludwig Mies van der Rohe, architects were invited from all over Europe to design their own buildings for the settlement.[131] Although the collection of buildings varied considerably, Mies required all buildings have a flat roof and a white exterior.[132] Under these guidelines, the settlement presented the world with a cohesive representation of the modernist common mission and principles.[133] Referred to as "his two most-discussed houses on pillars," Le Corbusier's contribution of two connecting houses demonstrated the new aesthetic through his five points (Plate 10).[134] Beyond their pillars, the concrete houses consist of a flat roof, an open plan with partition walls, and facades decorated solely by horizontal bands of windows.[135] To those architectural critics that considered the exterior of Le Corbusier's houses and those like them "very unsightly," the modernists responded that the barren facades were not intended to be an "aesthetic focal point."[136] Thus as a realization of their principles, the modernists indicated at the Weissenhof Settlement that aesthetics, so valued in the classical tradition, mattered little to them.

Following this exhibition, Le Corbusier continued his attempt to overturn the traditional understanding of architecture in his design of the Villa Savoye (Plate 11). Considered by Giedion as the "purest" expression of the five principles, the Villa Savoye was also significantly inspired by the aesthetic of the automobile, a concept explored in *Towards a New*

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[130] Ching, 728.
[131] Giedion, 595.
[132] Ching, 728. In addition to Le Corbusier, Adolf Loos, Walter Gropius, Bruno Taut, J. J. P. Oud, and Mart Stam also contributed to the settlement.
[133] Ching, 728.
[134] Giedion, 595.
[135] Ching, 729.
[136] Giedion, 599.

Architecture.[137] Resting on pilotis at the apex of a hill, this "column-and slab construction in reinforced concrete" is also composed of brick and cinder block walls covered in stucco, the exteriors of which were painted white.[138] The inspiration of the automobile is visible in the ground-floor plan which was designed around the turning radius of the client's car.[139] The ground floor holds both the chauffeur's quarters and a ramp that rises in the middle of the villa.[140] On the second floor, living quarters are laid out on three sides of this ramp, and a terrace fills the remaining space (Plate 12).[141] Completing the structure with an accessible flat roof and horizontal windows that were intended to make the surrounding view an integral part of the experience, Le Corbusier attempted to challenge the tradition of defined interior and exterior space.[142] While clearly defined spaces are crucial in classical design, at the Villa Savoye Le Corbusier hoped to completely overturn this aspect of design, creating an "interpenetration of inner and outer space" by hollowing out the house "in every direction."[143] Although it was highly praised in modernist circles, the owners were not comfortable in this unconventional house and abandoned it.[144] Similarly in the public realm, his "new architecture" was not initially well received.

The 1927 international competition for the Palace of the League of Nations demonstrated that the modern aesthetic had yet to gain the favor of the majority.[145] Working with his business

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[137] Giedion's quotation found on page 525. Discussion of the influence of the aesthetic of the automobile found on page 721 of Ching.
[138] Ching, 721.
[139] Ching, 721.
[140] Ching, 721.
[141] Ching, 721.
[142] Giedion, 525.
[143] Giedion, 529.
[144] Sullivan, Mary Ann. "Villa Savoye—Introduction and Index: Le Corbusier 1929-30." 2006. Web. Accessed 17 March 2013.
[145] Ching, 730.

partner Pierre Jeanneret, Le Corbusier submitted a design for the three-part complex that made liberal use of reinforced concrete, large expanses of glass, pillars and flat roofs (Plate 13-14).[146] While it offered "high officials from everywhere in Europe" an opportunity to consider modernist architecture, the proposal was rejected.[147] Demonstrating that the Beaux-Arts style was still preferred, the jury chose Henri-Paul Nénot's traditional design, however, his proposal was never constructed.[148] Although Le Corbusier's approach was rejected in 1927, twenty years later the United Nations chose a design greatly influenced by Le Corbusier's original proposal for the new United Nations Headquarters in New York (Plate 15).[149] Over the course of twenty years, the modernists would make serious progress in their effort to dominate mainstream architecture.[150] One development that significantly contributed to the spread of modernism was the creation of a new organization of modernists. Inspired to organize themselves after Le Corbusier's League of Nations proposal was rejected, the Congrès Internationaux d'Architecture Moderne would soon become "the group that had the most important impact on architectural thinking" in the early twentieth century.[151]

The Congrès Internationaux d'Architecture Moderne, CIAM, was created in 1928 to provide the isolated, modernist architects of Europe with a forum to discuss their varying views

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[146] Giedion, 532.
[147] Quotation from Giedion, 530. Rejection of Le Corbusier's proposal found on Ching 730
[148] Hein, Carola. *The Capital of Europe: Architecture and Urban Planning for the European Union.* Westport: Greenwood Publishing Group, 2004. Web. Accessed 14 March 2013. 29
[149] Giedion, 564-565. Ten architects were originally chosen by the United Nations to develop a design for the new building. As each began to work on their designs, Le Corbusier's design known as Project 23A was recommended by the commissioners for execution, but modernist architect Wallace K. Harrison was chosen as Planning Director, thus Le Corbusier received little recognition for his contribution.
[150] Giedion, 564.
[151] Ching, 730.

on the defining characteristics of the new architecture.[152] In addition to this purpose, CIAM served the more active goal of establishing "contemporary architecture's right to existence against the antagonistic forces of official architectural circles, who controlled the major building enterprises," and as Le Corbusier pointed out, such problems "could not be solved by the single individual."[153] At the first congress held in La Sarraz, France in 1928, the "small international group" of twenty-five architects drafted a manifesto, known as the Sarraz Declaration, that laid out "the bases of contemporary architecture."[154] This declaration called for "an architecture based on practical, economic and sociological considerations" and criticized the academies "for their sterilizing grip on the architectural profession."[155] Furthermore, it held that "modern architecture had the obligation to satisfy not only the material needs of the population but also the spiritual and intellectual demands of contemporary life."[156] Following the first congress, the annual assemblies attracted a larger group of international architects focusing on a different problem each year and how to tackle it.[157] CIAM's ultimate goal of social reform through architectural reform was only possible if the proponents of tradition who dominated the academy were forced out of power.[158] Not all the supporters of modernist architecture, however, believed in its social purposes. While the American interpretation of modernism maintained the overall design principles as they had been developed in Europe, the new aesthetic was not so closely tied to a call for "sociological considerations."[159]

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[152] Giedion, 696.
[153] Giedion, 696.
[154] Giedion, 696.
[155] Ching, 730.
[156] Ching, 730.
[157] Giedion, 697.
[158] Giedion, 696.
[159] Giedion, 696.

While the modern movement in Europe was making significant advances during the 1920s, in the United States architectural institutions continued to employ the traditional curriculum of the École des Beaux-Arts.[160] However, technological advances in construction methods and materials resulted in a response on the part of architects of the leading architectural schools.[161] For example, in the 1920s Harvard's School of Architecture updated their the Official Register adding to their original call for "artistic imagination enriched by the knowledge of the great art of the past," the phrase "with knowledge of the needs of today and of the materials and methods now available for expressing those needs."[162] Architects still used traditional forms to express these needs through new technology, however, leading European modernists to condemn architectural education in the United States.[163] From the modernist perspective, technological advances allowed architects to abandon the forms of the past and "search for new forms" linked to "not only new materials and technology but also changes in society."[164] While the "cataclysm of World War I" had encouraged radical modernists to reject the idea of history "as a model for the present and a guide for the future," American architects had yet to experience an equivalent tragedy that would completely alter their understanding of history.[165] When the devastating effects of the Great Depression set in, a radical reform seemed the only appropriate reaction.[166]

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[160] Giedion, 500.
[161] Alofsin, 58.
[162] Alofsin, 58.
[163] Alofsin, 58-59.
[164] Alofsin, 59.
[165] Alofsin, 56.
[166] Alofsin, 79.

The "scope of national disaster" that accompanied the Great Depression demanded "reform at all levels," and made "a break with tradition appear more necessary than ever."[167] Architects who had been trained in the American institutions that taught the Beaux-Arts curriculum began to question and reject their "reliance on the past as a guide to the future."[168] At the same time, the architectural products of European modernism were gaining significant exposure in the United States.[169] Considered the "benchmark for reform in American architecture," the 1932 International Exhibition of Modern Architecture held at the Museum of Modern Art in New York introduced America to the International Style and demonstrated the differences and similarities between the European and American interpretations of modernism.[170] The exhibition was curated by the head of the Department of Architecture and Design at MoMA, Philip Johnson, and art historian Henry Russell Hitchcock, who differed from the European modernists in their belief that modern architectural works did not constitute an entirely new architecture, as Le Corbusier had proclaimed, but indicated the creation of a new style.[171] Realizing that their argument was highly contested by European modernists, Johnson and Hitchcock explain in the exhibition catalog that the idea of "style" has been jaded by the revivals of nineteenth century.[172] According to the authors, in the nineteenth century a multitude of historic styles were "but a decorative garment to architecture, not the interior principles according to which it lived and grew… [giving] the very idea of style a bad name."[173] However, the architecture created at the beginning of the twentieth century by the rejection of this

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[167] Alofsin, 79.
[168] Alofsin, 82.
[169] Alofsin, 82.
[170] Alofsin, 83.
[171] Johnson and Hitchcock, 35.
[172] Johnson and Hitchcock, 34.
[173] Johnson and Hitchcock, 34.

revivalism has resulted in new "aesthetic conceptions… based on the experimentation of the individualists" and has thus produced "a single new style."[174] In their view, the creation of this single new style should be exalted, because it proves that "the idea of style, which began to degenerate when the revivals destroyed the disciplines of the Baroque, has become real and fertile again."[175] While Hitchcock and Johnson differed from the European modernists in their recognition of modernism as a style, they still held that adherence to the principles of this new style was essentially dogmatic.[176]

Hitchcock and Johnson claim these principles were created as a result of the "experimentation" of the "individualists," also known as early modernists, working in the first decades of the twentieth century.[177] Upon closer examination, however, it is evident that these points were also developed in rejection of traditional design principles. These principles are threefold: "emphasis upon volume—space enclosed by thin plane or surfaces as opposed to the suggestion of mass and solidity; regularity as opposed to symmetry or other kinds of obvious balance; and, lastly, dependence upon intrinsic elegance of materials, technical perfection and fine proportions, as opposed to applied ornament."[178] Like Le Corbusier's five points, from which they are derived, these three principles intentionally challenge classical design principles. While classical tradition encouraged designs enhanced with applied decoration that expressed strength and demonstrated balanced symmetry, the new International Style called for bare, thin planes that relied entirely on their material for aesthetic appeal. These anti-classical principles illustrated in the works displayed in the exhibition were codified in Hitchcock and Johnson's

[174] Johnson and Hitchcock, 34.
[175] Johnson and Hitchcock, 35.
[176] Johnson and Hitchcock, 37.
[177] Johnson and Hitchcock, 35.
[178] Johnson and Hitchcock, 16.

catalog that became "a kind of Bible at Harvard and across the United States."[179] This "Bible" of Johnson and Hitchcock allowed architecture schools across the nation to become increasingly aware of the principles of modernism and contemplate how best to incorporate them into their curricula.[180]

Among these American architectural institutions, Harvard University's newly formed Graduate School of Design was the most active in its pursuit of a complete modernist revision of its architectural approach.[181] Although "the reform movement in the School of Architecture" had been developing since the mid 1920s, the School "still needed a catalyzing figure to push forward its agenda of modernism."[182] When the search for a chair of the new GSD began in 1936, the top three candidates were coincidentally three of the major architects featured in the International Style Exhibit.[183] While Mies van der Rohe and J. J. P. Oud were both considered, Gropius whose "celebrity status [had been] solidified by the exhibition catalogue," was deemed the most "practicable" person for the position.[184] Arriving at Harvard in the spring of 1937, Gropius made his radical vision known through lectures at the GSD and in Boston's architectural circles.[185]

In these lectures, Gropius praised his Bauhaus approach to architectural training that was "based on the belief that the machine would liberate people from the oppression of labor and

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[179] Alofsin, 83.
[180] Alofsin, 83.
[181] Alofsin, 11. The Graduate School of Design was created in 1936, although the architecture program at Harvard was started in 1895.
[182] Alofsin, 112. As the first dean of the GSD, Joseph Fairman Hudnut was extremely influential in promoting modernism and was responsible for Gropius being hired (Alofsin, 12-13).
[183] Alofsin, 131.
[184] Alofsin, 83 remark on Gropius' celebrity status. Alofsin, 131 reference to Gropius as the most "practicable" person for the position, quoting Hudnut. Alofsin notes that there is no "precise indication of the reasons for the choice."
[185] Alofsin, 135. Gropius also lectured at the Boston Architectural Club.

thereby open the creative impulses," furthermore he asserted that "its education programs of theoretical and manual training would lead to creative industrial production."[186] While he believed that the entire American educational system should conform to this "homogeneous fundamental training," Gropius hoped that specifically for the Harvard architecture student this reformed education would lead to the creation of "true genuine forms out of the technical, economical and social conditions in which he finds himself instead of imposing a learned formula."[187] For Gropius and the modernists who would come to imitate his educational approach, design should be inspired not by classical tradition which they saw as a hindrance to creativity, but by the "biological, social, technical and artistic problems" that required an architectural response.[188] While Gropius was not solely responsible for the modernist transformation of Harvard's architecture program, his radical architectural theories certainly enlivened the modernist spirit at Harvard.[189]

Soon after Gropius arrived at Harvard, Mies van der Rohe accepted a position at the new Illinois Institute of Technology in 1937, where he not only employed the Bauhaus ideals in the curriculum, but also designed the entire campus according to these ideals (Plate16-17).[190] As some of the first European modernists to infiltrate American architectural programs, Gropius and Mies were largely responsible for the wider acceptance of modernism in the United States.[191] Like Gropius and Mies, many other European modernists began accepting positions at American

[186] Alofsin, 136.
[187] Alofsin, 137, quoting a lecture of Gropius.
[188] Alofsin, 137.
[189] Alofsin, 12-13.
[190] Alofsin, 133.
[191] Ching, 723.

universities over the next decade, some seeking refuge from the Nazi Regime.[192] While the built products of the modernist transformation of the GSD curriculum would not be created until after the War, architecture schools across the nation began to look to the GSD as a model for "the path to modernist design."[193]

Although the transition to modernism at Harvard's GSD had been rapid, for most American architecture schools this change was a gradual process.[194] As the Depression worsened, creating mass unemployment and an overall sense of hopelessness, architecture schools across the nation saw pedagogical reform as the only answer.[195] To many professors and students, the Beaux-Arts curriculum was based on "grand, anachronistic aspirations and theories" and seemed irrelevant in the difficult climate of the Depression years.[196] While doubts about the suitability of the Beaux-Arts method contributed to calls for reform, the eventual domination of modernism in architectural curricula was largely due to the individual efforts of administrators and professors at top architecture schools. As the nation's first academic architecture program, MIT's School of Architecture and Planning employed the Beaux-Arts methods until 1944, when the new dean, William Wilson Wurstler, began to shift the school's design emphasis towards modernism.[197] Similarly, Yale began its modernist transformation in

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[192] Pearlman, Jill. *Inventing American Modernism: Joseph Hudnut, Walter Gropius, and the Bauhaus Legacy at Harvard*. Staunton: University of Virginia Press, 2007. 1.
[193] Pearlman, 1.
[194] Bacon, Mardges. *Le Corbusier in America: Travels in the Land of the Timid.* Cambridge: MIT Press, 2003. 279.
[195] Alofsin, 248. As Alofsin describes, "Following the past and anything associated with it—tradition, political conservatism, and values of the status quo—somehow had played a role in creating economic chaos, hardship and suffering. The rejection of the past and the search for a new ideology of the future was a natural reaction to this failure—a view also embraced by radical European modernists at the beginning of the twentieth century."
[196] Pearlman, 51.
[197] Nauman, Robert Allen. *On the wings of modernism: the United States Air Force Academy*. Champaign: University of Illinois Press, 2008. 142.

1939 with the appointment of "the young modernist Wallace Harrison as associate professor of design."[198] When modernist G. Holmes Perkins, who had taught alongside Gropius at Harvard's GSD, accepted a position at the University of Pennsylvania as dean of the School of Fine Arts in 1951, he made sweeping changes to the curriculum and the faculty, ridding the school of its Beaux-Arts character in favor of modernism.[199] This trend of radical pedagogical reorientation that began in the late 1930s continued through the 1940s and 1950s across the United States resulting in an "academic revolution."[200] Looking to the GSD as a model, American architecture programs that had utilized the methods of the École since their establishment were now completely "reformed in the Bauhaus image."[201]

While the building industry stagnated during the Depression and Second World War, the end of the war brought great economic prosperity for the United States, resulting in the largest building boom this nation has ever experienced. As art historian Anthony Alofsin points out, "Modernism now had its greatest opportunity to enter mainstream American life."[202] Returning veterans needed homes, jobs, and education, and the recently reformed architecture schools strove "to create a new body of modern professionals to satisfy an overwhelming demand for buildings."[203] As the capitalist world reconstructed itself following the war, American corporations became powerful leaders in the postwar economy.[204] Seeing the International Style as "a symbol of progress" and truly representative of the future, corporate powers commissioned

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[198] Bacon, 281.
[199] "G. Holmes Perkins, Dean and Architect." *University of Pennsylvania Almanac.*Vol.51. No. 2. 7 Sept 2004. Web. Accessed. 31 March 2013.
[200] Larson, Magali Sarfatti. *Behind the Postmodern Facade: Architectural Change in Late Twentieth-Century America*. Berkeley: University of California Press, 1993. 48.
[201] Larson, 48. Quoting Sybil Moholy-Nagy.
[202] Alofsin, 196.
[203] Alofsin, 196.
[204] Larson, 67.

modernist structures to accommodate their needs and demonstrate their prominent role in the new age of American hegemony.[205] In his illustrative description of the changing postwar cityscape, architectural historian William Jordy writes; "Overnight, it seemed, the skyscraper silhouette of brick and stone at the heart of American cities gave way to highly polished reticulated metal and glass walls nearby. In the suburbs and countryside, a comparable style appeared in low, spreading shopping centers, schools and industrial complexes. From the United States, the style spread throughout the world."[206] The low cost of prefabricated, industrial materials and the speed at which they could be assembled greatly contributed to the growing popularity and eventual triumph of modernism as the dominant architectural style in America.[207]

As the modernist skyscraper came to symbolize American capitalism following the war, it served as the most visible representation of modernism's dominance.[208] While the first modernist skyscraper was constructed before the outbreak of World War II, it was not until after the war that the form was replicated in great quantity.[209] In applying modernist principles to the this form, architects designed enormous steel-framed towers that made liberal use of glass and steel.[210] Some early examples include Pietro's Belluschi's Equitable Building in Portland, Oregon (1948), the United Nations Secretariat in New York (1949), Mies van der Rohe's Lake Shore Drive Apartments in Chicago (1948-51), and the Lever House designed by Gordon

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[205] Larson, 67.
[206] Quoted in Larson, 48.
[207] Larson, 49.
[208] Larson, 48.
[209] Larson, 48. Designed by American architect George Howe and Swiss architect William Lescaze, the Philadelphia Savings Fund Building (1929-1932) was the first modern skyscraper built. While "European architects had been designing modern skyscrapers for a decade" for competitions such as the Chicago Tribune Tower competition in 1922, these designs were never built, thus Howe and Lescaze's "overtly unornamented" skyscraper was the first modern skyscraper constructed (Handlin, 199-200).
[210] Handlin, David. *American Architecture: Second Edition.* New York: Thames and Hudson, 2004. 246.

Bunshaft of Skidmore, Owings and Merrill (1952-54). (Plates 18, 15, 19, 20)[211] Produced by the architectural firm known as the "leading provider of towers for the corporate world," the Lever House became a model for "corporate America's ubiquitous glass and steel presence."[212] While these glass towers were simple to replicate on account of their inexpensive, factory-made materials, a recent study has found they are "wildly energy-inefficient."[213] Specifically, the single-glazed curtain walls, originally so highly exalted, "leak heat like a sieve," furthermore, the structure is generally too weak to support a more "energy-efficient, double- or triple-glazed glass."[214] The "un-green" nature of these buildings was of no concern to their architects, however, as energy was inexpensive at the time of their construction.[215] Nevertheless, these sleek corporate towers demonstrate the danger of subscribing to the modernist faith in new technology.

As American architects utilized modernist materials and principles without encouraging social reform, this growing association of the modernist aesthetic and capitalist enterprises demonstrated that modernism was indeed, a style, [and did not constitute] a completely "new architecture," as Le Corbusier had argued.[216] Still, the American interpretation of modernism maintained the idea that through the use of new technologies and materials, modernist architecture embodied progress, making then contemporary traditional design seem antiquated.

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[211] Larson, 49.
[212] Larson, 48.
[213] Karni, Annie. "Landmarks Battle Turns Green." *Crain's New York Business.* 24 March 2013. Web. Accessed 2 April 2013. The study discussed in Karni's article was conducted by Terrapin Bright Green consulting firm. It found that most modernist skyscrapers are so energy inefficient that even if they were replaced with taller buildings they would still "leave less of a carbon footprint than maintaining and running these buildings as they are."
[214] Karni, "Landmarks Battle Turns Green."
[215] Karni, "Landmarks Battle Turns Green."
[216] As one of the most vocal members of CIAM, Le Corbusier expressed the desire of the group to see social reform through architectural reform (Giedion, 696). For more on the irony of corporate modernism see Wolfe, Tom. *From Bauhaus to Our House.* New York: Picador, 2009.

While the individual interpretations of the style varied, this belief that modernist architecture represented "the height of modernity" pervaded throughout the latter half of the twentieth century.[217]

[217] Karni, "Landmarks Battle Turns Green." For further discussion of this idea see Semes, 93.

Chapter 2:

The Preservation of Classicism during the Modernist Dark Ages

As Modernism dominated mainstream architecture following the war, classicism was seriously threatened with being completely stamped out of architectural practice. By the 1960s, Modernism drove academic architecture programs across the world and had come to be considered by the architectural establishment the only acceptable style appropriate for the modern age.[218] The closing of the École des Beaux Arts's School of Architecture in 1968 seemingly indicated an end to the continuation of traditional design education.[219] In spite of its exclusion from the academic setting, however, classicism was certainly not entirely forgotten and traditional architecture continued to be produced "albeit in a weakened form."[220] This "weakened form" of classical architecture, most often seen in the private residential sector, was largely due to the misapplication of traditional elements and principles by builders and architects who were either unable or unwilling to receive proper training in classicism but still desired to call upon architectural tradition in their designs.[221] A few traditional practitioners, who had received training under the last of the academically trained classical architects, were able to design "admirable buildings," but such commissions were largely ignored by the architectural establishment. [222] Still, it is worth focusing on those rare instances that allowed the classical tradition to continue in spite of modernism's dominance.

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[218] Amundson and Miller, 270.
[219] Stanek, Lukasz. *Henri Lefebvre on Space: Architecture, Urban Research, and the Production of Theory*. Minneapolis: University of Minnesota Press, 2001. Web. Accessed 2 April 2013. 28.
[220] Semes, 93.
[221] Amundson and Miller, 270.
[222] Semes, 93.

One of the most significant figures of late twentieth-century classicism is British architect Quinlan Terry.[223] After graduating from London's Architectural Association, Terry studied under Raymond Erith and joined his Dedham-based architecture practice in 1968.[224] At this time, Erith's traditional style was considered by architectural critic Ian Nairn "not a pastiche of a past style but a serious attempt to make classicism work in the second half of the 20th century."[225] Having started his practice in 1928, Erith's career ironically peaked "at the apex of Modernist hegemony in the 1960s."[226] So great was the authority of modernist thought in the establishment at this time that Erith and Terry's traditional design for King's Walden Bury, Hertfordshire (1969-1971) was "wrongly regarded as the last traditional country house that would ever rise."[227] When Erith died in 1973, Terry took over the practice and continued to receive commissions for private houses and public universities and developments, such as Richmond Riverside (Plate 21).[228] Today, Terry's firm is the oldest existing classical architectural practice in the world.[229] From the beginning, Terry's use of classical principles has been criticized by the architectural establishment as "backward looking tripe" and even "Wren on steroids."[230] Yet, his popularity outside of the architectural establishment is demonstrated by the number of commissions he

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[223] Watkin, David. "Something to Love Among the Ruins." *City Journal.* Summer 2010. Vol. 20. No. 3. Web. Accessed 2 April 2013.
[224] "Quinlan Terry." *University of Notre Dame: School of Architecture*. 2013. Web. Accessed 2 April 2013.
[225] Powell, Kenneth. "Raymond Erith's Library at Lady Margaret Hall, Oxford." *The Twentieth Century Society*. November 2004. Web. Accessed 2 April 2013.
[226] Powell, Kenneth. "Raymond Erith's Library at Lady Margaret Hall, Oxford."
[227] Watkin, David. "Something to Love Among the Ruins." *City Journal.* Summer 2010. Vol. 20. No. 3. Web. Accessed 2 April 2013.
[228] "Projects: Public." *Quinlan & Francis Terry LLP*. 2013. Web. Accessed 2 April 2013.
[229] "Practice." *Quinlan & Francis Terry LLP*. 2013. Web. Accessed 2 April 2013. When Quinlan Terry's son joined the practice changed its name.
[230] Brussat, David. "Donnybrook at Chelsea Barracks." *Architecture Here and There Blog.* 30 April 2009. Web. Accessed 2 April 2013. Brussat quoting London *Evening Standard* writer, Rowan Moore.

continues to receive.[231] The continuation of classicism in Britain was not only supported by Terry's clients, but also by Prince Charles who began to publicly express his distaste for modernism in the 1980s.[232] In 1987 Prince Charles founded the Prince's Foundation for the Built Community which encourages the use of traditional architecture and urbanism to improve the built environment. While Quinlan Terry's strict adherence to classical principles and Prince Charles' special efforts to promote classicism demonstrated a desire to keep traditional architecture alive, this interest in continuing classicism was not restricted to the United Kingdom.

As the modernists maintained control of the architectural establishment in mid-century America, classicism was nearly eliminated from mainstream architecture. With the modernist takeover of academic architecture programs, the traditional styles and design principles were disregarded as merely expressions of past time periods that modern technological advancement had made irrelevant.[233] In spite of this modernist dismissal of historical precedent, the demand for traditional design aesthetic still existed in residential architecture.[234] As previously mentioned, this demand was met by architects who had not received classical training, and their work reflected this lack of knowledge.[235] However, a desire to revive classicism in its true forms persisted.[236] One of the most vocal advocates of classicism was the historian Henry Hope

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[231] Brussat, "Donnybrook at Chelsea Barracks."
[232] Amundson and Miller, 270.
[233] Semes, 146. The complete overhaul of Beaux-Arts curricula is recalled on numerous occasions that describe Modernist instructors literally throwing out the classical models originally intended to inspire architecture students. See Pearlman, 54-57.
[234] Semes, 93.
[235] Semes, 93.
[236] Semes, 93.

Reed.[237] Turning his attention to architecture in the 1950s, Reed's criticisms of the style that was beginning to dominate the urban landscape were considered so unconventional by the modernist architectural establishment that they largely ignored him.[238] In one of his first articles for a 1952 issue of Yale's *Perspecta,* Reed asserted, "We have sacrificed the past, learning, the crafts, all the arts on the altar of 'honest functionalism,' … In so doing we have given up …the very stuff which makes a city beautiful, the jewels in the civic designer's diadem."[239] Reed's later writings maintain this distaste for modernism and call for an architecture that utilizes traditional principles and adapts them for contemporary needs.[240] With this mission in mind, Reed co-founded "Classical America" in 1968, an organization which offered lectures and classical drawing courses.[241] While this attempt to promote classicism was significant in continuing classical education on a very small scale, the organization could not begin to compete with the modernist architecture schools.

Although Henry Hope Reed's efforts certainly contributed to the continuation of classicism, Leon Krier has been hailed as "the most important polemicist for the architecture of traditional cities based on classical principles."[242] A native of Luxembourg, Krier studied architecture at the University of Stuttgart, but after one year became disenchanted with the school's modernist outlook and in 1971 took a position in the practice of British architect Sir

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[237] Gray, Christopher. "Streetscapes/Henry Hope Reed; An Architecture Critics Who Still Loves the Classics." *The New York Times.* 19 Sept 1999. Web. 31 March 2013. 1-2.
[238] Gray, 1.
[239] Gray, 1. Quoting Reed. *Perspecta* is Yale's architecture magazine
[240] Gray, 1. See *American Skyline* (1955), "The Next Step Beyond Modern" (1957), *The Golden City* (1959).
[241] Gray, 2.
[242] Amundson and Miller, 270.

James Stirling.[243] In Krier's opinion Stirling "was interested in traditional architecture, but would never dare to call it such," as it would take ten years for both architects "to understand what was going on and why modernism was so shallowly based." [244] Following his year with Stirling, Krier worked on projects in Luxembourg to rebuild the sections that had been destroyed by the war leading him to the realization that his modernist methods were "really not adequate to operate on those scales."[245] While he aimed to maintain the traditional urban patterns of his native country in his own work, he watched as modernism invaded other areas of Luxembourg.[246] This experience of seeing large-scale modern development intrude upon the city inspired Krier in his future work and eloquent arguments for traditional architecture.[247]

Entering the academic field in 1974, Krier accepted positions over the course of the following decade at the Royal College of Art in London, Princeton University, the University of Virginia, and Yale, and began publishing his criticisms of Modernism and studies of the traditional urban environment, encouraging the continued use of the principles that created the admired cities of the past.[248] Krier's critiques assert that modernist architecture is "a totalizing production which has substituted that which has been traditionally appreciated as truly engaging in buildings—including the accumulation of thousands of years of architectural accommodation to social, political, and environmental circumstances—which classical architecture is able to

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[243] Hetherlington, Peter. "Interview: Leon Krier, "the Godfather of Urban Soul." *The Guardian.* 27 June 2006. Web. Accessed 31 March 2013.
[244] Hetherlington, "Interview: Leon Krier, "the Godfather of Urban Soul." Quoting Krier.
[245] Hetherlington, "Interview: Leon Krier, "the Godfather of Urban Soul."
[246] Thompson-Fawcett, Michelle. "Leon Krier and the Organic Revival." *Planning Perspectives*. Vol 13. 1998. Web. Accessed 31 March 2013. 171. Quoting Krier.
[247] Thompson-Fawcett, 171. Hetherlington also makes not of the impact this experience had on Krier.
[248] Hetherlington, "Interview: Leon Krier, "the Godfather of Urban Soul." Summary of his overall thesis derived from Amundson and Miller, 270.

adapt."[249] Krier does not call for a return to the past, but identifies the beneficial qualities of traditional urban environments and sees their potential to create viable, sustainable communities on a human scale.[250]

In 1988 Krier had the opportunity to employ these concepts in new development when Prince Charles invited the architect to act as master planner for his new urban extension of Poundbury (Plate 22).[251] This community, combining social and private housing is still growing today demonstrating the success of traditional urbanism.[252] While Poundbury serves as arguably the best demonstration of Krier's ideas, it is one of few built examples of Krier's work, and he has more exerted a more significant influence on architects and urbanists through his writings and lectures.[253] Andres Duany, the architect-urbanist who has been largely responsible for the development of the New Urbanism movement, credits Krier with changing the course of his career with one lecture: "I couldn't go on designing these fashionable tall buildings, which were fascinating visually, but didn't produce any healthy urban effect. They wouldn't affect society in a positive way."[254] Krier's perspective allowed Duany and other modernist architects to understand the greater context in which they worked and the significant impact their buildings have on the larger community.[255] As the most influential polemicist to speak out against the

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[249] Amundson and Miller, 270.
[250] Stern, Robert A. M. "Forward." *The Architecture of Community*. Washington, D.C.: Island Press, 2009. Web. Accessed 31 March 2013. Xviii.
[251] Hetherlington, "Interview: Leon Krier, "the Godfather of Urban Soul."
[252] Hetherlington, "Interview: Leon Krier, "the Godfather of Urban Soul."
[253] Stern, "Forward." *The Architecture of Community*. Xviii.
[254] "Dreihaus Prize Recipients: Leon Krier." *University of Notre Dame: School of Architecture*. 2013. Web. Accessed 31 March 2013.
[255] "Dreihaus Prize Recipients: Leon Krier." *University of Notre Dame: School of Architecture*.

Modernist establishment, Krier continues to exert his influence today in an architectural environment that is still controlled by modernism.[256]

The dominance of modernism is demonstrated by the lack of architecture schools that provide any type of instruction in traditional design. Of the one hundred and twenty-three academic institutions that house architecture programs in the United States, only Notre Dame, the University of Miami, and Boston Architectural College offer instruction in classicism.[257] As the only architecture school in the nation strictly devoted to classicism, Notre Dame plays a significant role in the continuation of traditional design education. Like other American architecture schools, Notre Dame's School of Architecture underwent a modernist reform in the 1950s disregarding its traditional roots.[258] This embrace of modernism persisted until 1989, "when the school's accreditation was put on probation," and the search began "for a new chairman to lead the school to good NAAB [National Architectural Accrediting Board] standing."[259]

In 1993, professor and classical architect Thomas Gordon Smith accepted the position and reintroduced classicism into the curriculum.[260] While Smith's conversion of the program was initially "fraught with difficulties and conflicts" resulting in two years of low enrollment, this transition period was short lived, and the program has only continued to grow over the past

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[256] David Watkin quoted by Nikos Salingaros. "Léon Krier." *Zakuski*. Web. Accessed 31 March 2013.
[257] "Architecture Programs." *National Architectural Accrediting Board.* Web. Accessed 31 March 2013.
[258] "Many Canons, Many Conversions." *Students for Classical Architecture Blog-Notre Dame Chapter.* 28 Sept 2012. Web. Accessed 31 March 2013.
[259] "Many Canons, Many Conversions." *Students for Classical Architecture Blog-Notre Dame Chapter.*
[260] "Many Canons, Many Conversions." *Students for Classical Architecture Blog-Notre Dame Chapter.*

twenty years.[261] In terms of its classical curriculum, Notre Dame has not simply returned to the Beaux Arts tradition that predated the modernist transformation. The École des Beaux Arts and its pedagogy existed within a culture dominated by traditional design and was driven by an exuberant interpretation of classicism.[262] As the current program was created in an effort to recover and promote classicism, it produced its own approach to classical design principles and traditional architectural education.[263] This approach encourages variation in the interpretation of classical principles that respond to contemporary needs.[264] Attempting to meet the needs of today, Notre Dame's curriculum extends its traditional mindset to urbanism, emphasizing the importance of architecture within a greater context.[265]

Like Smith, the architects and professors who make up the faculty are products of modernist architectural education and are self-taught classicists, sometimes referred to as "Classical Converts."[266] In the Postmodern age where it was deemed acceptable to supplant modernist forms with classical ornament, these converts "came to the realization that there could be more to architecture than modernism," and chose to respect the classical principles in their entirety believing they lead to "beauty and reason made manifest in architecture."[267] In the view of Notre Dame professor Carroll William Westfall, "rejecting tradition or launching a radical

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[261] "Many Canons, Many Conversions." *Students for Classical Architecture Blog-Notre Dame Chapter.*
[262] Grifflin, "Architects of the State: Rise and Fall of the State."
[263] Westfall, Carroll William. "Approach: Traditional and Classical Architecture and Urbanism." *University of Notre Dame: School of Architecture.* 2013. Web. Accessed 31 March 2013.
[264] Westfall, "Approach: Traditional and Classical Architecture and Urbanism."
[265] Westfall, "Approach: Traditional and Classical Architecture and Urbanism."
[266] "Many Canons, Many Conversions." *Students for Classical Architecture Blog-Notre Dame Chapter.*
[267] "Many Canons, Many Conversions." *Students for Classical Architecture Blog-Notre Dame Chapter.*

transformation at its expense as occurs in most other schools…deprives a person of the inexhaustible fund of experience tradition makes available for guiding leaders."[268]

While the transformation of Notre Dame's School of Architecture was a significant development in the traditional architecture movement, the controversy surrounding the appointment of Robert A. M. Stern as dean of Yale's School of Architecture demonstrated that the architectural establishment was far from accepting classicism as a legitimate form of contemporary design.[269] Similar to the "classical converts" of Notre Dame's faculty, Stern received a modernist architectural education, graduating from Yale's School of Architecture in 1965.[270] Having studied under postmodernist Robert Venturi, Stern opened his firm in 1970 and followed Venturi's example making ironic historic references in his design work.[271] In the 1980s, however, these references became more literal, as Stern began to see the value of traditional design and aimed to adhere to its principles.[272] While his New York firm grew and his traditional approach to design developed, Stern served on the faculty of Yale and Columbia teaching courses in architectural history and historic preservation.[273] When Stern was offered the position at Yale in 1998 as dean of the School of Architecture, many figures in the modernist dominated architectural field were astonished and feared Stern would transform the school's modernist curriculum.[274] Referred to in one *Architecture* magazine editorial as "a suede-loafered

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[268] Westfall, "Approach: Traditional and Classical Architecture and Urbanism."
[269] Iovine, Julie V. "At Home With: Robert A. M. Stern; A Dean's Remodeling Job: Himself." *New York Times.* 1 July 1999. Web. Accessed 30 April 2013.
[270] Iovine, Julie V. "Robert Stern to Be Yale's Architecture Dean." *New York Times.* 03 Sept 1998. Web. Accessed 30 April 2013.
[271] Branch, Mark Alden. "Blast from the Past." *Yale Alumni Maganize*. March 1999. Web. 30 April 2013.
[272] Branch, "Blast from the Past."
[273] Iovine, "Robert Stern to Be Yale's Architecture Dean." In addition to his role of architect and professor, Stern has also been an active preservationist and writer throughout his career.
[274] Iovine, "At Home With: Robert A. M. Stern; A Dean's Remodeling Job: Himself."

sultan of suburban retrotecture" and a "notorious academic curmudgeon," Stern was brutally attacked by members of the architectural establishment for his traditional leanings.[275] In spite of their fears that Stern's appointment meant the end of the modernist curriculum at Yale, Stern made no such attempt to rid the school of modernism.[276] The hostility of the architectural establishment in reaction to Stern's appointment demonstrates the authority modernism stil has over the field of architecture.

Although Notre Dame is the only architecture school to fully embrace classicism, University of Miami and more recently Boston Architectural College have started offering programs in Classical Architecture in addition to modernist design classes.[277] Each school's website acknowledges not only the value of classical tradition but the increasing demand for it that can only be met through proper instruction.[278] This sentiment is eloquently expressed on BAC's website which states, "the current revival of classical architecture, interior decoration and urban design is predicated on the growing desire to again produce our built environment with beauty, dignity and order utilizing classical principles."[279] As the twentieth century resulted in the loss of "the knowledge and skill sets to produce architecture that withstands the tests of times," these programs are designed to teach architecture students the traditional principles that allow for the creation of beautiful architecture.[280] Along with Notre Dame's School of

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[275] Iovine, "At Home With: Robert A. M. Stern; A Dean's Remodeling Job: Himself." Quoting Reed Kroloff's 1998 editorial in *Architecture* magazine.
[276] Iovine, "At Home With: Robert A. M. Stern; A Dean's Remodeling Job: Himself."
[277] See "Classical Architecture: Courses and Certificate." *Boston Architectural College.* And "Classical Architecture" *University of Miami: School of Architecture*.
[278] Ibid.
[279] "Classical Architecture: Courses and Certificate." *Boston Architectural College.*
[280] "Classical Architecture: Courses and Certificate." *Boston Architectural College.*

Architecture, these two programs are aided in their mission by the Institute of Classical Architecture and Art.[281]

Formed in 2002 the ICAA is a nonprofit organization "dedicated to advancing the classical tradition in architecture, urbanism and their allied arts…through education, publications, awards, and advocacy." As a collaboration between Classical America, originally founded in 1968, and the Institute of Classical Architecture, started in 1991, the ICAA consists of fifteen regional chapters across the country and is affiliated with the UK's Traditional Architecture Group.[282] In its efforts to advance classical education, the ICAA presents lectures and exhibits, offers design courses, publishes and reprints literature on classical design, and awards achievements in the field of traditional architecture.[283] While the ICAA has grown significantly since 2002, it has had a minimal influence on mainstream architecture. Nevertheless, its growth along with the reestablishment of classicism at Notre Dame, the creation of the U of Miami's and BAC's Classical Programs, and the developing classical movement in Europe demonstrate resurgence of traditional architecture.[284] United in their recognition that modernism has negatively affected the field of architecture and the built environment as a whole in its intentional rejection of the past, these advocates have chosen to study the pre-Modernist approach to building.[285] Having studied this approach that defined architecture from roughly the 6th century BC up until the twentieth century, traditional architects apply this wealth of

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[281] "About Us." *Institute of Classical Architecture & Art.*
[282] "About Us." *Institute of Classical Architecture & Art.*
[283] "About Us." *Institute of Classical Architecture & Art.*
[284] Gabriel, Jean-François. *Classical Architecture for the Twenty-First Century: An Introduction to Design.* New York: W. W. Norton & Company, 2004. Print. 9. Gabriel explains, "there has been a tremendous increase of interest in classical architecture in the last fifteen years. More and more, people want to live and work in traditional buildings, endowed with charm and dignity, and many practicing architects are re-learning way to design timeless, people-friendly environments."
[285] Westfall, "What are the Preservationists Preserving?" 225.

knowledge in their contemporary work.[286] As architectural historian and Notre Dame professor Carroll William Westfall explains, "traditional architecture…draws on the depth of knowledge and breadth of experience with building to confront ever-new challenges with ever-new materials and techniques to address ever-new activities."[287]

[286] Westfall, "What are the Preservationists Preserving?" 225.
[287] Westfall, "What are the Preservationists Preserving?" 225.

Chapter 3:

The Modernist Rejection and Response to the Traditional Design Principles

While Modernist architectural doctrine requires that each architect's contribution be markedly different from that which proceeds it in order to achieve progress, traditional architecture is "based on unambiguous rules that can be clearly articulated" and are therefore easily transmitted.[288] The modernist requirement for complete originality is not only unattainable but also depends entirely on the talent of the individual. Not every architect will be a genius in his own right, however, and most will need to look at past examples to achieve successful designs. Traditional architecture recognizes this fact and invites the architect to learn from the past and employ the principles that have guided its design for thousands of years. Although these principles and the canons they encompass "have been formulated and tested throughout centuries of experiments," they do not necessarily guarantee a good design, rather they provide a "framework within which the architect might search for harmony."[289] Because these principles defined Western architecture prior to modernism, they provide an explanation for "how buildings as diverse as those enclosing many historic streets and squares, with their variety of styles, ages, materials, and uses can nevertheless form an ensemble marked by congruity."[290] While the exact principles are unchanging, they exist within broader traditions whose adaptations of them vary considerably."[291] Nevertheless, the styles that have come out of these different traditions are "inherently consonant with one another because they share such a common set of premises."[292]

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[288] Gabriel, 9.
[289] The first quotation comes from Gabriel, 12. Semes notes on page 67 of *The Future of the Past* that the principles "are not prescriptive for design or a set of rules that will guarantee a good result." The second quotation comes from Semes, 69.
[290] Semes, 67.
[291] Westfall, "What are the Preservationists Preserving?" 225.
[292] Semes, 68.

An examination of these premises that created the architectural traditions of Western civilization demonstrates how modernists chose to completely reevaluate and essentially reject these principles believing it was the only path to architectural progress.[293] As these principles are based on the human scale and an intimate understanding of how humans relate to architecture, their rejection by modernists has led to the creation of an architecture that often disorients, shocks, overwhelms and even disturbs the viewer.[294] Believing "our senses" were merely "slaves to habits built up during the centuries," the modernists disregarded the objective standards of beauty developed through architectural tradition.[295] A study of the traditional principles proves their superiority to the alternative architectural responses offered by modernists. As the traditional approaches to space, structure, elements, composition, proportion, ornament, and character are founded on a desire to apprehend beauty in design, these principles guide the creation of truly successful works of architecture.

Traditional architecture conceives of space as a "solid body" that is well defined with a "distinct shape, scale, proportion, and size."[296] The traditional spatial unit is a room that is understood broadly as existing either indoors or outdoors but is always "defined by firm boundaries."[297] While it must be bounded, the shape of the classical room can vary significantly as it may be "large or small, simple or complex, polygonal or circular."[298] Whatever the shape, this defined space is "governed by axes that provide a sense of orientation and movement" that essentially invite the viewer to move through the space providing a source of animation and

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[293] This explanation of the traditional principles and how they contrast with modernism is significantly derived from Steve Semes' comparison found on pages 45-69 and 91-113 of *The Future of the Past.*
[294] Semes, 106.
[295] Giedion, 484.
[296] Semes, 49.
[297] Gabriel, 20.
[298] Gabriel, 20.

sense of direction.[299] In comparison to this traditional treatment of space, modernists strived to create a new space conception that intentionally blurred the defined spaces in buildings.[300] Having identified the "free plan" as one of the "Five Points Towards a New Architecture," Le Corbusier exalted the new building materials and techniques, specifically steel and reinforced concrete that allowed him to eliminate structural walls from the interiors of his buildings.[301] Such free plans of modernist design "accommodate space as if it were a kind of flow that may be deflected and corralled, but not enclosed, by walls, ceilings and floors that are rendered as abstract floating planes."[302] This spatial concept persists today in contemporary modernist work that "renders architectural elements as weightless screens in a limitless spatial field, with the powerful suggestion of instantaneity, mobility, and ephemerality (Plate 23)."[303]

In spite of its potential power, such spaces that lack defined boundaries often produce anxiety by overwhelming the viewer, and it is generally recognized that "there is something satisfactory in being inside a well-defined space."[304] This point is demonstrated when each spatial concept is applied to urban design.[305] While the traditional space conception creates a comfortable outdoor room enclosed by solid buildings (Plate 24), the modernist understanding sets individual buildings in an "extensive spatial field" separated from one another with desolate areas in between (Plates 15 and 16).[306] As the tight-knit buildings that surround Piazza Navona act as urban walls bounding a large area, the space is comfortable and easily comprehended by

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[299] Semes, 50. Demonstrating the significance of this governing axis in traditional architecture, the École des Beaux Arts stressed the importance of the *précis* in design.
[300] Gabriel, 20.
[301] Le Corbusier, "Five points towards a new architecture: 1926."
[302] Semes, 94-95. Frank Lloyd Wright and Mies van der Rohe were two other architects that stressed the importance of unenclosed space.
[303] Semes, 95.
[304] Gabriel, 20.
[305] Semes, 95.
[306] Semes, 95.

its dwellers. On the other hand, Mies van der Rohe's Illinois Institute of Technology campus and the United Nations Headquarters in New York both abandon their viewers in an enormous daunting space, failing to provide any sense of orientation.[307] Whether interior or exterior, modernist spaces typically ignore the individual who experiences them, in comparison to traditional spaces that welcome the individual providing him with a sense of place.[308]

As traditional space is defined with the intention of appealing to the human sensibility, similarly a traditional structure is designed to convey its strength and stability, thereby offering the viewer a sense of security.[309] As architect, preservationist, and architectural historian Steve Semes explains, "because all earthbound structures are subject to gravity and because our sense of well-being demands that we feel secure inside and outside of buildings, not only must a structure succeed in resisting gravitational forces to remain standing, it must be seen to be doing so."[310] Thus in order for humans to feel truly comfortable in a building, it must express structural durability. Traditional architecture indicates its "tectonic logic" through such details as the "proportion of a building's height to its width," the placement of openings within the walls, wall thickness, and "the grace with which the implied loads are carried down through the structure to the ground."[311] The "apparent tectonic structure need not be the actual means of supporting the building," however, as traditional architecture often incorporates decorative structural elements or what Semes refers to as "fictive structure."[312] Examples of fictive structure include a horizontally-articulated building elevation with a rather massive lower level and seemingly lighter upper levels or window openings that "are supported on string courses or

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[307] Semes, 95.
[308] Semes, 51.
[309] Semes, 51.
[310] Semes, 51.
[311] Semes, 51-52.
[312] Semes, 52.

pedestal-like panels rather than 'floating' on the wall." (Plate 25)[313] The ultimate purpose of conveying structure, whether fictive or actual, is to fulfill the viewer's expectation that the building "recognizes the reality of gravity" and can sufficiently support its load.[314] By doing so, the architecture makes the individual experiencing the building feel comfortable, allowing her to comprehend and appreciate the other aspects of design.

Contrasting with this strong connection to the ground and specific desire to convey stability, modernist doctrine required the use of new materials and building technologies, especially steel and glass, to convey a sense of lightness in the structure's planes.[315] Because steel framing only required thin I-beams to support its load, many modernists aimed to demonstrate the structure's "architectonic honesty" and made no effort to emphasize the building's ability to support its load.[316] Moreover, modernists such as Walter Gropius were praised for camouflaging these structural supports and employing vast expanses of glass, thus challenging the human desire to see projecting parts supported by structural elements.[317] This refusal to satisfy such inherent human desires in terms of design is fundamental to modernist doctrine.[318] Instead of prioritizing the viewer's perception of the building and his subconscious need to feel secure in it, modernists made a special effort to ignore these sensory needs and

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[313] Semes, 52. These decorative structural elements generally serve functional purposes as well, such as aiding the building's drainage system.
[314] Semes, 52.
[315] Semes, 96. Semes goes further and points out that "Modernism as a style properly emerged only after the advent of new steel and concrete technologies introduced alternatives to lead-bearing masonry systems, metal-and-glass assemblies allowed the development of lightweight curtain-wall systems for building envelopes." Giedion (482) describes the new space conception "with its urge towards freely hovering parts."
[316] Giedion, 497.
[317] Giedion, 484. Referring specifically to Gropius' office building at the 1914 Werkbund Exhibition
[318] Giedion, 484.

instead sought to express extra-architectural ideas in their designs such as honesty.[319] While many modernists claimed their buildings were merely expressions of their structural systems, the varied appearance of modernist buildings that incorporate the same steel frame belies such statements.[320]

Today, contemporary modernist architects no longer see the construction methods and materials as determinants for rational architectural form.[321] Because technological advancements now allow buildings to take essentially any form the architect can imagine, rationality is rarely the basis for architectural design. [322] These contemporary works that attempt to convey "dematerialization and weightlessness" and therefore minimize or trivialize structure, often induce the same type of anxiety in the viewer as their modernist predecessors.[323] This unease results from the basic fact that the introduction of new materials does not change the human "expectation of tectonic logic."[324] In its attempt to declare "independence from the supposed imperatives of gravity," modernist architecture confuses and disorients the viewer.[325] On the other hand, traditional architecture aims to be "readable as a visual expression of stability and repose," in an effort to please the people who experience it. [326]

This "readability" extends into the third principle of traditional architecture which is the subdivision of architectural compositions into elements.[327] Semes simply defines these elements as, "bits of architecture, each of which has a name, a history, and a characteristic role to play in

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[319] Giedion, 484. For more on the application of extra-architectural concepts to architecture see Watkin, *Morality and Architecture.*
[320] Semes, 97.
[321] Semes, 97.
[322] Semes, 97.
[323] Semes, 97.
[324] Semes, 53.
[325] Semes, 96.
[326] Semes, 96.
[327] Semes, 53.

the larger composition in which it occurs."[328] These elements have the potential to unify not only one building, but an entire built environment, as a series of elements "compose a façade, a series of facades define a street, several of which make up a district centered on a small public square."[329] While the elements of different building traditions vary, all traditions create new architecture out of older architectural components.[330] As a "transformation of an ideal type," an element, such as a pediment, reminds viewers of other pediments for the way it is designed, but is its own new creation.[331] Thus due to their familiarity the elements establish a visual language and facilitate orientation in the built environment, but still allow for invention "as the designer finds new meaning in the adaptation of familiar forms."[332]

According to Semes, "the elements that most strongly demonstrate adaptability and inventiveness are the ancient orders."[333] The types of classical orders, including the Doric, Ionic, Corinthian, and their derivatives the Tuscan and the Composite, govern "the proportions and ornament of walls and spaces." (Plate 26)[334] Although the complete display of an order incorporates columns, buildings can also exhibit an implied order in which the designer omits certain elements of "decorum," while maintaining a specific order's proportions.[335] The classical orders are not utilized by all traditions, yet each tradition has elements that serve analogous

[328] Semes, 53.
[329] Semes, 53.
[330] Semes, 53.
[331] Semes, 53.
[332] Semes, 54.
[333] Semes, 54.
[334] Semes, 54.
[335] Semes, 55.

roles.[336] Regardless of the exact definition or style, the elements are "the building blocks from which traditional buildings" are made.[337]

Although modernist architecture at times incorporates components similar to elements, it fails to create a recognizable, "stable visual language."[338] These modernist elements are often abstract in meaning and form, such as the "multicolored shapes" or the "graffitilike metal grilles" that are placed on the exterior elevations of some modernist buildings.[339] Rarely does modernist architecture exhibit elements equivalent to those found in traditional architecture that establish connections in the built environment.[340] More often modernist buildings are understood as "configurations of form and space" or "abstract sculptures" in and of themselves. [341] Yet some modernists have attempted to encourage the use of elements, such as Le Corbusier with his five points of pilotis, horizontal windows, open plans, free façades, and flat terrace roofs.[342] While these elements were imitated by other modernist architects, they did not result in the creation of a cohesive typology largely due to the fact that modernist doctrine favors novelty and originality over imitation.[343] Furthermore, in their attempt to make no historical reference, these modernist elements are unfamiliar and their meaning is difficult to decipher.[344] This lack of distinctive,

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[336] Semes, 55. For example, Gothic architecture is ordered by "such elements as the aedicule, rib vault, bundled column, lancet window, flying buttress and center-occupied opening."
[337] Semes, 55.
[338] Semes, 98.
[339] Semes, 98. Specifically, Semes refers to "the multicolored shapes hanging off the side of the Jean Nouvel's Musée Quai Branly or the graffitilike metal grilles masking the exteriors elevations of Francis Soler and Frederic Druot's officies for the French Ministry of Culture, both in Paris" as examples of modernist architectural elements.
[340] Semes, 98.
[341] Semes, 98.
[342] Semes, 98.
[343] Semes, 98.
[344] Semes, 98.

recognizable elements in modernist architecture often keeps the viewer from understanding and connecting with the building.[345]

In traditional architecture, this connection is achieved by a successful composition of a building's elements.[346] A traditional form is conceived "as a whole composed of parts, and each of these parts is also a whole composed of still smaller parts."[347] The way a composition "moves from the whole to the details" is defined "by means of a process of hierarchical subdivision in which every whole is a part and every part is a whole, depending on the scale level at which it is viewed."[348] The hierarchy of scales allows the viewer to direct his attention "to different parts of a composition without losing a sense of the whole, and vice versa."[349] Thus these distinct scales are the mechanisms by which humans understand a building.[350] Specifically, humans estimate the size of a building by "the scaling factor" which is "the number of scale levels (subdivisions) a composition has in comparison to its size."[351] Following this idea, the natural assumption is that larger compositions will have more subdivisions, and when this expectation is not met, it can often surprise the viewer.[352]

In addition to overall scaling, a successful composition is also defined by the three canons of arrangement which are number, punctuation, and inflection.[353] Because "the most important goal of any composition is to create a strong center of focus," the canon of number

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[345] Semes, 98.
[346] Semes, 58.
[347] Semes, 58.
[348] Semes, 58.
[349] Semes, 58. While the details found on each scale exhibit self-similar patterns, new information can be found on each scale that differentiates one scale from another
[350] Semes, 61. For more on the hierarchy of scales and human perception see Salingaros, Nikos. *A Theory of Architecture.* Solingen, Germany: Umabu-Verlag, 2008.
[351] Semes, 61.
[352] Semes, 61.
[353] Semes, 58.

calls for an odd number of composite forms and tripartition by which the center is emphasized.[354] Punctuation promotes a graceful transition between these parts "that both separates and links adjacent parts" such as a border or frame.[355] Punctuations are more visible at important points of transition, such as where a beam rests on a column, necessitating a capital.[356] The canon of inflection recognizes that "in any composition some one element must be dominant and the others must inflect toward it," in order to prevent monotony.[357] Inflection can therefore relieve the predictability of bilaterally symmetrical compositions, while maintaining a sense of balance.[358] Achieving both coherence and complexity is the ultimate aim in the arrangement and scale of a composition, so that a viewer is able to understand and delight in a design.[359]

While traditional architecture is based on the hierarchy of composite forms, modernist composition is based on the assemblage or "unresolved juxtaposition" of large abstract shapes.[360] Unlike traditional shapes that are highly detailed and broken down on many scales for the purpose of human understanding, modernist forms are intentionally abstract and thus overwhelm the viewer.[361] As previously mentioned, modernist architecture was significantly influenced by the abstractionist painters of the early twentieth century.[362] In an effort to free themselves of what they considered "the oppressive conventions of classical pictorial composition and

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[354] Semes, 58. Tripartition is also known as the rule of three. Gabriel (28) notes that the classical emphasis on the center derives from the human anatomy as "the most important organs are found in the center."
[355] Semes, 59.
[356] Semes, 59.
[357] Semes, 60.
[358] Semes, 60.
[359] Semes, 62.
[360] Semes, 99.
[361] Semes, 99.
[362] As Giedion points out, "the work of the Bauhaus can be grasped only when the conception behind modern painting has been understood" (Giedion, 489).

perspective," these painters abstracted forms and utilized collage as a method of composition.[363] Inspired by this anti-traditional approach, modernist architects designed their buildings on the model of the collage, favoring "unresolved juxtaposition" of forms as opposed to coherent hierarchical organization.[364] Due to this rejection and the absence of articulated composite forms, modernist buildings exhibit few scales, "typically only the scale of the whole and the scale of a typical component of the building envelope system."[365] In this intentional limitation of the number of scales that would allow the viewer to easily comprehend the building, modernist aim to shock the viewer but their forms also typically evoke confusion and subconscious distress.[366]

If traditional composition establishes the qualitative relationships among a building's parts, proportion offers "a more precise set of quantitative relations" to order a design.[367] As Steve Semes explains, "proportion can be most simply understood as an ordered set of ratios governing the shapes and sizes of parts, such that these parts are regulated by a common measure, and are also visibly indefinable as subdivisions of the whole."[368] There are three ways parts can relate to one another, referred to as the proportional relationships of equality, punctuation, and differentiation.[369] Following these relationships two parts can be equal to each other; one can be significantly larger than the other, reducing it to a border or frame; "or the two can be in a balanced hierarchical relation, with neither being the extreme nor the mean.[370] In the ideal composition, the punctuations "employ the same ratio, and similarly all the differentiations

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[363] Semes, 99. Semes notes that collage was "invented by Picasso and Brague around 1910."
[364] Semes, 99.
[365] Semes, 102.
[366] Semes, 102.
[367] Semes, 62.
[368] Semes, 62.
[369] Semes, 62.
[370] Semes, 62.

are defined by a second repeated ratio." For centuries, designers have attempted to determine a system of achieving a refined composition through the ordering of these ratios, however, no exact system offers a definitive method that guarantees a beautiful design.[371] Still, the continued attempts speak to the enormous effect proportional systems have on design.[372] The effect is demonstrated by the fact that the major differences in traditional styles are often determined by the specific ratios they employ.[373] In spite of these proportional variations exhibited in styles, traditional architecture maintains a preference for overall vertical orientation following the model of human form. [374]

Contrasting with the traditional understanding of proportion based on centuries of experimentation, modernist architecture is founded on the idea of disregarding the knowledge provided by past attempts to achieve proportionality.[375] The traditional concepts of proportion, were rejected by the leaders of the modernist movement whose ideas continue to influence contemporary design.[376] For example, in opposition to the traditional approach to proportion and its emphasis on vertical orientation, Le Corbusier made horizontal ribbon windows a requirement of the "new architecture."[377] Beyond his points, Le Corbusier created his own proportional system, known as the "Modulor." (Plate 27)[378] While "this double scale of standard linear dimensions purportedly based on the standing human figure" can be applied to a façade to produce "consistent differentiations throughout the composition," the dimensions are only differentiated on the middle and larger scales, to intentionally avoid including ornamental detail

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[371] Semes, 62.
[372] Semes, 63.
[373] Semes, 63.
[374] Semes, 63.
[375] Semes, 103.
[376] Le Corbusier, "1920: Le Corbusier: Towards a new architecture: guiding principles."
[377] Le Corbusier, "1920: Le Corbusier: Towards a new architecture: guiding principles."
[378] Semes, 102.

on the small scale.[379] Thus the building does not consist of a complete proportional system on multiple scales, thereby lacking overall proportion.[380] Other modernist architects have experimented with proportionality, but generally there is an absence of "diffused proportional conformance among the parts of the modernist building," that would allow a viewer to more easily understand the composition.[381] This disinclination towards proportional systems is largely due to the modernist reliance on individual genius and originality that is "unsympathetic to a practice that implies an objective standard of beauty."[382] As the complexity of proportion requires extensive experimentation, traditional architecture provides the designer with proportional concepts that have characterized many successful compositions for centuries.[383] On the other hand, the modernist philosophy demands completely unique designs that disregard all knowledge of proportion and instead depends on the architect's ability to reconcile proportion on his own terms.[384]

Like proportion, the traditional principle of ornament and decoration are fundamental to conveying a sense of beauty in design. Although these two terms are often used interchangeably, ornament is actually defined as "embellishment in the form of repeating patterns," while decoration presents pictorial imagery.[385] Ornament directs the eye to scales in a composition that are roughly the same size or smaller than the human body.[386] As Semes explains, "classical ornament is typically derived from five categories of motifs: human, animal, botanical,

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[379] Semes, 102. The dimensions of Le Corbusier's human figure are also regulated by the Fibonacci sequence.
[380] Semes, 103.
[381] Semes, 103
[382] Semes, 103.
[383] Semes, 62.
[384] Semes, 103.
[385] Semes, 64-65. For example, a row of acanthus leaves on a molding constitutes ornament, while a painted mural in its place would be considered decoration (Semes, 64).
[386] Semes, 64.

geometric, and man-made artifacts."[387] For centuries, artists have incorporated these motifs while adapting them to express new purposes.[388] In comparison to the rhythmic repetition of ornament, decoration enriches a composition through pictorial image.[389] Examples include "murals in paint or mosaic, sculpted reliefs and panels, as well as statuary placed on the building or freestanding."[390] Together, ornament and decoration create a narrative through the generalized meanings of their symbolic forms, such as an "acanthus-clad Corinthian capital" representing life and rebirth, or a piece figural statuary in the center of an urban square evoking a sense of civic virtue.[391] This narrative is regulated by decorum which calls for ornament "to be commensurate with the purpose and status of the building."[392] A complete absence of ornament is rare, however, as it is "typically felt as a deficiency."[393]

In comparison to the traditional incorporation of ornament, modernist architecture abandons the use of ornament "as an instrument of composition" and expresses a preference for eliminating ornament altogether.[394] Because humans have an innate interest in ornament its absence from modernist architecture creates a plain, bare, and cold environment.[395] While the early modernists sought to reform ornament, simplifying motifs and modeling them on the nature of machine production, the more radical figures of the Modern Movement believed "all ornament, especially anything resembling handicraft" should be shunned.[396] One need only

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[387] Semes, 64. While the first four are rather self-explanatory, the fourth category often includes "weapons, artists' or craftsmen's tools, or musical instruments."
[388] Semes, 65.
[389] Semes, 65.
[390] Semes, 65.
[391] Semes, 65.
[392] Semes, 65.
[393] Semes, 65.
[394] Semes, 104.
[395] Semes, 104.
[396] Semes, 104.

recall Adolf Loos' *Ornament and Crime*, to understand the extreme opposition to traditional decorative elements found in the modernist doctrine.[397] In spite of this strict opposition to decorative forms, modernist architecture still exhibits artistic attempts to decorate the structure, demonstrated by Mies van der Rohe's "meticulously detailed reveals."(Plate 28)[398] Because humans have a perennial interest in ornament, when the "ornamental impulse" is suppressed it manifests itself in other ways.[399] In addition to the more detail-oriented approach of Mies van der Rohe, other architects choose to design their entire composition as one enormous piece of ornament or assemblage of gestural shapes, without any smaller articulations (Plate 29).[400] In its intentional rejection of the traditional treatment of ornament, modernist architecture lacks detailed elements on the human scale, preventing the viewer from deeply relating to the overall composition. [401] This abandonment of the traditional approach to ornament results in forms that fail to exhibit any true aesthetic quality.

Together, these six principles of structure, space, elements, composition, proportion, and ornament create a sense of character, "which may be considered the phenomenological aspect of architecture as it is actually experienced."[402] The understanding of character dates back to the Romans who referred to it as the *genius loci* ("the spirit of a place").[403] As the defining or memorable essence of a place, character results from the combination of recognizable details and distinguished elements.[404] Thus, character is not simply the idea or concept itself, "but the

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[397] See discussion of *Ornament and Crime* (1908)
[398] Semes, 104.
[399] Semes, 104.
[400] Semes, 104.
[401] Semes, 104.
[402] Semes, 66.
[403] Semes, 66.
[404] Semes. 66.

manner in which it is materially embodied, the totality of its realization in physical terms."[405] Although character is rarely discussed by modernist theorists, the architectural response of the modernists to the other six principles produces its own character.[406]

This modernist character is "derived from its assertion of a self-referential formal autonomy in disregard of, or in opposition to, traditional sensibilities."[407] The work of the European modernists, such as Le Corbusier or Walter Gropius, demonstrates this characterization as their earlier buildings evoke a "confidence in the new technologies and new forms of social order."[408] Contemporary modernist architecture also exhibits a character in opposition to traditional practice, as it expresses a "breathtaking emptiness of content…at the largest possible scale" thereby provoking a "sense of instability."[409] This emptiness of content is largely due to the absence of small-scale ornament that not only conveys generalized meaning but also allows the viewer to engage with the building in a more intimate way.[410] Overall, the character of modernist architecture is "conspicuously distinguishable from that projected by most traditional buildings."[411] While the *genius loci* of traditional environments, such as historic districts, continues to attract visitors, the minimalist or abstract nature of modernist architecture presents a remarkably different character that often alienates the viewer.[412] In its rejection of the traditional principles that are based on the intent to express beauty and satisfy human perception,

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[405] Semes, 66.
[406] Semes, 105-106.
[407] Semes, 105-106.
[408] Semes, 106.
[409] Semes, 106. Semes' uses the examples of "Peter Eisenman's Memorial to Murdered Jews of Europe in Berlin, Steven Holl's Simmons Hall at MIT, or Rem Koolhass's Chinese Television Center in Beijing.
[410] Semes, 106.
[411] Semes, 106.
[412] Semes, 104.

modernist architecture is not only difficult to understand but also fails to establish the same intuitive connection with the viewer.

The aesthetic quality of architecture defines its character and essentially determines how it is perceived. As modernism demanded a complete rejection of architectural tradition and the principles that guided its design, it disregarded the objective standards of beauty leaving aesthetic judgments to the individual architect. Created out of this subjective understanding of aesthetics, modernist forms fail to convey a true sense of beauty due to their rejection of a cultivated knowledge of human perception.

Chapter 4:

Sustainability: A Condition of Traditional Design Disregarded by the Modernists

Because the modernist failure in terms of aesthetics has had the most significant impact on the field of architecture, this essay has focused primarily on the physical appearance of architecture. While it is the aesthetic quality of traditional architecture that makes it superior to modernist forms, its ability to endure the test of time, largely due to its design, significantly contributes to its value. In its rejection of traditional principles, modernism has not only negatively affected the aesthetic quality of architecture but also the natural environment as a whole. Due to the modernist reliance on new materials and construction methods to achieve compelling designs, the creation of its forms requires an enormous amount of energy and resources.[413] The unsustainability of anti-traditional forms due largely to their design demonstrates the inferiority of modernist architecture.

Due to its unfailing confidence in prefabricated, industrial materials and new building techniques, modernism has produced a large collection of unsustainable buildings that consume a massive amount of energy.[414] Furthermore, this devotion to novelty, as well as the unsustainable materials and building practices it requires, persists in mainstream architecture.[415] As the products of the postwar building boom were built when energy was inexpensive and environmental impact was of little concern, it is no surprise that the carbon footprint of these buildings is so significant.[416] Today mainstream culture is becoming increasingly aware of the importance of sustainability, yet most contemporary architects continue to design buildings that

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[413] Flint, Anthony. "The Case Against Saving Midcentury Office Buildings." *The Atlantic Cities: Place Matters.* 29 March 2013. Web. Accessed 31 March 2013.
[414] Flint, "The Case Against Saving Midcentury Office Buildings."
[415] Semes, 250.
[416] Flint, "The Case Against Saving Midcentury Office Buildings."

are environmentally expensive due to their embodied energy and complete reliance on mechanical systems.[417]

Because this type of building is monetarily inexpensive in the short term, there are few incentives to build truly sustainable buildings.[418] The most well known organization that encourages environmentally friendly building practices is LEED (Leadership in Energy and Environmental Design) which promotes "green building" through a certification process that is based on the most general concepts of environmental consciousness.[419] For example, one of their "main credit categories" is "indoor environmental quality credits [that] promote better indoor air quality and access to daylight and views."[420] The fact that architects are rewarded for designing buildings that allow occupants access to daylight is an unfortunate consequence of modernism. In their rejection of architectural tradition, modernists brought into question such basic concepts as properly sized windows that let in enough light to warm a room without overwhelming the space with heat.

Abandoning the traditional building methods that created a truly sustainable architecture, the modernists chose to embrace untested materials and construction techniques that require an exorbitant amount of energy to produce and operate.[421] Today, the majority of contemporary architects are encouraged to continue this reliance on industrial materials and unsustainable building techniques because they are less expensive in the short term than a traditional

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[417] Semes, 250. This heavy reliance on mechanical systems demands a significant amount of energy as well.
[418] Terry, "Designing a Sustainable Future."
[419] "What is LEED?" *LEED*. U.S. Green Building Council. 2013. Web. Accessed 31 March 2013.
[420] "LEED Green Building Rating Systems." *LEED*. U.S. Green Building Council. 2013. Web. Accessed 31 March 2013.
[421] Semes, 250.

approach.[422] However, in the long-term, building in this manner drains the earth of its limited resources.[423] While the sustainability of traditional architecture is demonstrated by the countless examples of historic structures that have endured for centuries and continue to adapt themselves to new uses, it is useful to identify the exact reasons why traditional architecture is more sustainable than contemporary modernist alternatives.

In his essay, "Designing a Sustainable Future," Quinlan Terry eloquently explains why traditional architecture presents the most sustainable approach.[424] Terry notes that generally sustainability is considered in terms of the energy consumption of its occupants, but this does not fully encompass a building's environmental impact. A more complete assessment of a building's sustainability accounts for its longevity, carbon emissions in the manufacture of its building materials, thermal mass, the ability of the parts of demolished buildings to be recycled, and its thermal movement. As these issues depend on the design of the building and the materials its employs, the aesthetic quality effects its environmental impact. To illustrate his argument, Terry provides a table in which he grades both traditional and modern materials in terms of each issue.[425]

Because modern steel-framed buildings are typically demolished after about forty years due to their inability to age well, this demolition and the new construction it necessitates has considerable environmental effects.[426] In comparison traditional structures built with the materials and by the processes described last longer allowing the building to be adapted to new

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[422] Terry, "Designing a Sustainable Future."
[423] Terry, "Designing a Sustainable Future."
[424] Terry, "Designing a Sustainable Future."
[425] Terry, "Designing a Sustainable Future."
[426] The inability of modern structures to age well is further discussed in terms of thermal movement in the discussion below.

uses as time goes on.[427] In terms of the second issue, the environmental impact of manufacturing modernist materials is considerable due to the factory production it requires, while energy consumption involved in the creation of traditional materials is minimal. The thermal mass of a building determines its ability to insulate itself which affects the amount of energy required to heat or cool the interior. Modernist buildings are generally "light and brittle" whereas traditional buildings are "solid and heavy." Thus the thermal mass of modernist buildings demands a significant reliance on heating and air conditioning, while a traditional construction provides a fair amount of insulation on its own, requiring less heating and cooling. With respect to recycling parts, traditional materials, specifically brick and stone, can be more easily reused than modern materials which typically end up in a landfill after demolition.[428] Finally, the thermal movement of a building, or how its materials react to temperature change, has the most significant impact on its lifespan. Because modern materials have a high co-efficient of thermal expansion, "they require expansion joints at regular intervals," but these expansion joints fail "to protect the building from driving rain and water ingress." Traditional materials, on the other hand "are all virtually inert to changes in temperature," allowing their buildings to endure the test of time. Recognizing the overwhelming impact modernist architecture has had and continues to have on the environment, it is time to change course. The simple truth is that the human race can no longer afford to design in this manner and ignore the lessons of history.

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[427] The longevity of traditional structures is largely due to the organic nature of its materials and the way they are arranged.

[428] Terry also makes the point that traditional materials, specifically lime mortar, can enrich the soil.

Conclusion:

The built environment demonstrates that modernism, as an anti-traditional approach to design, has failed as an architectural experiment. Because the ascendancy of modernism occurred simultaneously with the postwar building boom, the majority of the American architectural landscape is plagued by the products modernism. Buildings that follow modernist design principles in their construction materials and methods dominate, while there are virtually no examples of traditional architecture. This trend continues today, as most contemporary architecture is driven by this anti-traditional approach to design. The enormous collection of modernist architecture that makes up our built environment provides the clearest example of why modernism as an architectural experiment has failed. By rejecting the knowledge developed over two millennia of architectural tradition, the modernists attempted to create a new architecture in opposition to all that had existed before. This step-by-step rejection of tradition and its design principles, led to the creation of forms that fail to offer a better alternative to traditional architecture.

In their attempt to abandon all aspects of traditional architecture, the modernists disregarded the design principles that had guided the creation of beautiful architectural works since antiquity. Prior to modernism, these classical principles had been maintained and interpreted by different traditions for over two thousand years to produce an extremely diversified architectural record. The modernists of the early twentieth-century, however, decided that advances in technology had made these design principles irrelevant and that their designs should embody progress by making no historical references. Thus they created a tradition of anti-tradition that relied on the ability of the architect to create without any guidance from past precedent. In this attempted absence of traditional architectural knowledge, the modernists

rejected the standards of objective beauty which had driven the architectural tradition since the 6th century BC and instead left all aesthetic judgments to the individual artist. For more than a century, this approach to design has dominated the field of architecture, and its contemporary practitioners, like their modernist predecessors, attempt to apprehend beauty without following the classical design principles. Because this tradition of anti-tradition provides virtually no framework for successful design, the majority of modernist architecture fails to achieve an aesthetic quality equivalent traditional design.

For over a century, the modernist experiment has driven the vast majority of architectural design and has produced a built environment essentially absent of the aesthetic quality found in traditional architecture. Relying completely on the talent of the architect, instead of the time-tested principles of design, the results of the modernist experiment prove the inferiority of this anti-traditional approach. Furthermore, the novelty and originality crucial to modernist design requires industrial materials and construction techniques that exhaust the environment and thus waste natural and economic resources. While it is the aesthetic quality of traditional architecture that establishes its superiority, its ability to endure the test of time speaks to the overall validity of its design techniques.

Recognizing that modernism has failed as an architectural experiment certainly proves the validity of traditional architecture. Nevertheless, utilizing these pre-modern principles does not require a return to the past or a step backward. Conversely, traditional architecture allows designers to approach the future informed by the lessons of the past. Enriched by the knowledge more than two millennia of experience, the architect is able to interpret the time-tested principles and create innovative new designs that meet contemporary needs. By acknowledging the failure

of the modernist experiment, the field of architecture can rediscover the rich classical tradition that created the magnificent works of the past and can inspire the masterpieces of the future.

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Plate 1: Glass Pavilion (1914), Bruno Taut. Cologne, Germany.[429]

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Plate 2: Factory and Office Building for Werkbund Exhibition (1914), Walter Gropius. Cologne, Germany .[430]

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Plate 3: Fagus Shoes Last Factory (1911-1913), Walter Gropius. Alfeld on the Leine, Germany.[431]

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Plate 4: Dessau Bauhaus Campus (1924), Walter Gropius. Dessau, Germany. [432]

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Plate 12: Villa Savoye, Roof, Le Corbusier. Poissy-sure-Seine,1929-1930.[440]

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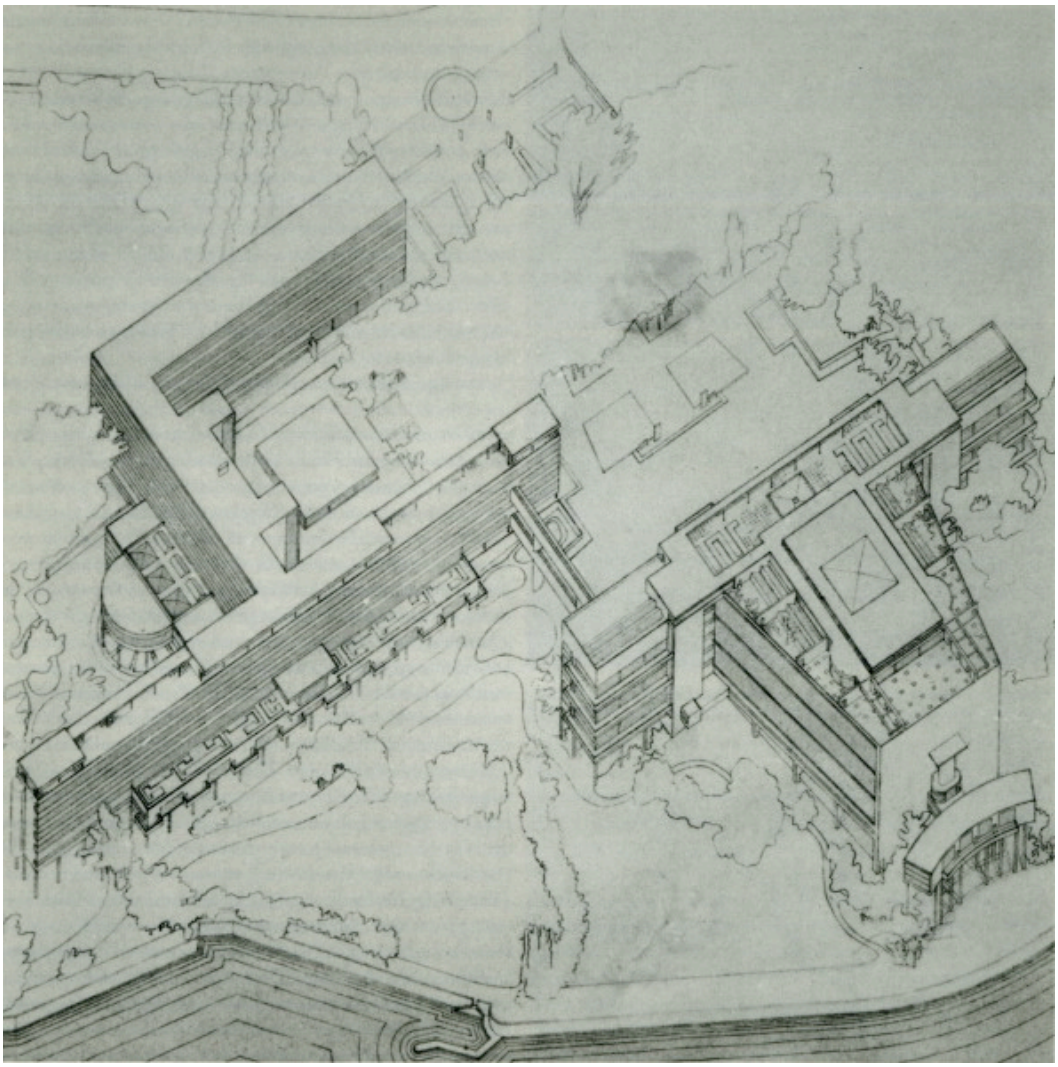

Plate 13: The Palace of League of Nations Proposal Aerial Sketch, Le Corbusier,1927[441]

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Plate 14: The Palace of League of Nations Proposal, Le Corbusier, 1927.[442]

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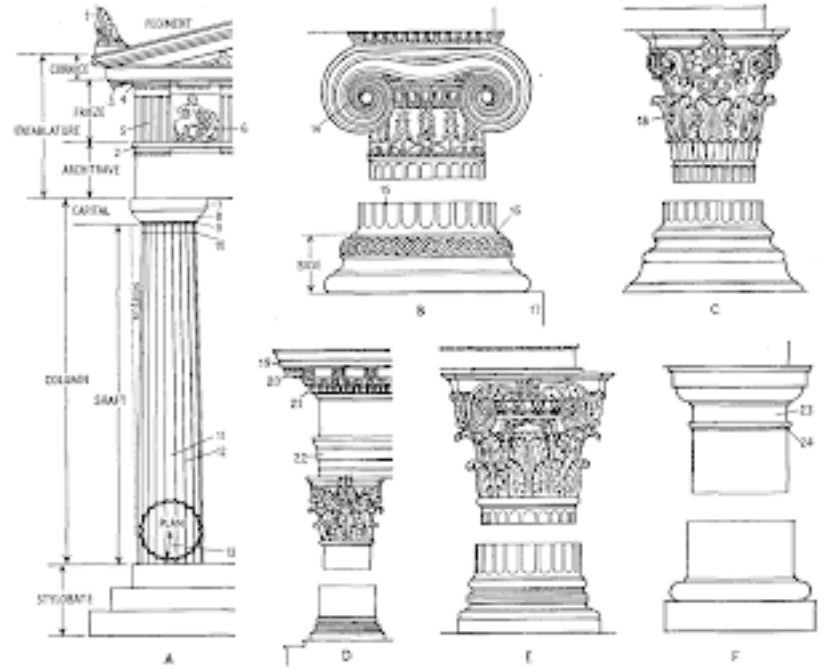

ORDERS OF ARCHITECTURE: A. GREEK DORIC. B. GREEK IONIC. C. GREEK CORINTHIAN. D. ROMAN CORINTHIAN. E. COMPOSITE. F. TUSCAN

A. 1. Acroterion. 2. Tænia. 3. Guttæ. 4. Mutule. 5. Triglyph. 6. Metope. 7. Abacus. 8. Echinus. 9. Annulet. 10. Hypotrachelium. 11. Flute. 12. Arris. 13. Module. B. 14. Volute. 15. Sinus. 16. Apophyge. 17. Plinth. C. 18. Anthemia. D. 19. Cornice. 20. Modillion. 21. Dentil. 22. Fascia. F. 23. Necking. 24. Astragal

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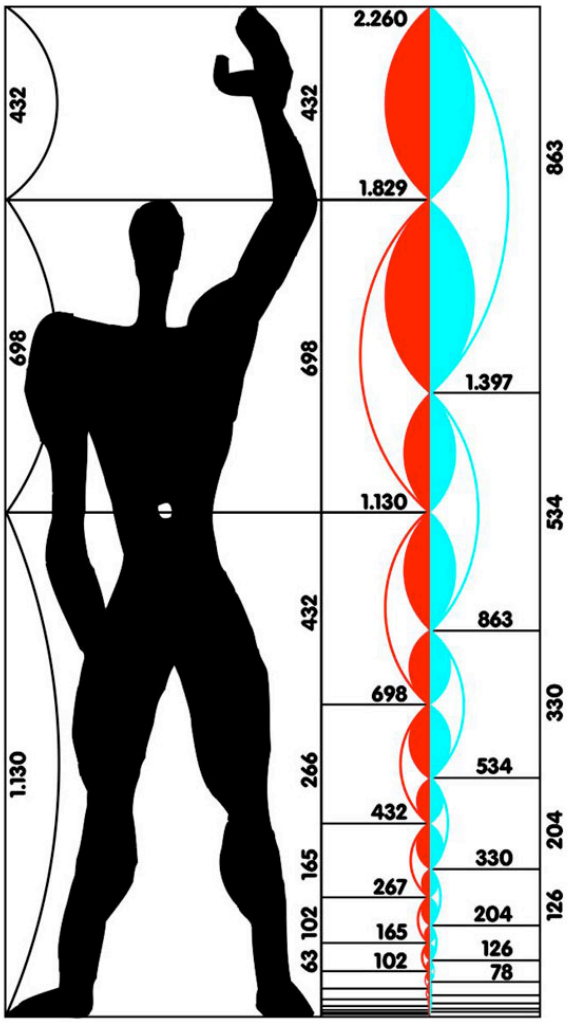

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