Architectural historians recently joined historians of business, technology, engineering, and science, as well as geographers and historic preservationists, to discuss industrial buildings and their relation to Modernist ideology. In addition to the presentation of new material which drew on many disciplines, the conference, organized by the Hagley Center for the History of Business, Technology and Society, provided an opportunity to reflect on connections between the methods traditionally used by architectural historians and those employed by historians of other fields. It became obvious that art historical analysis, grounded in formally derived aesthetic values, is not the only framework within which to consider the goals and accomplishments of those who built for industry during the modern era. The conference, designed to invite the study of both industrial architecture and the broader context of building for industry, engendered considerable discussion of the disparity between the concept of Architectural Modernism and the general use of the terms such as modern, modernity, and modernization.

Echoing Nikolaus Pevsner’s contention that architectural Modernism is a synthesis of a number of stimuli—various aesthetic movements and the development of steel construction—conference speakers noted that industrial Modernism was influenced by several modernizing factors, including advances in building construction technology and industrial production methods, evolving economic conditions and the social context of modern thought, and the dominance of a functional architectural aesthetic. Though recognizing the value of such considerations, Carol Willis (Columbia University) insisted that any definition of industrial Modernism recognize a Modernist aesthetic intent, the evocation of which separates the modern from the utilitarian in architecture. Willis urged the development of a taxonomy of industrial buildings based on form and aesthetic, as well as the determination of who actually designed buildings and the spaces within them, and the economic function of the structures. The presentation by Gabrielle Esperdy (City University of New York) of the New York City Municipal Asphalt Plant (Ely Jacques Kahn and Robert Allen Jacobs, 1940–43) integrated recognized and documented high-style architectural theory, technological innovations incorporated in the new structures, and social context. Esperdy’s topic and her use of traditional art historical analysis underscored the limitations of such an approach in most instances; few sites offer similarly rich documentation.

The conference explored several ideological concepts that broadened the understanding of the intent of trained professionals who were involved in building for industry. Lindy Biggs (Auburn University) related how industrial engineers, as they responded to early twentieth-century mass production methods, came to consider the industrial building the “master machine” in order to rationalize the modern goals of order, control, and system. An appreciation of the work of material scientists and civil engineers who made advances in reinforced concrete and steel engineering, advocated Amy Slaton (Harvard University), must be integrated with economics-based and form-driven analysis of utilitarian industrial buildings. Economic reorganization and the development of larger-scale transportation systems, argued Robert Lewis (McMaster University), were allied with the selective use of mass production methods and the need for flexible factory space that could be readily adapted for new uses. Larry Peterson (City University of New York) used the contexts of industrial photography and public relations to explore the development and promotion of Pullman, Illinois.

Despite the modernizing forces at work during the early twentieth century, many industrial buildings erected for and altered to accommodate mass production operations were not conceived as (and are now not considered) examples of architectural industrial Modernism. So, who built Modernist and why? According to Michael Stratton (University of York), tradition, pragmatism, and adaptation were more influential than architectural Modernism in the provision of facilities for British automobile and aircraft manufacturers. His finding of no correlation between the economic success of those industries and the use of Modernist or even modernized buildings raises the question of the indispensability of the modern industrial plant. It was noted during a discussion period that Henry Ford could build plants at Highland Park and later at River Rouge with relatively little concern for the high first costs of construction, in expectation of long-term economies in production. However, most industrialists, working on a smaller scale, were not able to relocate their operations to modernized works. The more typical manufacturer, who likely began his operation in buildings adapted, not built, for that purpose, and who replaced facilities only when forced to (probably after a fire), appreciated the hidden efficiencies of older buildings. Consequently, the question was raised, to what extent was Ford Motor Company, which constructed progressively modern facilities, an industrial model, and to what extent a cultural icon?

Work in this field has been limited in scope by a general lack of interest in non-architect-designed industrial buildings. Architectural history has continued to be influenced by a prejudice articulated by Sheldon Cheney in The New World Architecture (1930); though admitting that “unnamed American engineers created many a building that might justly be illustrated... I
Buildings such as this foundry for the Walker Manufacturing Company in Cleveland (1880) built by a civil engineer, F. Felkel, and the eight-story brick and reinforced concrete building designed by the architectural firm of Prack and Perrine for Westinghouse Electric Corporation (1915) were the topic of the "Industrial Modernism: Architecture and Ideology," held at the Hagley Museum and Library. (Betsy Hunter Bradley)

prefer to pick up the story a bit later, when a few architects have become architect-engineers." Cheney's bias toward architect-designed buildings was supported by his belief that "the engineer's achievement, in architecture, is usually only half a triumph." But can architectural historians justify the arbitrary focus on architect-designed industrial architecture? Around the turn of the twentieth century, architects followed, rather than led, industrialists, builders, mill engineers, industrial engineers, and even material scientists and steel beam specifiers into the field of industrial architecture. Before architects became routinely involved in industrial building projects much work had been accomplished: the standard building types had evolved and had been refined for various uses; a utilitarian aesthetic vocabulary based on the most practical means for building in brick, wood, iron, and steel had been adopted; and complicated, systematized production and plant layouts had been developed. The presentation of Mark Brown (University of Pittsburgh) illustrated that the history of architectural industrial Modernism needs to recognize the advances made during the nineteenth century by nonarchitects. Brown described steel mills designed by engineers around 1870 that incorporated Modernist paradigms: the interlocking of structure and interior machinery as one giant machine and the use of large, shed-like buildings that could accommodate modernized production methods. Weren't these projects early examples of industrial modernism and not just engineering solutions to production problems?

Why has the lack of interest in the utilitarian industrial persisted, even as attention has turned to other vernacular buildings types? The reasons are varied but seem more problematic for architectural historians than for scholars in related disciplines. Many industrial buildings are difficult to understand functionally because they were designed to house what are now obsolete operations. Because the written record of the design, construction, use, and contemporary response to industrial structures is far less complete than that for other types of architecture, more information must be garnered from the buildings themselves. The limited number of early examples of industrial buildings and the deteriorated or heavily altered condition of many structures that remain require the use of supplementary materials. Perhaps, too, scholars
have seen no enticing cultural context as a framework for inquiry and theory.

In his closing address Terry Smith (University of Sydney) reviewed some of the images of industrial modernism that he had explored in his book, Making the Modern: Industry, Art, and Design in America (Chicago, 1993). Smith has proposed a definition for industrial Modernism based on an actual, instead of symbolic, functionality. Focusing on the work of architect-engineer Albert Kahn and the Kahn Associates for Ford and other automobile producers (as Cheney would have advocated), Smith noted the difference between the "radical functionalism" of the industrial buildings designed by Kahn for Ford's Highland Park plant and the "symbolic functionalism" of European Modernists. For them, American industrial buildings were spontaneous vernacular structures or products of the American System of Manufactures, not carefully designed buildings already fulfilling the criteria of Modernist architecture. According to Smith, industrial Modernism was typified by the automobile plant of the early twentieth century with its flexibility allowing for exceptionally complex operations and the separation, yet interdependence, of the single-story sheds which were internally open to a variety of usages and also tied to external service systems. Emphasizing the integration of functionalism and engineering, Smith asserted that Kahn had supervised the birth of a modernity which transposed the values of engineering (synonymous with functionalism) into those dominating architecture. According to Smith, industrial Modernism was typified by the automobile plant of the early twentieth century with its flexibility allowing for exceptionally complex operations and the separation, yet interdependence, of the single-story sheds which were internally open to a variety of usages and also tied to external service systems. Emphasizing the integration of functionalism and engineering, Smith asserted that Kahn had supervised the birth of a modernity which transposed the values of engineering (synonymous with functionalism) into those dominating architecture.4

Will architectural historians come to agree with Terry Smith that architectural industrial Modernism was defined by engineering ideals, or will they persist in requiring a more deliberate and recognizable aesthetic intent on the part of the designer? Was industrial Modernism born of an aesthetic architectural theory? Or was there an engineering-derived aesthetic that architects adopted when they turned their attention to industrial architecture?5 In short, if Modernism was an expression of function and structure, does the reverse relationship hold true without qualification?

Though the conference offered no answers to questions such as these, it strained the old disciplinary boundaries. Even though Modernism was universally considered an essential component of industrialism, it clearly meant different things to the followers of different disciplines. Architectural historians decode industrial architecture by defining taxonomy, evaluating aesthetic intent, and assessing individual inventiveness on the part of designers. Under the influence of contact with other fields definitions of building and architecture, and the appreciation of the roles of builder, engineer, and architect will surely become more fluid. The reconciliation of utilitarian or functional with high-style Modernist industrial architecture will make it possible for industrial buildings to be read in the same way as skyscrapers, as expressions of structure and the Modernist aesthetic. Modernism in architecture must be viewed in a broader context, not simply as an internal discourse. Was the incorporation of industrial plant and the manufacturing worker into the imagery of modernity more important culturally as an ideal than any actual widespread use of Modernist buildings by industry? In what ways has industrial architecture—either as the master machine or the ultra-flexible shed—related to the emergence of the United States and other nations as industrial powers? And finally, how can the significance of historic industrial buildings be determined so that appropriate examples of the modern industrial era will be interpreted and preserved?

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Cleveland, Ohio

Notes
1 The Hagley Museum and Library, which has extensive holdings of interest to architectural historians, introduced at the conference a new brochure, Industrial and Commercial Architecture: A Guide to Collections, 1995 (available from the Museum and Library).
2 Some scholars have, of course, studied the industrial building work of engineers and others not formally trained in architecture. However, the contributions from the field of architectural history have not kept pace with the efforts of industrial archaeologists, geographers, the work of the Historic American Engineering Record, and heritage parks that commemorate the industrial past.
4 Kahn has come to loom as large as Henry Ford in industrial history and has yet to receive an impartial evaluation from architectural historians. Nor have the automobile plants been placed in the appropriate context of their predecessors, buggy and wagon manufacturing operations, or other metal-working industries as having any influence on automobile manufacturers. Smith's analysis of Kahn's work begs a more articulated differentiation between the Kahn-designed functionality and the utilitarian industrial buildings of the previous fifty years.