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# Diagrammatic Practices

## The Office of Frederick L. Ackerman and *Architectural Graphic Standards*

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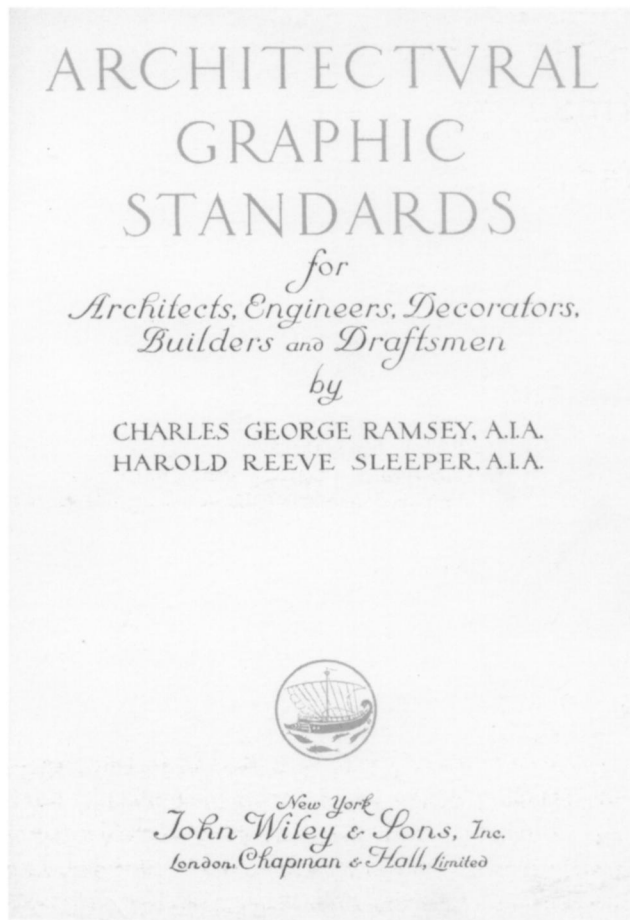
The handbook *Architectural Graphic Standards* was first published in 1932, the same year and in the same city that the exhibition *The International Style* opened at The Museum of Modern Art in New York. The coincidence of these two events underscores the bifurcation in modern architectural practice between appearance and function. While the show emphasized formal compositional principles to the exclusion of the role of function, the manual specified that it contained only factual information “purposely devoid of aesthetic expression.”<sup>1</sup> Although the design approach advocated in current handbooks is accepted as the way architecture is practiced, it was not always so. *Architectural Graphic Standards*, as the first of many modern guides, attempted to isolate constructional and functional facts from aesthetic design decisions. Its broad acceptance by the profession can be traced through the manual’s own history (Figure 1). Born in the very particular practice of Frederick Ackerman, it drew on the emphatic cultural critique by Thorstein Veblen. *Architectural Graphic Standards*, perceived today as a benign reference, was conceived as a revolutionary architectural treatise, a manifesto.

### Frederick Lee Ackerman

Frederick Ackerman (1878–1950) is best remembered for his involvement in the Regional Planning Association of America (RPAA); with Clarence Stein, Henry Wright,

Lewis Mumford, and others, he worked for socially responsible planning, design, and financing of community housing.<sup>2</sup> Born in New York State, Ackerman received a degree in architecture from Cornell University in 1901 and, after two years of architectural study in Paris, returned to develop a successful architectural practice in New York City.<sup>3</sup> From 1906 to 1920, he was in partnership with Alexander Trowbridge, architect and dean of the College of Fine Arts at Cornell.<sup>4</sup> The firm designed numerous houses as well as commercial and institutional buildings. The office’s largest project was the Brooklyn Central YMCA, seen at the time as embodying progressive social programs.<sup>5</sup> With support from Charles Whitaker, the progressive editor of the *Journal of the American Institute of Architects*, Ackerman made a detailed survey of the housing and planning movements in England, particularly government war housing prior to the American involvement in World War I.<sup>6</sup> During the war, Ackerman became chief of the Department of Housing and Planning of the U.S. Shipping Board. Ackerman’s staff included Wright, later a partner of Stein. After the war, Ackerman proposed a peacetime national public housing program, known as the Ackerman Plan, which was ultimately rejected by Congress.

Ackerman returned to architectural practice in 1921 as a sole practitioner. His work was primarily housing, ranging from low-income accommodations to private estates and dormitories for Cornell University.<sup>7</sup> Ackerman worked with Stein and Wright on houses for Sunnyside Gardens,



**Figure 1** Title page of the first edition of Charles George Ramsey and Harold Reeve Sleeper, *Architectural Graphic Standards* (New York, 1932)

Queens, New York, and community buildings for Radburn, New Jersey, two planned communities informed by garden-city principles. Ackerman's First Houses project of 1935 in New York City, described as the first publicly financed housing in the United States, revitalized existing buildings by demolishing every third tenement to create 122 units enhanced with sunlight and outdoor space.<sup>8</sup> In numerous articles, Ackerman aggressively advocated expanding the architect's role to include preparing architectural programs and zoning regulations, rather than passively accepting them, because they already determined major aspects of a project such as housing density.<sup>9</sup> As Harold Sleeper later described it, Ackerman's office had "an atmosphere where architecture was practiced as a social service."<sup>10</sup> By the 1930s, Ackerman joined the New York City Housing Authority and directed it toward technical research and progressive projects.<sup>11</sup> At this time Ackerman and his wife, Mary Linton Ackerman, an interior decorator who sometimes collabo-

rated with her husband, lived in an apartment directly below Stein's. Ackerman's many articles written after World War I, on housing, planning, and other topics, reflected his enthusiastic commitment to the ideas of Veblen.

### Thorstein Veblen

The son of Norwegian immigrant farmers, Wisconsin-born economist and social critic Thorstein Veblen (1857–1929) coined the phrase "conspicuous consumption" in his critique of leisure-class spending motivated for display.<sup>12</sup> Contrary to Adam Smith's economic theory, Veblen held that self-interested individual choices did not automatically contribute to the common good. Veblen rejected capitalism, or "the price system," as an entirely artificial approach to valuation that was manipulated by business and financial interests. These vested interests were in inherent conflict with the rational machinery of industrial production because their goal was the acquisition of wealth rather than the general interest of society.

While the prevailing model of the "economic man" presumed that work is irksome, Veblen identified a quasi-aesthetic "instinct of workmanship" that leads people to find futility and inefficiency distasteful and improvement desirable.<sup>13</sup> For Veblen, work was a defining characteristic of humanity. In what he identified as the craft era, the instinct of workmanship was fulfilled by skilfully making raw material into useful items. In the new industrial era, the instinct of workmanship was channeled by the machine into a rational, repetitive production process.

To replace the questionable leadership of the ostentatious leisure class, Veblen proposed the disinterested technician who, following the certainty of facts, would work for the general good. The production engineer was the paradigm of this expert for whom technological processes act without a commercial interest.<sup>14</sup> "These men [are] soberly trained in a spirit of tangible performance and endowed with something more than an even share of the sense of workmanship, and endowed also with the common heritage of partiality for the rule of Live and Let Live."<sup>15</sup> Veblen described engineers themselves as part of the mechanism of the emerging worldwide industrial production system. He believed that an economic revolution in the United States would be the work of professionals united in a "soviet of technicians" and often hinted that it would be arriving soon. "So sharply defined and homogeneous is their class [engineers], that a sufficiently compact and inclusive organization of their forces should arrange itself almost as a matter of course."<sup>16</sup> In claiming that the captains of finance manipulated prices for self-interest by restricting production even

# The Facts Behind TECHNOCRACY

How Man's Growing Use of Energy Is Revolutionizing His Social Life

By FREDERICK L. ACKERMAN, F.A.I.A.

## I. Two Ways of Looking at History

SHALL not attempt a dictionary definition of the word "Technocracy." It is a newly coined word which stands for a new way of looking at the world of activity of which we are a part. What I write will serve to define it. Recent events have resulted in the appropriation of this word by a particular group. I do not wish to be misunderstood as supporting an extreme interpretation, nor as speaking for any one but myself. The fundamental facts of this subject, however, are not the monopoly of any person or group, and they will not be upset by any temporary human differences. They deal with permanent physical phenomena, with the growth of technology and its effects on man's social and economic life. They can be understood by any intelligent boy or girl. I shall therefore abandon the use of the word Technocracy in the remainder of this article and devote myself to a simple explanation of these fundamental facts.

### The Scientific Point of View

At one time men believed that a heavy object would fall more rapidly than a light one. But Galileo, who was inquisitive, made an experiment: he let two objects of different weight fall from the leaning tower of Pisa, and he observed that they fell an equal distance in the same period of time. He was looking at things in a new way—what we call the scientific point

### Introducing Mr. Ackerman

THE extraordinary vogue of the theory and movement called Technocracy has led to a great deal of unwarranted speculation and confused information. In the interest of truth, therefore, Scholastic presents three authoritative articles. This is the first.

Mr. Ackerman is a distinguished New York architect. He is a graduate of Cornell University and has lectured there and at Columbia after a period of study in Paris. Among the many buildings he has designed are the Brooklyn Y.M.C.A., and several college structures. He is a Fellow of the American Institute of Architects, and a member of many professional and scientific societies. During the war he served as Chief of the Bureau of Housing and Town Plan Design of the United States Shipping Board, directing the building of several model communities. He has written extensively on housing and planning.

Technocracy (the word was not adopted until last year) grew out of an informal group of scientists and economists which gravitated together about 1920, and included the late Thorstein Veblen, of Princeton University; the late Charles F. Spurgeon; Howard Scott; Frederick L. Ackerman; Stuart Chase, and others. Scott (Schol., Feb. 4, p. 24) was the chief organizer of the group.

In the spring of 1932, with the renewal of interest in economic problems caused by depression, the group was revived and began its "Energy Survey of North America." The Department of Industrial Engineering of Columbia University offered it office space, and unemployed architects were furnished by the New York City Relief Committee to prepare graphic charts on the development of several hundred American industries.

Late in January, a growing division of opinion among some of the leaders of the movement led to the withdrawal of four of the chief members, including Mr. Ackerman, Professor Walter Reuther, Bassett Jones, and Leon Henderson, "from

of view. He was not satisfied merely to believe; he wanted to know; and he found out by a method of exact measurement.



FREDERICK L. ACKERMAN

all association with Technocracy," and their announcement that they would continue the investigations independently at Columbia University, with the approval of the administration.

The division in Technocracy has led many to assume that it has received its death blow and will vanish overnight like mere popular fads. Such a conclusion is hasty. Conservative students of the subject agree that important basic tendencies in the industrial system have been brought to light, and that its contentions that technological unemployment and the debt structure are increasing at a rate out of all proportion to the population are sound. Mr. Ackerman's thoughtful articles will show this basis of fundamental fact.

A number of American scientists and engineers chanced to meet some years ago. They discovered that they were not satisfied with the common

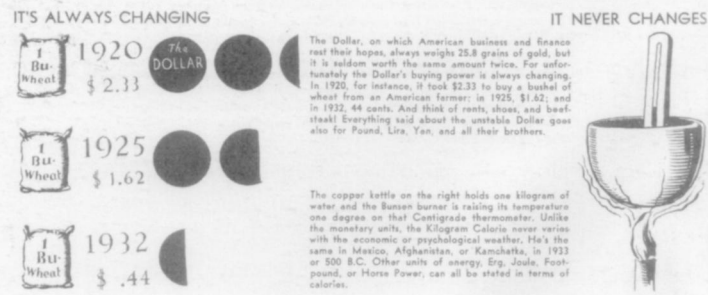


Figure 2 Page one of Frederick Ackerman, *The Facts Behind Technocracy: How Man's Growing Use of Energy Is Revolutionizing His Social Life* (New York, 1933), 1

though industry could create a virtually unlimited supply of goods, Veblen anticipated the economic collapse of 1929 and deemed it unnecessary. As people across the United States struggled with the impact of the economic depression, many embraced Veblenian technocracy, advocating social and industrial control by technical experts for the benefit of society.

Ackerman likely first met Veblen at the New School of Social Research shortly after the latter's arrival in New York City in 1919 and was brought into Veblen's circle to help realize the revolutionary soviet of technicians.<sup>17</sup> According to his friend and colleague Lewis Mumford, Ackerman was "the most persistent and understanding disciple that Veblen ever acquired. Indeed, Ackerman's thoughts on economics followed closely Veblen's own reasoning."<sup>18</sup> By 1920, Ack-

erman was a member of the executive committee that formed the Technical Alliance, which was inspired by Veblen. In 1932, the year *Architectural Graphic Standards* was published, Ackerman was a founding member of the Committee on Technocracy, where he collaborated on a survey to establish energy exchange as a factual, quantitative economic measure to replace the arbitrary price system (Figure 2).<sup>19</sup> For the rest of his life, Ackerman remained dedicated to realizing Veblen's vision. In a 1941 letter to Mumford, he wrote that he was still "very deeply impressed over how right that bird [Veblen] was. It almost seems as if the whole world is now geared to his analysis."<sup>20</sup> Throughout his mature architectural practice and the formation of *Architectural Graphic Standards*, Ackerman was a central leader of the technocracy movement.

## Ackerman's Application of Veblen's Views to Architectural Practice

After 1919, Ackerman's architectural writings are specifically grounded in Veblen's thought and idiosyncratic language.<sup>21</sup> Echoing Veblen's vitriolic tone, Ackerman wrote that "the price system" leads to buildings "that will be less durable, but they will be more perfectly functional in respect to the needs of financial business and less so in respect to the common welfare."<sup>22</sup>

While Ackerman embraced Veblen's desire to remove superfluous ornament from his architecture, in an apparent paradox his own projects throughout the 1920s were primarily Georgian in style. The appearance of his work perhaps explains why it has received little attention in the histories of modern American architecture. Ackerman believed that it was impossible to develop a true modern architecture until the price system was overturned because pecuniary self-interest undermined rational technical decisions. For Ackerman, Georgian was the final achievement of the handicraft era as described by Veblen,<sup>23</sup> embodying most clearly the craft manner of the instinct of workmanship. Veblen held that under the handicraft system, price was regulated on the basis of labor cost, and only with "the late-modern regime of investment and machine industry" did price become merely what an article could bring. According to Veblen, the handicraft era was strongest in the "English-speaking community" and after long development culminated in the eighteenth century.<sup>24</sup> Thus, Ackerman's Georgian architecture reflected the apogee of Veblen's handicraft system based on direct labor with materials prior to the distorting effects of the price system (Figure 3). In an article on Georgian architecture, Ackerman similarly noted, "The traditions of craftsmanship that had been built up during the preceding centuries were still in force as guiding factors. [The architects' competence] . . . was, in large measure, due to their sympathetic understanding of materials, their knowledge of craft ways and means."<sup>25</sup> When asked to design colonial houses, for example, Ackerman used wooden downspouts, an unusual practice in his time, when they were usually made of metal. He emulated not the historic appearance but the colonial material and mode of construction.<sup>26</sup> Indeed, wooden gutters were illustrated in *Architectural Graphic Standards*. Like Veblen, Ackerman rejected stylistic concerns because they were based on pecuniary motivations for consumption and profit by increasing demand through changing styles. With Georgian architecture, as Ackerman interpreted it, one could best avoid style as novelty and fashion by making architectural decisions according to the facts of construction.

Ackerman, like Veblen, embraced machine industry but believed the architect's modern instinct of workmanship was



**Figure 3** A doorway in Amersham, Bucks, England, exemplifying Frederick Ackerman's conception of Georgian architecture

overwhelmed by business-profit motives. Ackerman wrote about the small house in 1920: "I believe thoroughly that if the machine process could be lifted out of the control of predatory forces, or if we could bring our social and economic institutions and industrial processes into an harmonious working, we could create out of the machine process a material environment which would be superior, from the social standpoint, to anything thus far created by the architects and builders of the past."<sup>27</sup> Ackerman considered architectural style as fashion that is "profit induced" for consumption by the leisure class. This critique was not limited to historical styles, and Ackerman accused modernism of adopting only the formal appearance of the machine. The modern revolution in architecture, he wrote ironically, "gave promise of introducing something new—a fashion; and fashion may be made the basis of profitable business." Ackerman made similar criticisms of recent exhibitions of modern

architecture: "The work is as frequently in violation of the rules of functional expression as any work that has gone before. They express more accurately the aggressive character of modern competitive selling."<sup>28</sup> Architectural aesthetics were contaminated by the pecuniary goals of stylistic consumption that benefited business profits. Ackerman rejected most modern architecture as little more than advertising.

Veblen's critique of conspicuous consumption led Ackerman to attempt to eliminate applied, decorative ornament in architecture. For Veblen, aesthetic judgment was confused by the financial values of conspicuous consumption; he held that the true aesthetic values of utilitarian items should be derived from their use. In 1899, Veblen wrote in *The Theory of the Leisure Class*: "Among objects of use the simple and unadorned article is aesthetically the best." He went on to apply this line of reasoning to architecture: "The substitution of pecuniary beauty for aesthetic beauty has been especially effective in the development of architecture. . . . The endless variety of fronts presented . . . in our cities is an endless variety of architectural distress and suggests expensive discomfort. Considered as objects of beauty, the dead walls of the sides and backs of these structures, left untouched by the hands of the artist, are commonly the best feature of the building."<sup>29</sup> Veblen's critique inspired Ackerman to design Georgian houses, for their matter-of-fact utility and their simple details derived directly from the means of crafting building materials. In a 1929 letter to Mumford, Ackerman set out his thought:

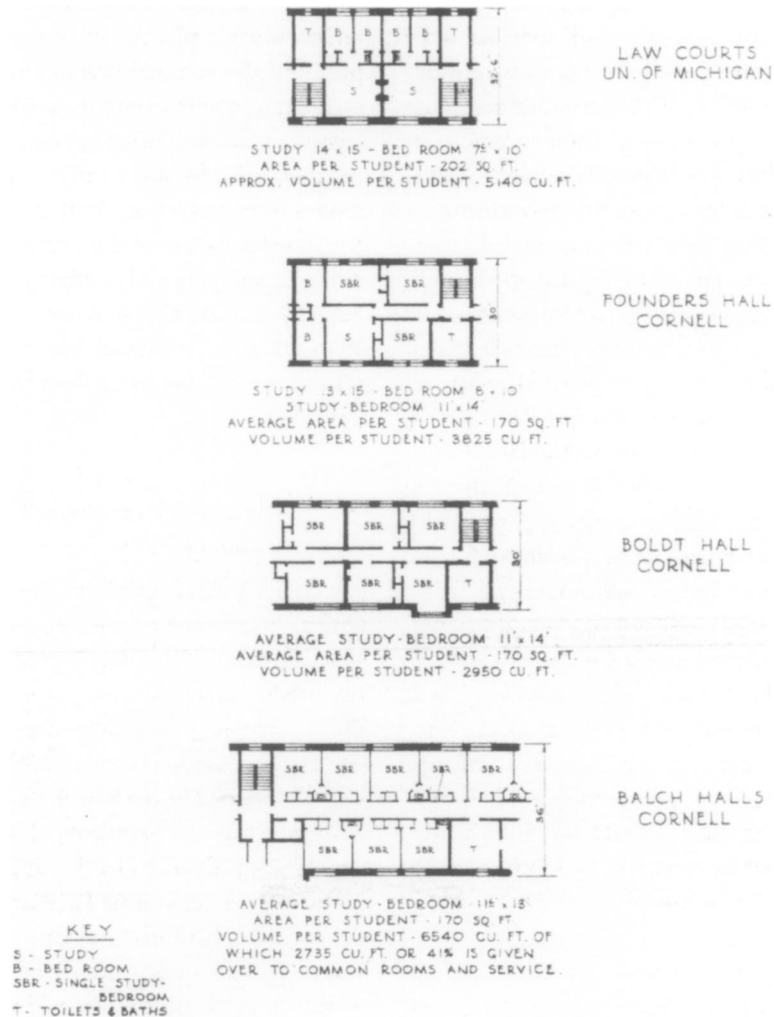
For an indeterminate future, interest in art . . . is due to be actuated by the aims of conspicuous consumption under guidance of the pecuniary canons of taste. . . . The "designer" appears. But the "designer" must of a necessity go to his work without the benefit (or handicap) of discipline under the logic of handicraft or the logic of machine technology. . . . In the typical case, due to the purpose which actuates him, he will be guided by the logic of salesmanship. . . . This may be deemed most unfortunate. But we are faced with a dilemma: the logic of handicraft runs at cross purposes with the logic of technology; and the logic of machine technology runs at cross purposes with conspicuous consumption. Handicraft, therefore, is dead (approximately). But conspicuous consumption is not. For the time being, conspicuous consumption may be sustained by salesmanship but this turns upon the power of salesmanship to accelerate the rate of turn-over of taste, style and fashion. For this is all that salesmanship is equipped to offer in this field. The pecuniary canons of taste would prevail as now: But the criteria would change. To be greatly appreciated or highly prized, an expression would have to be utterly strange, untainted, as it were, by causal circumstances out of which it burst upon us.<sup>30</sup>

Ackerman's primary commitment was to work toward a technocratic replacement of the price system that would promote the rational practice of architecture within the machine system. Given the inevitability of waste within the current economic price system, Ackerman endeavored to reconnect the architect with the facts of use, materials, and modes of construction. In this way, he attempted to resist the transformation of the architect into a designer of novelties. In applying and codifying Veblen's presumption that cultural excrescences of conspicuous waste can be scraped away to reveal a factual life process, Ackerman created office practices that led to the advent of *Architectural Graphic Standards*.

### The Origin of *Architectural Graphic Standards* in Ackerman's Office

It was in Ackerman's technocratic architectural practice that *Architectural Graphic Standards* was completed in 1932 as the first modern handbook of architecture.<sup>31</sup> By 1935, numerous other handbooks, many still in print today, were introduced, including *Time-Saver Standards* and *Don Graff's Data Sheets* in the United States; *Bau-Entwurfslehre* in Germany; and *Planning, The Architect's Handbook* in England.<sup>32</sup> The authors of *Graphic Standards*, Charles Ramsey (1884–1963) and Harold Sleeper (1893–1960), had worked in Ackerman's office since at least 1919 and continued as partners in the successor firm after Ackerman's retirement.<sup>33</sup> Ackerman was fully aware of and supported the production of *Graphic Standards* in his office, where the plates for the book were executed.<sup>34</sup> In later years, applicants for employment there had to demonstrate their drafting skill by copying a sheet from *Graphic Standards*. The book proposal emphasized the authors' involvement in Ackerman's office,<sup>35</sup> and while the first edition was in preparation, Sleeper consistently and strongly identified himself as a member of Ackerman's firm in the articles he wrote.<sup>36</sup>

Ackerman's intellectual influence on the handbook is demonstrated in his introductions to the three editions produced during his lifetime, texts that provided the visionary basis of the publication. Significantly, the four sample sheets included in the original accepted book proposal were produced for Ackerman's projects in his office (Figure 4); they were later revised and published in the first edition of *Graphic Standards*. Sleeper described the proposal materials as two pages showing sizes of athletic sports fields and two illustrating the "various types and sizes of college dormitory bedrooms."<sup>37</sup> These were prepared under Ackerman's direction for projects executed at Cornell University.<sup>38</sup> One of them was published in 1930 as an example of the plates



**Figure 4** Frederick Ackerman, "Comparison of Student Living Halls on the Relation between Use and Volume of Structure," from a report to Cornell University concerning his Balch Hall design, 1930

Ramsey and Sleeper were preparing for their book. Ackerman's visual comparison of dormitories appeared with additions but was otherwise unchanged in the first edition of *Graphic Standards* (Figure 5). In Ackerman's introduction to one of his reports to Cornell—where he was identified as architect and Ramsey and Sleeper as associates—the sheets he included demonstrate the connection between his work and their book. Furthermore, the language he used is similar to that of the introductions to *Graphic Standards*: "The drawings showing proposed arrangements and groupings of structures should be viewed as simplified diagrammatic illustrations of subject matter rather than fully matured architectural studies. For it has been assumed that a rational proposal in respect to the utilization of this area would

serve both as point of departure and objective for the development of definite and detailed studies of use, arrangement and architectural character."<sup>39</sup> For the realization of the first *Graphic Standards*, Ramsey contributed outstanding graphic capabilities and Sleeper thoroughly organized technical information, but it was their employer, Ackerman, who provided the intellectual vision.<sup>40</sup>

### The Technocratic Construction of *Architectural Graphic Standards*

Faced with the problem of how to practice architecture in a world dominated by the price system he rejected, Ackerman directed his office to develop scientific architectural

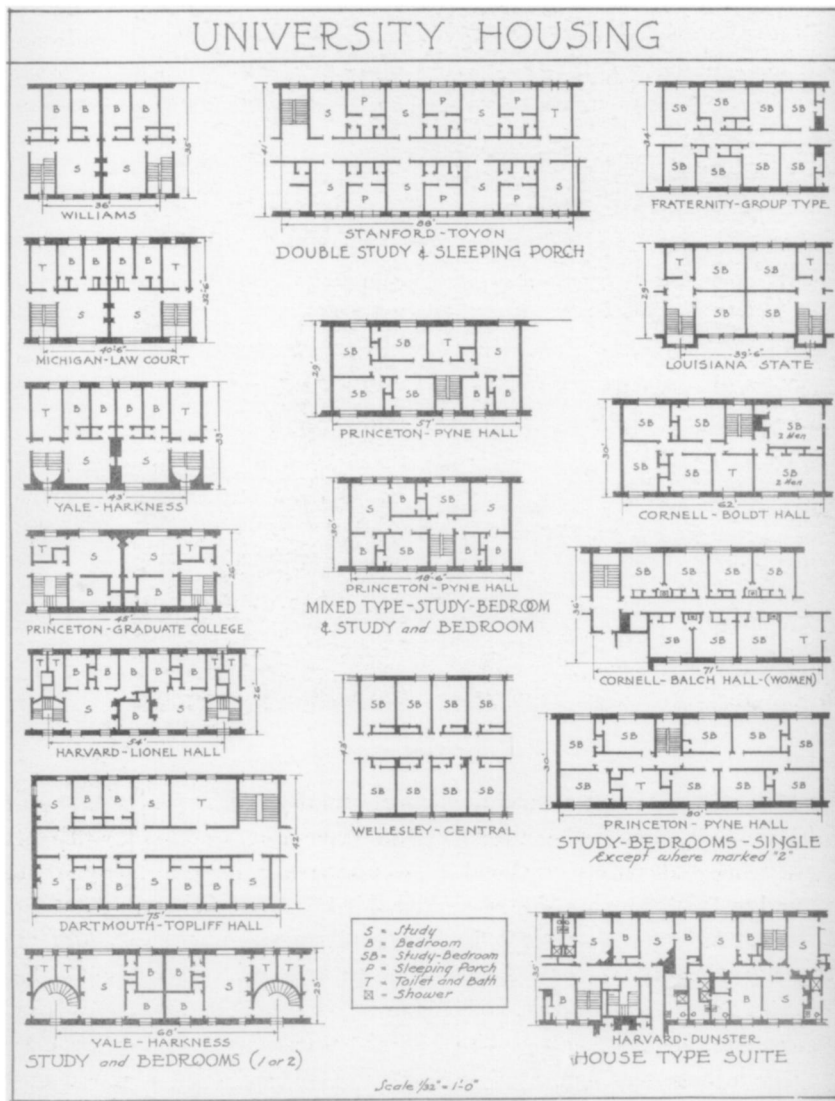


Figure 5 "University Housing," in the first edition of *Architectural Graphic Standards*, pl. 194

data to provide the basis for future rational building. He believed that in producing physical facts for a technical practice he could prepare architecture for the time when the price system would be overturned. Ackerman's office work followed the same rationale as the energy survey that he published for the Technocracy Committee, which presented energy as an objective measure of labor to replace the arbitrary price system. Employing the language of technocracy, Ackerman introduced *Graphic Standards* as presented in the "simple language of facts which technical men use for a scientific document." He used "data," a key word in the handbook, in a technical sense, as the metrical or quantitative relationship between production, materials,

and habitation needs in contrast with the pecuniary criteria of the price system. This technocratic view of data is predicated on the assumed ability to distinguish between objective fact as an actual human need and appearance as conspicuous consumption.

Veblen's theory of the instinct of workmanship influenced the sequence of the contents of *Graphic Standards*. As an advertisement for the fourth edition stated: "The material is arranged in the usual sequence of building—from the foundation up [to the roof]."<sup>41</sup> In the first several editions, data sheets were stacked into an edifice, paralleling the sequence of construction on the building site. Like Ackerman's description of the eighteenth-century Georgian archi-





**Figure 6** Frederick L. Ackerman, Architect, and Ramsey & Sleeper, Associates, Lusk Apartment Building, New York City, 1938

tect, when turning the pages of the reference manual the modern draftsman would be constantly reminded of the relation between constructing drawings and constructing buildings. When Ackerman mused in 1929 that “the ‘designer’ must of a necessity go to his work without the benefit of discipline under the logic of handicraft or the logic of machine technology,” the contents of *Graphic Standards* provided one means to engage the designer seated at a drafting table with the builder working on site.<sup>42</sup> In Ackerman’s approach to architecture, the technocratic logic of construction countered the salesmanship of novelty for conspicuous consumption.

One subject that Ackerman deemed least contaminated by pecuniary goals was access to sunlight, which he described as a “purely technical problem.”<sup>43</sup> The first plate of the first edition of *Graphic Standards* was a solar orientation diagram. Veblen, in criticizing the design of institutional buildings that ostentatiously display the donor’s generosity, singled out windows that “are placed with a view to impress their pecuniary excellence upon the chance beholder from the outside, rather than with a view to effectiveness for their ostensible end in the convenience or comfort of the beneficiaries within.”<sup>44</sup> In 1937, Ackerman, with associates Ramsey and Sleeper, designed Lusk Apartments, the first completely air-conditioned apartment building in New York City. Since they believed operable windows for ventilation were rendered unnecessary by the new mechanical system, the architects attempted to provide only glass

block for day lighting, but were required by code to include some operating windows as well (Figure 6).<sup>45</sup> This design seems to realize physically Veblen’s argument that windows should be merely functional, making secondary any views or expressive qualities they might offer.

In Ackerman’s practice and in the handbook, data were used to establish construction and planning standards as the foundational facts of an objective practice. Although the word “standard” did not appear in the title used for the book proposal, the contents were from the outset based on the concept.<sup>46</sup> Technocracy adopted the approach from scientific management, in which a standard was understood as “the one best way to do work.” In the early twentieth century, to standardize was to be modern and efficient. Ackerman’s office developed such designs for houses and interiors to create a minimum list of stock wood forms for the Curtis Companies in 1920.<sup>47</sup> The rationalization of building elements was conceived as predicated on the uniformity of the human activities they were to accommodate.<sup>48</sup> The presumption that everyday habits could be scientifically studied, improved, and fixed was widespread. The standardization of human activities in relation to architecture, in turn, was based on normative human dimensions. The paradigmatic human was diagrammed and dimensioned in the early pages of the modern handbooks.<sup>49</sup> Regarding the “normal” human, Ramsey and Sleeper wrote in their book proposal:

The human body has changed little in stature during the centuries since man emerged from the caves and hence standards have developed based on his size and physical ability that stay very constant. Chairs taken from Tut-ankh-Amen's tomb can be used well today. Cleopatra's couch would probably still serve comfortably. All utensils, furniture, and building are closely bound by this human scale. These well established standards have never been formulated for easy reference for draftsmen. We will include many such standards, as architecture houses the human and is dependent on this human scale.<sup>50</sup>

In the book, a standard human was used to determine the minimum dimensions for the execution of functions such as cooking, defined by a repertoire of prescribed efficient movements. The space required for activities in turn provided dimensions for construction elements. Standardization also informs Veblen's advocacy of the "typical" as the basis of the instinct of workmanship in the machine age. The house was planned to fit around the life of the family, like clothing around the human body, to achieve pure utility in the smallest space without conspicuous consumption.<sup>51</sup>

Handbooks of illustrated details existed prior to *Graphic Standards*. In 1873, M. F. Cummings may have been the first in the United States to publish plates of details, although these were primarily intended for builders rather than architects.<sup>52</sup> Late-nineteenth-century publications of standard building details appeared in conjunction with early university architecture courses in construction, including Clarence Martin's *Details*, with which Sleeper was familiar at Cornell.<sup>53</sup> By the 1920s, there were several such books.<sup>54</sup> In 1924, before coauthoring *Graphic Standards*, Ramsey wrote a book of architectural drafting details with Louis Rouillion to support their teaching at the Mechanics Institute in New York.<sup>55</sup> As Hyungmin Pai has shown in his insightful analysis, construction handbooks prior to *Graphic Standards* were illustrated with drawings and photographs of outstanding completed projects by leading firms as exemplars of the best-built work.<sup>56</sup> For example, the Ackerman office library owned six volumes of Mervyn Macartney's *The Practical Exemplar of Architecture*, which included photographs of actual projects. Details were presented in the context of their whole. The same applied to detailed section drawings, even if showing only a single element, since they were represented with combinations of drawings including both elevations and plans (Figure 7). Although Rouillion and Ramsey's slightly earlier publication was by one of the same authors and issued by the same publisher, it is fundamentally different from *Graphic Standards*. The prior book presented the details in relation to a whole house design, the perspective of which served as its frontispiece,

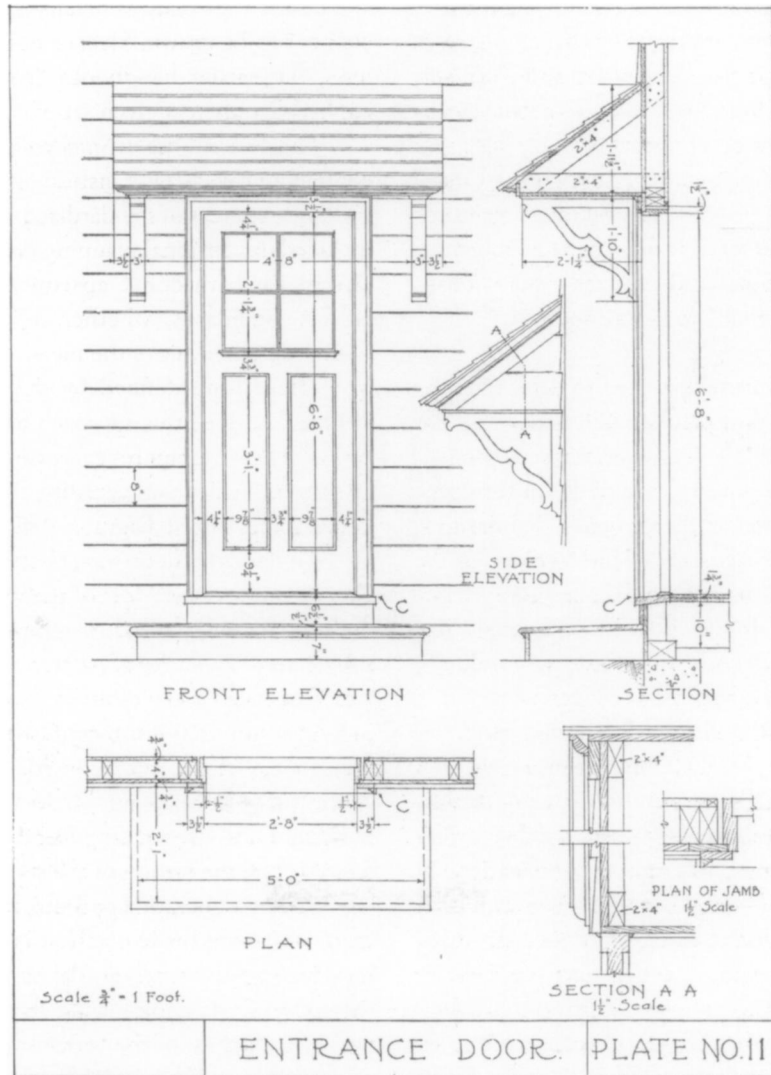
and beside each plate of details is a perspective view of the element to be drawn. Sleeper noted that unlike their volume, the earlier handbooks "contained specific details, applicable only to a given set of conditions."<sup>57</sup>

The data in *Graphic Standards*, rather than derived from complete projects, was instead abstracted from catalogues and other sources of standardized industrial products. It also included dimensional planning data such as predetermined layouts for bathrooms, apartments, lunch counters, and closets. Standards, whether of manufactured goods or human activities, were the measure of the modern instinct of workmanship defined by the uniformity of industry. Veblen described this approach for the machine age: "The canon of beauty requires expression of the generic."<sup>58</sup> In an attempt to achieve universality, the new handbooks introduced standardized diagrams that killed the exemplar.

Unlike its predecessors, *Graphic Standards* has very few elaborate drawings. Most of the images are sections whose outlines are emphasized to appear more essential and less subject to the vagaries of particular projects or styles. Exterior elevations were omitted to avoid ornamentation or individuation of uniform standards. The exemplary architectural model was replaced with, as the authors termed it, "core, or skeleton data." These sections, as X-rays of a building body, presented general guidelines of practice as fact through the notion of the standard.

The technocratic approach to architecture in Ackerman's office was made manifest in the diagrammatic drawings of *Graphic Standards*. Pai concluded that the plate of the composition book for the artist-architect was replaced with the diagram of the reference manual for the technician-architect. For architectural practice and education, Ackerman advocated replacing expressive Beaux-Arts *parti* sketches drawn from historical precedent with concise architectural diagrams grounded in the social needs of the present. He summed up his approach as "methods of analysis" distinguished from "gyratory movements of the six-B [pencil]."<sup>59</sup>

Ackerman directed that drawings in his office were only "to give explicit information in terms of dimensions," while specifications were to define material and technique.<sup>60</sup> A technocratic manifesto by Howard Scott, *Thermodynamic Interpretation of Social Phenomena*, referred to Ackerman's work and was published the same year as *Graphic Standards*. It set out the postulate that "all phenomena involved in the function of a social mechanism are metrical." *Graphic Standards* was similarly described as an encyclopedia of dimensions. Ackerman's office documented technical facts with diagrammatic drawings devoid of expression. These practices were directly applied to the creation of *Graphic Standards*.



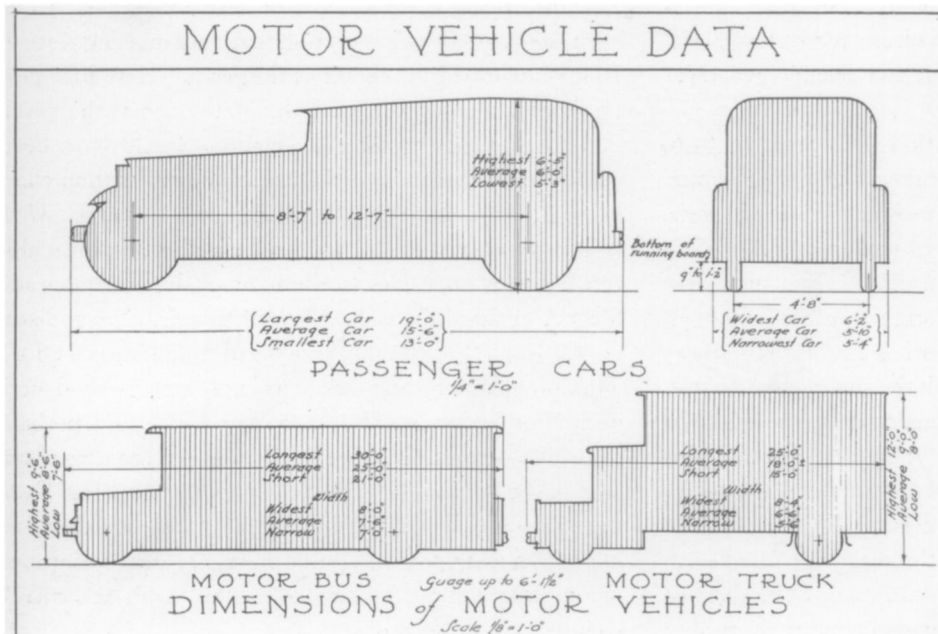
**Figure 7** "Entrance Door," Louis Rouillion and Charles Ramsey, *Architectural Details* (New York, 1924), pl. 11

## The Facticity of Diagrams

The simultaneous appearance of MoMA's exhibition *The International Style* and *Architectural Graphic Standards* underscores that each act of repression in this dance of dualism between function and appearance anticipated its opposite reaction. Another modern handbook, *Time-Saver Standards*, was explicit about this split: "Before a building can succeed aesthetically it must perform its function efficiently. All the material presented in this handbook deals with the function of a building rather than its form. There is absolutely no attempt to dictate or even suggest aesthetic or definitive design solutions to any building type. The architectural designer must have complete freedom to exercise his or her

creative abilities."<sup>61</sup> The identification of function with fact necessitated its being severed from aesthetics, which was understood as personal expression.

In applying Veblen's ideas to architecture, *Graphic Standards* isolated functional facts from design imagination. This effort was manifested in the modes of representation utilized. The authors of the handbook explained: "To translate the facts most quickly for those accustomed to making and using drawings, we chose the graphic form of presentation, purposely devoid of all design in the decorative sense."<sup>62</sup> Diagrams in *Graphic Standards* were identified with essential, standard facts administered by a technocratic architect. Ramsey and Sleeper described their work as a



**Figure 8** "Motor Vehicle Data," in the first edition of *Architectural Graphic Standards*, pl. 199

"graphic and diagrammatic assembly of data, standards, and information." Ackerman explicitly emphasized the facticity of diagrams in his introduction: "Graphic presentation is the language of the draughting room. This accounts for the absence of text. The plates, in many cases, constitute translation into this simple language of facts that are often obscured by words."<sup>63</sup> The diagram, he believed, provided an objective picture of the thing itself, while words were merely conventional symbols subject to misinterpretation. Unlike more expressive images, diagrams are often considered transparent to facts, since they eschew shading, depth, and mimetic likeness in favor of precise lines and geometric order. Denying the inevitability of mediation, the dream of modern diagrams is another contribution to the history of attempts to achieve the long-sought universal language with what was considered direct access to truth.<sup>64</sup>

The image of function was conceived as a diagram. The simplified, schematic drawings of the handbooks provided factual planning and construction information by separating it from design understood as willful external appearance. Section drawings showing construction were simplified and elevations depicting appearances were largely eliminated. Yet this division between fact and appearance was untenable, since functional facts are inextricably bound with cultural desires. Diagrams have always been important to architectural representation and have not always been considered reductive. The missing illustrations from Vitruvius were diagrams rather than architectural images. Plato attributed the making of cosmological diagrams to Daidalos, the mythic first architect. Robert Hahn has even argued that ancient architectural diagrams were the source for Anaximander's first cosmological representation.<sup>65</sup> Diagrams are also used as mystical vehicles of transcendence. The ancient Greek word for diagram was employed to describe drawings used in divination as well as geometry. Patrick Geddes (1854–1932), a pioneer of modern city planning whose work was important to the RPAA and who lectured in 1923 at the New School for Social Research, noted the close relation between ancient cosmological and mystical diagrams with modern planning diagrams.<sup>66</sup>

Diagrams, even those purporting to be objective, are inevitably culturally influenced. The "Motor Vehicle Data" plate in the first edition of *Graphic Standards* shows cars in silhouette to emphasize their dimensions and downplay their conspicuous style (Figure 8). These orthographic shadows were intended to reveal the facts but not the ornament of the car. The hatching reflects the technology of the blueprint and is used elsewhere in the handbooks to shade the outline of the standard human for anthropometric data. Yet the contours reveal and even highlight the car's style. In other plates in *Graphic Standards* where elevations are utilized to show manufactured objects, such as the "French Phone" (pl. 110) or household furniture (pls. 155–60), the appearance of style is clearly manifest. Some of the building detail sections also strongly communicate styles in their outline, particularly the ornamental plaster ceilings (pl. 124, for example). The use of sections as skeletons illustrates the effort to provide only facts of construc-

tion.

tion and avoid elevations that show style. Since function is always embedded in a particular culture and historical situation, its expressive dimension is unavoidable, whatever efforts are taken to suppress it.

The first plate of the first edition of *Graphic Standards*, the “orientation chart” diagramming daylighting (which Ackerman singled out as a purely technical subject), reveals a cosmography embedded within its seemingly straightforward presentation of data (Figure 9).<sup>67</sup> The plate was included in all the editions by the original authors, although its location in the book changed with each edition.<sup>68</sup> Showing a house plan at the center with the sun moving around it, the diagram follows the Ptolemaic system, with a fixed earth at the center of the cosmos. The pamphlet in which the orientation chart first appeared explained the diagram by describing the sun as moving around the earth (Figure 10).<sup>69</sup> Inherent in the structure of this diagram is its reliance on an ancient cosmography to conceptualize the issue of sunlight for building, graphically demonstrating the futility of Ackerman’s project to present purely factual data.

Occult planetary influences on the world are suggested in the central panel of the orientation chart by four personified suns radiating some three thousand line segments toward the house plan. The likelihood of the diagram representing esoteric effects is reinforced by the original pamphlet’s cover, which shows an aged magus with a star on his pointed hat divining a diagram (Figure 11). If not intended to suggest the occult, representing the scene at night is an odd choice for a study of the effects of sunlight.

Of the 213 plates in the original *Graphic Standards*, only the orientation chart is turned sideways to accommodate its zodiacal borders. Other modern handbooks following *Graphic Standards* in reproducing this diagram omit the borders to fit their vertical formats.<sup>70</sup> Usually these peripheral areas are considered innocuously decorative and hence dispensable, but here a clear decision was made to retain them. The zodiacal border is replete with iconographic references, presenting not only the facts but also the myths of orientation. The diagram’s east/west axis, running vertically through the rotated upright page, continues all the way through the first “I” of “ORIENTATION” at the top, or eastern end. This visual relationship invokes the long tradition that gives us the word “orientation” and locates east at the tops of medieval cosmographies and architectural plans. This practice was related to ideas of paradise being situated in the east with the rising sun.<sup>71</sup> Terminating the east/west axis are the eyes of two eagles in the diagram’s borders. In the ancient world, eagles were associated with the sun and thought to be able to gaze directly at the fiery sphere.<sup>72</sup> The birds of the chart recall the pair of eagles that

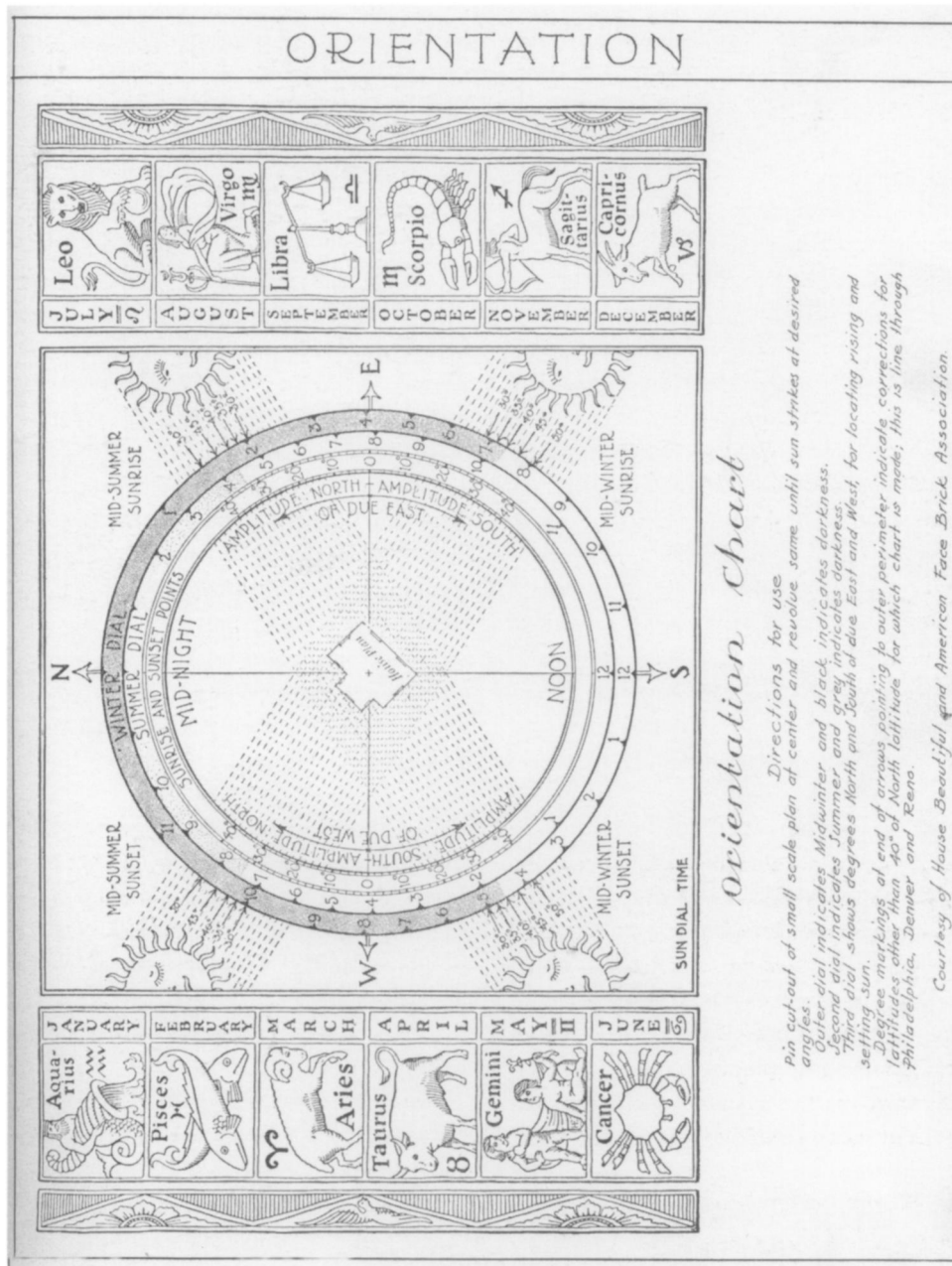
Zeus sent flying at equal speed in opposite directions, one to the east and the other west, so that their meeting place in Delphi identified the center of the earth.<sup>73</sup> Here they perform the same purpose, with the house plan as the navel. These and other esoteric associations would have been readily available to the draftsman of the orientation chart through W. R. Lethaby’s *Architecture, Mysticism and Myth* (1892), which included a line drawing of an ancient sculpture of the pair of eagles astride an omphalos.<sup>74</sup> Ramsey and Sleeper violated their sheet layout to retain the zodiacal border when they could have avoided the additional effort. They provided a further clue to its importance beyond mere decoration by subtly adding initials under Gemini, perhaps those of Ackerman (Figure 12).<sup>75</sup> Along with the facts of sun angles, the border gives the chart depth of meaning. Even those espousing a commitment to objectivity chose to include an iconographic approach, suggesting the authors’ incomplete understanding or acceptance of Ackerman’s technocratic architecture.

Ackerman’s attempt to separate pure empirical fact from expression only proved the inherent intertwining of the two in any cultural undertaking like building. Whether by choice or necessity, it was impossible to illustrate facts of construction without including appearances. The plates, like architectural drawings, are inevitably a meditation, to use Vitruvius’s word, imbued with culture. Veblen suffered from the same difficulty, presuming, but never establishing, the possibility of a state of complete utility “serving only men’s true needs.” Diagrams, like history, are not thin and factual, but rich with meaning.

### Ackerman’s Exceptional Practice Becomes Standard

On publication, *Graphic Standards* was quickly dubbed the “architect’s bible” and has retained the moniker ever since. Over one million copies of numerous editions were sold by the year 2000, making it perhaps the most widely owned architectural book. Philip Johnson wrote in the tenth edition, issued at the beginning of the new millennium, “I have always considered my *Graphic Standards* as important as my pencil. . . . Every architect loves it, wears it out, and keeps it within arm’s length.”<sup>76</sup> That Johnson, an organizer of the 1932 MoMA modern architecture exhibition, praised the book intended by Ackerman to reject style ironically reinforces the dualistic split between aesthetics and function.

Beginning with the 1970 edition, the American Institute of Architects took the unprecedented step of assuming editorial responsibility for *Graphic Standards*, reflecting its

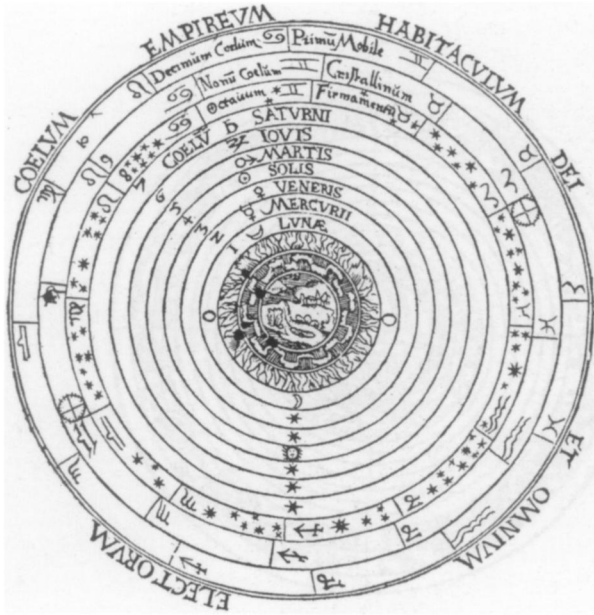


**Figure 9** "Orientation Chart," in the first edition of *Architectural Graphic Standards*, pl. 1

perceived importance in defining American architectural practice. In this edition, the format was changed from mirroring the order of construction of buildings to following the sixteen-part uniform system for construction specification. This revision severed the ties between architecturally drawn lines and construction lines on site that Ackerman tried to achieve and the original edition embodied.

Through *Graphic Standards*, the office practices of Ackerman's small firm had an enormous impact on standardiz-

ing practices across American architectural firms. Since 1994, when the book was first issued as a CD, its detail drawings can be transferred directly into actual project drawings, making the diagram fact.<sup>77</sup> The practice of tracing standard details that preceded computer printouts allowed each iteration to be an original through the act of redrawing in a way that the copy key on the computer does not.<sup>78</sup> Drafting-room practices, once developed by individuals and shared among coworkers, were absorbed by mod-



**Figure 10** Peter Apian, Ptolemaic diagram of the geocentric universe, from *Cosmographicus liber*, ed. Gemma Frisius (Antwerp, 1533), fol. 4



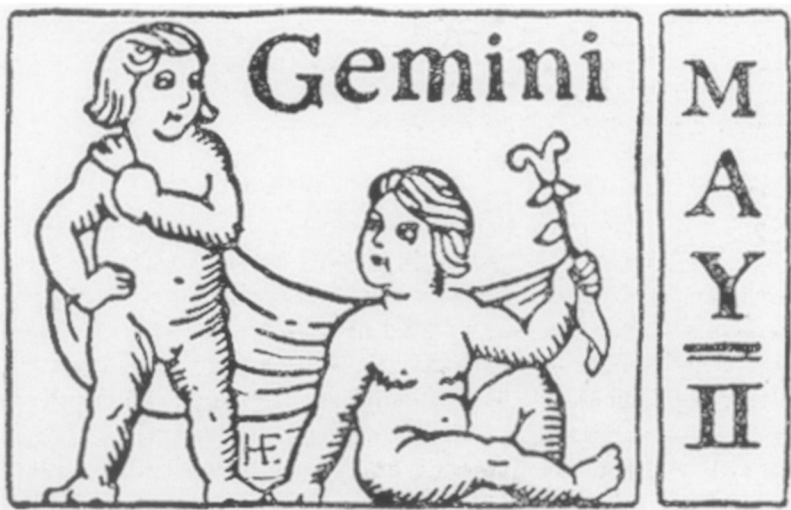
**Figure 11** Cover illustration from the American Face Brick Association pamphlet *Orienting the House: A Study of the Placing of the House with Relation to the Sun's Rays* (Chicago, 1922)

ern architectural handbooks and through their enormous success became professional practice standards.

Ackerman's strong political views influenced his practice and the nature of *Graphic Standards*. In 1920, when the red scare in the United States was palpable, Ackerman wrote in support of a "draughtsmen's union" in an article titled "Bolshevik or Mammon?"<sup>79</sup> Judging from the private letters of Stein, Ackerman was dedicated to realizing a much more socialistic form of technocratic government. At the

time of the publication of *Graphic Standards*, Ackerman was anticipating an imminent veblenesque technocratic revolution.<sup>80</sup> In his 1950 obituary of Ackerman, Mumford dared to publicly describe him as "extremely critical of the existing [economic] order." Ackerman's radical political convictions may explain why his wife destroyed his personal papers on his death.<sup>81</sup>

Although both had widespread influence, neither Ackerman nor Veblen had the impact on social practice each



**Figure 12** Detail of Gemini from the border of the orientation chart in the first edition of *Architectural Graphic Standards*

had hoped to achieve. Ackerman's anticipated political revolution failed to occur, but his technocratic ideals in some ways prefigured today's governmental bureaucracy of experts. Veblen's critique of conspicuous consumption failed to produce a significant change in American habits, but his critical viewpoint became widely disseminated. The social program inherent in their perspective was co-opted by American capitalism. *Graphic Standards* did not lead to the sort of practice that Ackerman envisioned, instead reinforcing the opposite as the "bible" of normative architectural practice. It is a paradox that the book, conceived as a revolutionary manifesto, went on to become in large part the basis, even the identity, of the practice of American architecture today.

The program to separate fact from appearance attempted by Veblen and Ackerman enabled the proliferation of precisely those motives—the desire for profit and conspicuous display—that they hoped to eliminate. The dualism between function as fact and aesthetics as self-expression came to dominate architectural practice and allow the commodification of architecture. This formulation continues to haunt practices today. While many commercial architectural firms ensure repeat business by favoring functional needs over aesthetics, many neo-avant-garde practices pursue a salesmanship dominated by novelty and self-expression. Unfortunately, Ackerman, like Veblen, failed to recognize that cultural expression is inherent in the material function of building and cannot be eliminated from it. If this is true of functional diagrams, then it is certainly true of other modes of architectural representation. As Georges Bataille suggested in 1947, the greatest myth of modern man is that he has no myths.<sup>82</sup> The mythopoetic dimension of function can never be fully isolated and extracted from pragmatic necessity.

Experience shows the accuracy of Ackerman's assessment of modern architectural practices. Furthermore, his attempt to resist the commodification of architecture by grounding it in the material and functional reality of building is a valuable approach that has recently been rediscovered in some experimental practices. Yet the attempt to reduce function to fact and aesthetics to self-expression continues to undermine this effort. Ackerman's goal for a modern architecture to derive from the nature of its use and construction for the general well-being to replace the design of novelties can best be fulfilled when the bifurcation of function and expression is set aside. Cultural excess or ritual continues to be embedded within the functional; it is expansive and is an unlimited source for the architectural imagination.

## Notes

This article is developed from my paper "Modern Architectural Handbooks and the Standardization of Office Practices," presented at the annual meeting of the Society of Architectural Historians, 25 April 2003, Denver, Colo., and from part of my dissertation, "The Image of Function: Architectural Diagrams in Handbooks and Normative Practices in the Twentieth-Century" (University of Pennsylvania, 2003). I wish to extend my appreciation to Bruno Giberti, Marco Frascari, and Nancy Stieber for their suggestions regarding the manuscript.

1. The exhibition itself reflected this sort of bifurcation between the section organized by Johnson and Hitchcock and the less well known section on housing organized by Lewis Mumford and other members of the Regional Planning Association of America—Catherine Bauer, Clarence Stein, and Henry Wright. Following the introductions, the catalogue is split between Johnson and Hitchcock's major portion, on exhibiting architects, and Mumford's contribution at the end on housing. The sections also differ in the mode of presenting work, the first emphasizing buildings as photographed objects and the second taking a more didactic approach. See Philip Johnson and Henry-Russell Hitchcock, Jr., *Modern Architecture, International Exhibition* (New York, 1932); and Terence Riley, *The International Style: Exhibition 15 and the Museum of Modern Art* (New York, 1992).
2. For a history of the RPAA, see Roy Lubove, *Community Planning in the 1920s: The Contribution of the Regional Planning Association of America* (Pittsburgh, 1963).
3. For biographical information on F. L. Ackerman, see Henry and Elsie Withey, *Biographical Dictionary of American Architects* (Los Angeles, 1956); *Who Was Who in America (1943–1950), Volume Two* (Chicago, 1950); Frederick Ackerman, *Homes for Workers* (New York, 1918), 2; John Murphy in John Murphy, ed., *The Housing Famine and How to End It: A Triangular Debate between John Murphy, Edith Elmer Wood and Frederick L. Ackerman* (New York, 1920), vii; and Lewis Mumford, "Frederick Lee Ackerman, FAIA (1878–1950)," *Journal of the American Institute of Architects* 14 (Dec. 1950), 249–54. While in Paris, Ackerman was in the atelier of Joseph-Eugène-Armand Duquesne, who taught at Harvard University from 1911 to 1914.
4. "Alexander Buell Trowbridge, Obituary," *Architectural Record* 108 (Nov. 1950), 196. On Trowbridge's having been brought to Cornell to institute a Beaux-Arts curriculum, see Mary N. Woods, *From Craft to Profession: The Practice of Architecture in Nineteenth-Century America* (Berkeley, 1999), 80.
5. Fiske Kimball, "The Social Center" *Architectural Record* 45 (May 1919), 417–40. Trowbridge & Ackerman's work is illustrated on pages 435–38.
6. Frederick Ackerman, *The Housing Problem in War and in Peace* (Washington, D.C., 1918).
7. There is no complete survey of Ackerman's work, although a partial list of work by Harold Sleeper, dated 12 Dec. 1942, includes all work in which he was involved at Ackerman's firm. No. 2135, Box 8, Harold R. Sleeper Papers, Kroch Library Manuscript Collections, Cornell University, Ithaca, N.Y. Many of Ackerman's projects have been published. In addition to those identified elsewhere in this article, a partial list includes: "Tryon Art Gallery, Smith College, Northampton, Mass.," *American Architect* 129 (20 Feb. 1926), 304; "Apartment House, 24 East 83rd Street, New York City," *Architectural Forum* 69 (Dec. 1938), 429–32; "The House of J. DuPratt White, Nyack, N.Y.," *American Architect* 135 (20 Jan. 1929), 81–96; "Young Quinlan Department Store Reborn," *Architecture Minnesota* 16 (Jan.–Feb. 1990), 22–29; "Munsey Park Business Center," *American Architect* 144 (July 1934), 67–70; "House in Munsey Park," *American Architect* 145 (Sept. 1934), 17–18; "Munsey Park Golf Club," *American Architect* 144 (Mar. 1934),



- 34–39; and “Studies, Cornell University,” *Architect* 9 (Mar. 1928), 680–88.
8. Still occupied, the First Houses project is located in New York City at 29–41 Avenue A at East Third Street. “First Houses,” *Metropolis* 12 (Jan.–Feb. 1993), 27–28.
9. See, for example, Frederick Ackerman, “Community Stupidity: How Real-Estate Promotion Creates Congestion and Reduces Values,” *Journal of the American Institute of Architects* 3 (May 1915), 193–97, 194; Ackerman, “The Relation of Art to Education, III: Architectural Schools,” *Journal of the American Institute of Architects* 4 (July 1916), 281–84; and Ackerman, “The Architect’s Part in the World’s Work,” *Architectural Record* 37 (Feb. 1915), 49–58.
10. Typescript, 2, item 10, “Biographical Data: Harold R. Sleeper,” Harold R. Sleeper Papers, Cornell University Archives.
11. Richard Pommer, “The Architecture of Urban Housing in the United States during the Early 1930s,” *JSAH* 37 (Dec. 1978), 235–64.
12. Thorstein Veblen, *The Theory of the Leisure Class* (New York, 1899).
13. Thorstein Veblen, “The Instinct of Workmanship and the Irksomeness of Labor,” *American Journal of Sociology* 4 (1898–99).
14. Thorstein Veblen, *The Instinct of Workmanship and the State of the Industrial Arts* (New York, 1914), 328.
15. Thorstein Veblen, *The Engineers and the Price System* (New York, 1921), 80.
16. *Ibid.*
17. Ackerman and Veblen would not have met at Cornell. Although they were both students there, Ackerman finished his degree in 1901, while Veblen was there from the winter of 1891 through the fall of 1892. By spring of 1892, Veblen moved to the new University of Chicago. Veblen’s first book, *Theory of the Leisure Class*, was not published until 1899. For the assertion that Ackerman knew Veblen at Cornell, see Michael Lang, “Town Planning and Radicalism in the Progressive Era: The Legacy of F. L. Ackerman,” *Planning Perspectives* 16 (2001), 143–67, 146; and Kermit Parsons, ed., *The Writings of Clarence Stein, Architect of the Planned Community* (Baltimore, 1998), 188 n. 2, 380 n. 1.
18. Mumford, “Ackerman,” 250 (see n. 3).
19. Along with Robert Kohn and Charles Whitaker, Ackerman was on the executive committee charged with reorganization of the Alliance. See John Dorfman, *Thorstein Veblen and His America* (1934; rev. ed. New York, 1966); and Frederick Ackerman, *The Facts behind Technocracy: How Man’s Growing Use of Energy Is Revolutionizing His Social Life* (New York, 1933).
20. Frederick Ackerman to Lewis Mumford, 9 May 1941, Letters, 1929–1941, to Lewis Mumford, folder 21, Lewis Mumford Collection, Rare Book and Ms. Library Manuscripts, University of Pennsylvania, Philadelphia.
21. See, for example, Frederick Ackerman, “The Function of Architectural Criticism,” *Journal of the American Institute of Architects* 16 (Apr. 1928), 145; Frederick Ackerman, “Where Goes the City Planning Movement? V. Drifting,” *Journal of the American Institute of Architects* 8 (Oct. 1920), 351–54; and Frederick Ackerman in Murphy, *The Housing Famine and How to End It*, 16–17.
22. Frederick Ackerman, “Forces that Influence the Profession’s Future,” *American Architect* 141 (May 1932), 30–32, 120.
23. Frederick Ackerman, “Georgian Architecture,” *Tuileries Brochures* (Mar. 1930), 115–27.
24. Veblen, *The Instinct of Workmanship*, 283–84.
25. Ackerman, “Georgian Architecture,” 116.
26. Mumford, “Ackerman,” 252.
27. Frederick Ackerman, “An Influence for Better Small Homes,” *Architectural Forum* 32 (Apr. 1920), 170.
28. Frederick Ackerman, “The Modern Movement I: A Point of Theory,” *Journal of the American Institute of Architects* 16 (Dec. 1928), 465.
29. Veblen, *Theory of the Leisure Class*, 112–13. Also quoted in Catherine Bauer, *Modern Housing* (Boston, 1934), 212.
30. Frederick Ackerman to Lewis Mumford, 19 Feb. 1929, 1–2, Frederick Ackerman file, Lewis Mumford Collection, Rare Book and Ms. Library Manuscripts, University of Pennsylvania. Ackerman’s letter was written in response to an article by Mumford where the latter argues that “conspicuous waste is quite as much in the salesrooms of the modernists as in the more conservative establishments,” and goes on to write that “the machine is a communist” and that “we must design for the millionaire precisely as we would for the manual worker.” Lewis Mumford, “The Economics of Contemporary Decoration,” *Creative Art* (Jan. 1929), xix–xxi.
31. Charles Ramsey and Harold Sleeper, *Architectural Graphic Standards* (New York, 1932).
32. Almost all of these modern handbooks were first published, at least in part, as installments in architectural journals, and some were not available in bound book form until later in the next decade. These early journal printings were explicitly intended to be made into books and were printed with a blank verso, marks identified for cutting and punching to put into special ring binders, and printing on different paper stock. See “Time-Saver Standards,” *American Architect* 147 (July 1935), 45; Don Graff, “Draftsman’s Data Sheets,” *Pencil Points* (Jan. 1932); Ernst Neufert, “Bau-Entwurfslehre,” *Bauwelt* (11 Apr. 1935); and E. and O. E., “Planning: The Architect’s Handbook,” *Architect and Building News* (London) (1935).
33. Harold Reeve Sleeper graduated from Cornell in 1915 and began working for Trowbridge & Ackerman in 1919; by the mid-1920s, following Ackerman’s advice, he became a specification writer for the office and in 1928 was named an associate. Charles George Ramsey graduated from the Architectural Association of Ireland and emigrated from Dublin in the early 1900s. Ramsey began working for Trowbridge & Ackerman in either 1913 or 1919. Ramsey’s employment data sheet has an original ink date of 29 May 1919. Sometime later that date was crossed out and 16 May 1913 written over in pencil. For the promotion for the fourth edition of *Graphic Standards*, Ramsey indicated his beginning date of employment with Ackerman as 1913. After Ackerman’s death in 1950, the firm continued as Sleeper, Ramsey and Schwartzman. See “Harold Sleeper Obituary,” *Journal of the American Institute of Architects* 35 (Jan. 1961), 58; *Architectural Forum* 113 (Dec. 1960), 16; *House and Home* 18 (Dec. 1960), 71; and “Charles Ramsey Obituary,” *Progressive Architecture* 45 (Jan. 1964), 60, Charles George Ramsey, Harold R. Sleeper, Employee Biographical Data Sheets, no. 2135, Box 2, and Questionnaire Related to the Promotion of Book, 1, no. 2135, Box 13, Harold R. Sleeper Papers, Cornell University Archives.
34. When Sleeper, late in life, recorded the origins of *Graphic Standards*, he identified Ackerman as “encouraging” the project. See Harold R. Sleeper, “*Architectural Graphic Standards: The Birth of a Book*,” *Graphic Science* (Apr. 1960), 19–21, esp. 19. Sleeper kept detailed records to repay Ackerman for the time office employees spent preparing sheets for *Graphic Standards* in Ackerman’s office. Harold R. Sleeper Papers, Cornell University Archives.
35. In Martin Matheson’s acceptance letter for Ramsey and Sleeper’s proposal, addressed to them c/o F. L. Ackerman, he quotes one of the three reader’s reports: “I have very high regard for Mr. Ackerman’s office.” Martin Matheson, Advertising and Sales Manager of John Wiley & Sons, to Messrs. Ramsey and Sleeper, 29 Nov. 1930, no. 2135, Box 13, Harold R. Sleeper Papers, Cornell University Archives.
36. For Sleeper’s articles, see, for example, “Where? What? How? The Specification! By Harold R. Sleeper, of the Office of Frederick L. Ackerman, Architect,” *Architectural Forum* (Nov. 1930), 635–37; and “University Housing Problems, by Harold R. Sleeper, Associate of the Firm of Frederick L. Ackerman, Architect,” *Architectural Forum* (June 1931), 761–70. The

- latter article included a plate from the “forthcoming *Architect’s Drafting Room Guide*, to be published Sept. 1931.” See “Assembly of Specification Data by Harold R. Sleeper of the Office of Frederick L. Ackerman, Architect,” *Architectural Forum* (May 1931), 619–21; and “The Standard Specification by Harold R. Sleeper, of the Office of Frederick L. Ackerman, Architect,” *Architectural Forum* (Feb. 1931), 237–40.
37. Sleeper, “*Architectural Graphic Standards*,” 19.
38. “Comparison of Student Living Halls on the Relation between Use and Volume of Structure” was included in Ackerman’s report on the Balch Hall project to Cornell University. Frederick Ackerman Report, no. 2/5/953, Box 1, Cornell University Archives. Sleeper indicated that he worked under Frederick Ackerman on projects for Cornell University, including residential halls for women and a recreation building and recreation field for women. “Partial List of Work,” typescript, Harold R. Sleeper Papers, no. 2135, Box 8, Cornell University Archives. The Balch Hall women’s residences were later described as executed in the “English Renaissance style.” Kermit Parsons, *The Cornell Campus* (Ithaca, 1968), 238 n. 18.
39. Frederick L. Ackerman, foreword to *Report on an Inquiry into the Utilization of a Certain Tract of Land for Residential Use for Men Students, Submitted to a Special Committee of the Board of Trustees on Housing for Men*, 20 Oct. 1930, Cornell University Archives.
40. According to Sleeper, Ramsey—an outstanding draftsman who provided leadership in that area for the book—could “print the Lord’s Prayer in a space smaller than a dime!” Sleeper, “*Architectural Graphic Standards*,” 20. Sleeper wrote of himself: “Harold Sleeper went to the office of Frederick L. Ackerman in 1919. His first responsibility that gave a direction to his career came when he was put in charge of all specification writing and the assembly of technical data for Mr. Ackerman.” “Biographical Data” (see n. 10).
41. Advertisement for the fourth edition of *Architectural Graphic Standards*, used on the back of the dust jacket. Harold R. Sleeper, *Building Planning and Design Standards for Architects, Engineers, Designers, Consultants, Draftsmen and Students* (New York, 1955).
42. Ackerman to Mumford, 19 Feb. 1929 (see n. 30).
43. Frederick Ackerman, *A Note on Site and Unit Planning* (New York, 1937).
44. Veblen, *Theory of the Leisure Class*, 255 (see n. 12).
45. Ackerman, “Apartment House,” 429–32 (see n. 7).
46. The book proposal identified the contents as collections of standards: “The subjects to be presented may be broadly divided classifications: (1) Data, standards and dimensions fixed by the human scale, (2) Government and trade associations’ accepted standards, and (3) Information and standards which have become fixed through usage and practice.” Book proposal to John Wiley & Sons, 29 Oct. 1930, no. 2135, Box 13, Harold R. Sleeper Papers, Cornell University Archives.
47. Frederick Ackerman, “An Influence for Better Small Homes,” *Architectural Forum* 32 (Apr. 1920), 167–70.
48. Knud Lönberg-Holm, “Design for Environmental Control,” *Architectural Record* 80 (Aug. 1936), 158.
49. Ernest Irving Freese, “The Geometry of the Human Figure,” *American Architect and Architecture* 145 (July 1934), 57–60. Ernst Neufert’s first article of *Bau-Entwurfslehre* was titled “Der Mensch als Mass und Ziel,” *Bauwelt* 26 (11 Apr. 1935), 15. Ramsey and Sleeper added human dimensions in their third edition of *Graphic Standards*, but it was clear from their book proposal that this was considered primary information at the outset. See also their article on the anthropometrics of children, written with Ruth Leigh, “Houses Are for Children, Too,” *American Architect* (Nov. 1932), and republished in *Time-Saver Standards*.
50. Ramsey and Sleeper, “Statement Concerning Proposed Book,” memorandum to John Wiley & Sons, 29 Oct. 1930, 2. Harold R. Sleeper Papers, Cornell University Archives.
51. John Hancock Callender, *Introduction to Studies of Family Living* (New York, 1943), 5. Callender was the first editor to appear by name in *Time-Saver Standards*, in the fourth edition (1966).
52. M. F. (Marcus Fayette) Cummings, *Cummings’ Architectural Details* (New York, 1873). See Daniel Reiff, *Houses from Books: Treatises, Pattern Books, and Catalogs in American Architecture, 1738–1950: A History and Guide* (College Park, Penn., 2000). See also Dell Upton, “Pattern Books and Professionalism: Aspects of the Transformation of Domestic Architecture in America, 1800–1860,” *Winterthur Portfolio* (1984), 107–50.
53. These included Francis Chandler, *Construction Details Prepared for the Use of Students of the Massachusetts Institute of Technology* (Boston, 1892); and Clarence Martin, *Details of Building Construction* (Boston, 1899), the latter based on Martin’s lectures at Cornell. See Sleeper, “*Architectural Graphic Standards*,” 19 (see n. 34).
54. One of the most widely used handbooks in the 1920s through several editions is Philip Knobloch, *Good Practice in Construction* (New York, 1923).
55. Louis Rouillion and Charles Ramsey, *Architectural Details* (New York, 1924).
56. Hyungmin Pai, *The Portfolio and the Diagram, Architecture, Discourse, and Modernity in America* (Cambridge, Mass., 2002), 202 ff.
57. Sleeper, “*Architectural Graphic Standards*,” 20.
58. Veblen, *Theory of the Leisure Class*, 112 (see n. 12); also quoted in Bauer, *Modern Housing*, 212.
59. Frederick Ackerman, “The Relation of Art to Education: III. Architectural Schools,” *Journal of the American Institute of Architects* 4 (July 1916), 281–84.
60. Frederick Ackerman, introduction to Harold Sleeper, *Architectural Specifications* (New York, 1940), v.
61. Joseph de Chiara, *Time-Saver Standards for Building Types* (New York, 1980), xv–xvi.
62. Ramsey and Sleeper, preface to *Architectural Graphic Standards* (see n. 31). Ramsey and Sleeper, “Statement Concerning Proposed Book,” 2 (see n. 50).
63. Ackerman, foreword, and Ramsey and Sleeper, preface to *Architectural Graphic Standards*.
64. For example, see Umberto Eco, *The Search for the Perfect Language*, trans. by James Fentress (Oxford, 1995); and Theodor Adorno, *Prisms*, trans. by Samuel and Shierry Weber (1967; Cambridge, Mass., 1981), 75, 92.
65. Robert Hahn, *Anaximander and the Architects: The Contributions of Egyptian and Greek Architectural Technologies to the Origins of Greek Philosophy* (Albany, 2001).
66. Patrick Geddes, “A Note on Graphic Methods, Ancient and Modern,” *Sociological Review* 15 (1923), 227–35.
67. The orientation chart was published in all five editions edited by Ramsey and Sleeper. Ramsey and Sleeper copied it from *The House Beautiful Building Annual of 1925: A Comprehensive and Practical Manual of Procedure, Materials, and Methods of Construction for All Who Contemplate Building or Remodeling a Home* (New York, 1924). The chart originally appeared in the anonymous 1922 pamphlet *Orienting the House: A Study of the Placing of the House with Relation to the Sun’s Rays* (Chicago, 1922).
68. The orientation plate was published in *Architectural Graphic Standards* in the first edition (1932) on the first page, in the second edition (1936) on page 249, in the third edition (1941) on page 292, in the fourth edition (1951) on page 563, and in the fifth edition (1956) on page 516. The sixth edition (1970), which omitted the orientation plate, was the first one edited by the AIA without Ramsey or Sleeper.
69. “The irregular hour spaces on the dials would make it appear that the sun moves around the earth in a jerky way. On the contrary, it moves, or rather the earth rotates, at an absolutely uniform rate.” *Orienting the House*,

6. For a similar diagram that the author directly identifies with the Ptolemaic system, see William Atkinson, *The Orientation of Buildings or Planning for Sunlight* (New York, 1912), 2.
70. The diagram was reproduced in a vertical format without the border in *Don Graf's Data Sheets* (New York, 1944); and Towne Abercrombie, *Applied Architectural Drawing* (1931; Milwaukee, 1948), 25.
71. Villard de Honnecourt's cathedral plans are drawn with east "up." For the orientation tradition in cartography, see O. A. W. Dilke, *Greek and Roman Maps* (Baltimore, 1998), 176; and Lloyd Brown, *The Story of Maps* (New York, 1979), 96.
72. Aristotle, *Historia Animalium*, 8. 620a. See also Vitruvius, I. IV. 7.
73. Pindar, *Pythian Odes*, 4. 6; and Strabo, *The Geography*, 9. 3. 6. For ancient images of eagles on each side of an omphalos, see A. B. Cook, *Zeus: A Study in Ancient Religion, Three Volumes in Five Parts* (New York, 1965), 2: 179, 187.
74. William Richard Lethaby, *Architecture, Mysticism and Myth* (London, 1892), 71.
75. The initials are likely the work of Ramsey and Sleeper, since they took responsibility for drawing all the original plates themselves. "Just the two of us did all the work for the First Edition, from preface to index." Sleeper, "Architectural Graphic Standards," 21 (see n. 34). The initials between the Gemini twins seem to read "HF" or they could be "AE." Whom the initials indicate is unclear. They could be construed as "AF" for Frederick Ackerman, who often identified himself by his initials. However, his birthday was 7 July. It is possible that Ramsey and Sleeper considered themselves "twins" in Ackerman's office.
76. For publications referring to *Graphic Standards* as the architect's bible,

- see Philip Johnson, foreword to *Architectural Graphic Standards* (New York, 2000), xiv, xv; "Harold Sleeper, Obituary," *House and Home* 18 (Dec. 1960), 71; and "Harold Sleeper Obituary," *Journal of the American Institute of Architects*, 58.
77. Kenneth Kramer, "Architecture's Classic Reference Has Been Transformed into a High Tech Design Tool," *Architectural Graphic Standards CD-ROM Version 2.0*, *Wisconsin Architect* 69 (May/June 1998), 6. *Architectural Graphic Standards* is now available by subscription in a downloadable Web format.
78. H. Vandervoort Walsh, "The Draftsman's Own Data File," *Architectural Forum* 33 (Dec. 1920), 201.
79. Frederick Ackerman, "Bolshevik or Mammon?," *Journal of the American Institute of Architects* 8 (Jan. 1920), 40–41.
80. Parsons, *Writings of Clarence Stein*, 246, 379 (see n. 17). Stein quotes Ackerman in 1931 as saying, "I passed Bolshevism a couple of years ago" (193). When Roosevelt reopened the banks after the Depression in 1933, Stein wrote "I am afraid Ackerman will have to wait until next time" (253).
81. See Lang, "Town Planning and Radicalism in the Progressive Era," 143 (see n. 17).
82. Georges Bataille, *The Absence of Myth: Writings on Surrealism*, trans. by Michael Richardson (London, 1994), 48.

### Illustration Credits

- Figure 3. Ackerman, "Georgian Architecture," 121  
 Figure 4. Ackerman, "Comparison of Student Living Halls," 65  
 Figure 6. Ackerman, "Apartment House, 24 East 83rd Street," 429