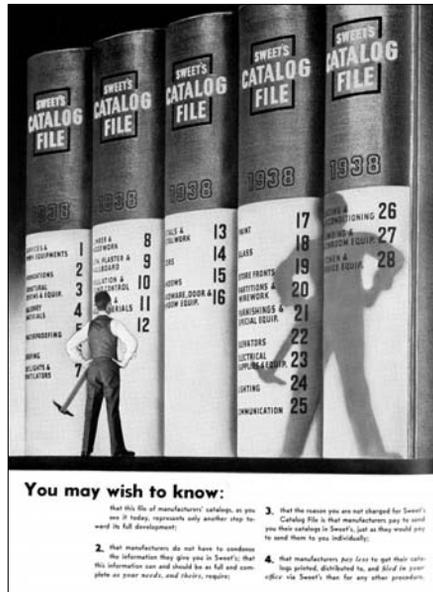


# From the Gospel of Efficiency to Modernism: A History of Sweet's Catalogue, 1906–1947

Andrew M. Shanken

Sweet's Catalogue (figure 1), that almost mythic fixture of promotion in the building industry, arose in 1906 in response to what architects called the "catalogue problem." Besieged by thousands of catalogues of irregular size and format, the architect or builder could scarcely keep up with the proliferation of building materials in the emerging national economy, let alone organize and read the trade catalogues generated by a building industry stoked by the emerging field of advertising. Sweet's systemized the chaotic lines of communication between architects, builders, engineers, and manufacturers, regularizing the typography and size of trade catalogues, and binding them in one large reference book with an index. By 1912, when the Architectural Record Company, the publisher that founded Sweet's, sold the catalogue to the F. W. Dodge Company, the idea of the compilation catalogue shifted from an attempt to reign in the unruly business of advertising, to a progressive era attempt to rationalize and manage the larger industry for architects and builders. During the Great Depression and World War II, Sweet's Catalogue File, as it came to be called, again changed, this time in response to European typography and layout, the latest ideas about the display of visual

Figure 1  
Sweet's Catalog File Advertisement, 1938  
(*Architectural Record* 83, June, 1938) 158.



information, and systems theory. This essay explores the creation and early development of Sweet's Catalogue from 1906 to the end of World War II as a way of revealing the ways in which architects responded to, and were shaped by, the emergence of a consumer culture.<sup>1</sup>

### Sweets, F. W. Dodge, and the Beginnings of Consumer Culture

Sweet's grew up with the beginnings of consumer culture, which Richard Wightman Fox and T. J. Jackson Lears locate in the maturation of the national economy, with the attendant growth of national magazines and advertising, and a "new stratum of professionals and managers, rooted in a web of complex new organization (corporations, government, universities, professional associations, media, foundations, and others)."<sup>2</sup> Lears, in particular, situates consumer culture in a shift in ethos. A thoroughly national marketplace, even more than the factory system that preceded it, alienated people from the means of production. Burgeoning bureaucracies plugged the growing managerial class into an impersonal system, leaving its members a narrowing purchase on self-determination. As Lears put it: "... the masses of employees who in a corporate economy could no longer aspire to become their own bosses," found legitimation, even transcendence, in consumption.<sup>3</sup>

Providing shelter for the bureaucracies of the rising service economy changed the scale of operation in building significantly in the late nineteenth century. The new skyscrapers, railroad stations, and other industrial and commercial structures, both individually and collectively, forced the building industry to rationalize. This meant forsaking the intimate and quasi-familial basis of business that prevailed before the advent of the corporation. A new system evolved to accommodate the new scale of operation. Frederick Warren Dodge (1864–1915), a pioneer in building statistics, emerged in 1891 in this context, running handwritten reports on construction projects organized by area, class of structure, and building progress to a small group of subscribers in Boston.<sup>4</sup> Within two years, he moved to New York City and soon his business, finding a quick monopoly in an important niche, developed into the leading construction news service in the nation. Adapting the relatively new system of the library card catalog to news in the building industry, Dodge was able to record each successive phase in the erection of buildings, presenting individual cards to the business offices of builders and manufacturers in an efficient manner for tendering bids and the filing of information.<sup>5</sup>

The change from acting as a local gopher for the building trades to a national news service happened with astonishing speed. As Dodge's obituary in *Architectural Record* pointed out, "the business of contractors" in the late nineteenth century "was more or less local in character, and the demand for building news was likewise

- 1 Sweet's Catalogue has changed name several times in its history. From 1906 to 1911, it was called *Sweet's Indexed Catalogue of Building Construction*. In 1912, it changed to *Sweet's Catalogue of Building Construction*, becoming *Sweet's Architectural Catalogue* in 1916, *Sweet's Catalogue File* in 1934, and *Sweet's Catalog File* in 1936. After World War II, the single tome proliferated into many annual specialized volumes. I will refer to the entire run with the generic "Sweet's Catalogue."
- 2 See the introduction to Richard Wightman Fox and T. J. Jackson Lears, eds., *The Culture of Consumption: Critical Essays in American History, 1880–1980* (New York: Pantheon Books, 1983), xi.
- 3 Ibid.
- 4 Capsule History of F. W. Dodge and Sweet's Catalogue, courtesy of McGraw-Hill Corporation.
- 5 Roger W. Babson, "F. W. Dodge: A Tribute," *Architectural Record* 39 (Jan., 1916): no page numbers. Melvil Dewey created the Dewey Decimal Classification System in 1872 while a student at Amherst College. His idea was widely disseminated in 1876, when he published *A Classification and Subject Index, for Cataloguing and Arranging the Books and Pamphlets of a Library*. See Wayne A. Wiegand, *Irrepressible Reformer: A Biography of Melvil Dewey* (Chicago: American Library Association, 1996).

very narrow. Few people, for example, in Chicago or even in New York cared to hear about building operations in Boston.”<sup>6</sup> All of this changed very rapidly in the years around 1900. After the panic of 1893, the “general development of large-scale business in nearly all lines of industry” demanded “more efficient and exact trade news than had been available before that time.”<sup>7</sup> The simple erection of a skyscraper, for instance, called for a level of organization that only surfaced during times of war. The unprecedented tons of steel, brick or terracotta, piping, glass, and the myriad of materials needed to finish and appoint the interior of increasingly large buildings taxed the manufacturers and distributors of materials, and the builders of the day:

In order to construct the huge buildings demanded in various large cities, contracting concerns needed to have sufficient capital to specialize on large work of the kind, and building material manufacturers were also obliged to sell goods on a mammoth scale. Naturally all this large-scale business created a demand for construction news which should cover fully all sections of the country where big construction work was being carried on.<sup>8</sup>

The industrial revolution gave rise to a revolution in communication that, in turn, enabled the new scale of consumption. The Dodge Reports, as the news service came to be called, became an essential cog in twentieth-century building in the United States.

Where industry went, advertising followed. The nationalization of advertising closely paralleled the rise of the Dodge Reports. Both grew out of the nationalization of industry and the need for manufacturers to communicate their services or products to a far-flung public. Where Dodge fed the manufacturing end of the building industry, Clinton W. Sweet (1842–1917), a generation older than Dodge, came to the building industry through real estate. Sweet founded *Real Estate Record and Building Guide* in 1868, followed by *Architectural Record* in 1891. With thirty years of journalism in real estate and architecture behind him, he started Sweet’s Catalogue to organize the commercial communication of building products for architects, in short, to rationalize advertising in a moment when it presented a particularly noisome threat to the architectural profession.

For architects, who were shedding the remnants of the builder-architect tradition for the Beaux-Arts model of the artist, consumer culture could be shocking. While Mary N. Woods rightly argues that “capitalism ... was the milieu of American architectural practice” in the nineteenth century, architects struggled to reconcile the pragmatic demands of doing business with their aspirations to high culture.<sup>9</sup> Professional ethics prohibited architects from advertising their personal services, an interdiction that created a strong antipathy to advertising in general. In the introduction to the first

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6 Ibid.

7 Ibid.

8 Ibid.

9 Mary N. Woods, *From Craft to Profession: The Practice of Architecture in Nineteenth-Century America* (Berkeley, CA: University of California Press, 1999), 167.

Sweet's Catalogue, Thomas Nolan, a Philadelphia architect and a professor of architecture at the University of Pennsylvania, wrote: "... the architect is not tickled to death with the present catalogue and its promiscuous distribution."<sup>10</sup> Canvassing more than three thousand architects, Sweet's learned that the profession wanted the new compilation to "exclude display advertising" entirely, and to "expunge mere 'trade' talk."<sup>11</sup> Sweet's would be lean and informative, a rational tool for business, and not a debased vehicle for promotion.

### "The Catalogue Delusion"

The "catalogue problem" did more than inconvenience the architect. It undermined the basic running of an office. Nolan wrote humorously of this "fruitful source of perplexity in every architect's office":

For a period of a dozen years, every possible method of collecting, sorting, classifying, filing and indexing all the catalogues and circulars of building materials was conscientiously given a fair trial, and after a thorough test, every method was just as conscientiously abandoned. ... Everything was tried, arrangements of shelves, book-cases, pasteboard boxes, filing cases, patent binders, filing cabinets, cases of drawers, indexing schemes and "index-reruns."<sup>12</sup>

The task took on the sense of physical comedy:

At first all the big books were put together in one place and all the little books in another place; and then all the big and little books were mixed up together, and indexed according to subject. Some had four pages, and some had four hundred pages. Barely two were of the same shape or superficialities. The little ones would not stand up, and could not be gotten at when laid flat. Another elaborate system was introduced, and a voluminous cross-index started, but the big books contained too much useless matter, and the little books got lost or mislaid or could not be found just when wanted. Then the writer decided, after much time and expense, that the present system of publishing and distributing catalogues, as far as the architect is concerned, might be rightly termed, "The Catalogue Delusion."<sup>13</sup>

The publisher of Sweet's took care to acknowledge the necessity of trade catalogues. He catered both to the architect and to companies in the building trades, which increasingly held sway over the market: "With few exceptions, the general desire has been 'to improve' and to assist the architectural profession in dealing with the 'catalogue problem.' For the catalogue is a vastly useful piece of trade machinery. It is simply indispensable to the building material firm. It is

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10 Thomas Nolan, "Introduction" to *Sweet's Indexed Catalogue of Building Construction* (New York: The Architectural Record Company, 1906), ix. Nolan (1857–1926), who trained at the University of Rochester, and Columbia University under William Ware, also enrolled at the Ecole des Beaux-Arts in Paris, in the Atelier Daumet. In addition to practicing as an architect, Nolan was a professor of architecture at the University of Pennsylvania. See Philadelphia Architects and Buildings at: [www.philadelphiabuildings.org/pab/](http://www.philadelphiabuildings.org/pab/)

11 *Sweet's Indexed Catalogue of Building Construction* (New York: The Architectural Record Company, 1906), xii.

12 Thomas Nolan, "Introduction" to *Sweet's Indexed Catalogue of Building Construction*, vii.

13 *Ibid.*, vii.

equally indispensable to the architect.”<sup>14</sup> The complete absence of a system, however, created an intractable problem, as catalogues flooded by the thousands into architects’ offices: “There comes a point in the process when something must break. Either the architect must surrender to the deluge, or, to save himself, embark [on] the Ark of Indifference to all trade literature.”<sup>15</sup>

Sweet’s Catalogue did not immediately solve the problem. In 1907–08, attacks on the old system continued, but now couched in terms of the changing role of the architect:

“SWEETS” was originally launched in the midst of extraordinary conditions. The architect had become, literally, the victim of what has been termed the “catalogue mania.” Certainly every firm in the building material world was issuing catalogues, and equally certainly every catalogue printed was immediately dispatched to every architect whose name and address could be discovered by any means. As a result the average architect received several thousand catalogues per annum.... What can the unfortunate architect do with all this literature? Clearly the poor fellow cannot read it, no, not even were he to work at the task for eight hours every day during the whole year.<sup>16</sup>

Architects confronted the explosion of trade literature as the second phase of the industrial revolution further mechanized the building trades and expanded the national marketplace with a profusion of new products. With an almost chastising tone directed at manufacturers, Sweet’s propagandized its effort to rationalize trade literature, but the publisher understood the problem with some subtlety, rooting it in the structure of the architectural profession and the character of the architect:

Any one might have been warned of the situation by regarding the fact that the architect is a particular victim of the catalogue. He is the disbursing agent for a large sum of money. He is few in number and it is easy to reach him through directories and the like. But in a certain personal sense, he is not an approachable man. He is busy, and with his technical training his ears are more or less stopped against the exuberant talk of the enthusiastic salesman.<sup>17</sup>

In spite of the evident disdain for advertising, the publisher dispensed with the usual castigation of consumer culture. “Catalogue mania” derived not from some inherent problem with trade literature or the abstract evil of promotion itself, but rather from a systemic problem, a disjunction between the means of distribution and its target. Architects were peculiar businessmen, part of a still protean profession with a certain haughty disregard for the commercial side of practice, yet as “the disbursing agent for a large sum of money,” they capped the pyramid of the building industry. They were a

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14 *Ibid.*, xi.

15 *Ibid.*, xi.

16 *Sweet’s Indexed Catalogue of Building Construction* (New York: The Architectural Record Company, 1907), vii.

17 *Ibid.*, viii.

hybrid profession, part artist, part manager, with an unstable relationship to the emerging consumer culture. Thomas Nolan understood the problem in purely practical terms that suggests a parallel to the present-day promotion of new prescription drugs to doctors. "The tremendous mechanical activity of our modern days," he wrote, exerted an increasing pressure on the architect, who "is compelled to pay some attention to these demands. He cannot give up his time to the reception of salesmen interested in pushing these novelties. The day is too short."<sup>18</sup> Yet the architect depended on the catalogues to remain informed about progress in the building industry: "The names of building material firms are legion. It is difficult to find any really valid test for discrimination. What course is open to the architect?"<sup>19</sup>

## A Rational Solution

The solution was to systemize trade literature, to provide a single source on the model of a phone book or a dictionary. Nolan wrote<sup>20</sup> "...the only solution of the problem must lie in a scientific standard catalogue and index of building materials and construction, gradually developed toward an ideal result by the co-operation of manufacturer and architect."<sup>21</sup> The publisher added that "the catalogue belongs properly to the same category as the directory, or if you please the telephone book ... building material catalogues should not be reading matter, but in reality booklets for reference."<sup>22</sup> Sweet's thus borrowed Dodge's use of the catalogue system for advertising. With some difficulty, he convinced manufacturers to condense their literature radically, dispensing with "pictures of utterly common articles," omitting "literature" and "mere writing," "as an architect has no time in his office for either."<sup>23</sup> They further condensed each individual catalogue to a page or two, regularized the typography, ridding the volume of the competitive visual tactics of advertising, and organized it with several indexes: by company, by type of product, and by geography (figure 2): "Each catalogue in the work is organically arranged in its parts ... every bit of information that is of a particular kind of class is kept together instead of being scattered."<sup>24</sup> Illustrations were to be informational, "and not for the sake of pictures," although many companies included exquisite photography and also art in the form of charts, logos, and sectional cuts through products.<sup>25</sup> Sweet's imagined a scientific book of tables more than a trade catalogue, and fought "to induce some of these manufacturers to give up the publication of irrelevant matter ... to induce them 'to get down' to stating facts, something about their products that could be weighed, or measured, or tested in some way or another."<sup>26</sup> The modern drive towards a scientific or technical manual for architects came partly to fruition. In the first two decades of publication, diagrams of materials and specification charts played an increasingly larger role, both as a replacement for text and as an ornament to the page. Manufacturers redirected the promotional



Figure 2  
Berger's Raydiant sidewalk lights. From  
Sweet's Architectural Catalogue, 1917.

- 18 Thomas Nolan, "Introduction" to *Sweet's Indexed Catalogue of Building Construction*, viii.
- 19 Ibid.
- 20 Ibid., vii.
- 21 Ibid., vii.
- 22 *Sweet's Indexed Catalogue of Building Construction* (1907), ix.
- 23 Ibid., ix. Nolan paints a picture a world away from H. H. Richardson's office, with his sumptuous library, friendly tennis games, and the genteel if hard-working atmosphere of a Parisian atelier.
- 24 Ibid., ix.
- 25 Ibid.
- 26 Ibid.

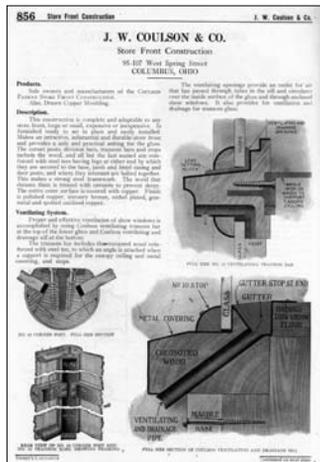


Figure 3  
Coulson Storefront Construction, from  
Sweet's Architectural Catalogue, 1917.

energy suppressed by Sweet's into the aesthetic virtuosity of their diagrams (figure 3). Some companies managed to get around Sweet's rigid structure by including many pages of photographs or drawings of products, as one might find in a Sears Roebuck catalogue, which was a close cousin to the early format of Sweet's, but Sweet's cowed the majority of manufactures into conformity.

### Truth in Advertising

The larger project of a technical catalogue for the building trades comes out of two intersecting ideals of the "progressive era," the consumer movement and the drive towards efficiency. By the 1911 edition, both played an overt part in Sweet's ideology. The editor was so taken with the grand social project of the progressive era, in which, he hoped to demonstrate that Sweet's played a part, that he titled his introduction for the first time, "The New Spirit of Efficiency."<sup>27</sup> The essay was a sort of Sweet's manifesto, linking the catalogue to other progressive ideals:

It does not need any very great amount of perspicacity to see that a new spirit is having what has often been called "a high old time" with many of our traditions. Its manifestations are numerous .... It has set a stamp upon our time so that the age in which we live threatens to be known in the future as the ... "age of inquiry." It is not only that we hear of ... "inquiries" in Washington and Albany and other political centers. There are insurance inquiries, gas inquiries, Standard Oil inquiries and the like. We have interstate commissions and conservation policies and a number of similar innovations .... It is a startling movement, if you will stop to consider it, and it is world wide.<sup>28</sup>

The new spirit emerged, according to the writer, from the will of the people, an "increasingly insistent public demand for efficiency everywhere. This modern note has invaded all fields of activity."<sup>29</sup> Sweet's presented itself as the medium through which the modern magic of efficiency would reach the building industry. The heated rhetoric aligned Sweet's Catalogue with the forces of modernity, sweeping away traditions in the name of pragmatism and efficiency. Far from a lone warrior, Sweet's marched alongside such progressive causes as the inquiries into public corruption and the fight for safe products by consumer advocates. The catalogue, compared to a phone book a few years before, had become part of a reform movement and, in particular, the incipient consumer movements then taking shape.

While the movement for consumer rights and education would not coalesce for another decade or so with books such as *Your Money's Worth* and *1,000,000 Guinea Pigs*, it rose originally on the energies of the Progressive Movement in the early twentieth century.<sup>30</sup> Consumer testing and reform organizations began to educate the public about the hazards of products, casting doubt on

27 Sweet's *Indexed Catalogue of Building Construction* (New York: The Architectural Record Company, 1911), iv.

28 *Ibid.*, iv.

29 *Ibid.*

30 The best source for the consumer movement is Charles Francis McGovern, *Sold American: Inventing the Consumer, 1890-1940* (Diss., Harvard University, 1993). Stuart Chase and F. J. Schlink, *Your Money's Worth: A Study in the Waste of the Consumer's Dollar* (New York: The Macmillan Company, 1927); and Arthur Kallet and F. J. Schlink, *100,000,000 Guinea Pigs: Dangers in Everyday Foods, Drugs, and Cosmetics* (New York: The Vanguard Press, 1932).

the claims of advertising. One of the most ardent condemnations of dishonesty in advertising came from the advertising industry itself. In 1911, the same year as “The New Spirit in Efficiency,” the newly formed Associated Advertising Clubs of America set in motion the first “truth-in-advertising” movement. The AACA proposed legislation that would make any deceptive or misleading representation in advertisements punishable as a misdemeanor.<sup>31</sup> Admen used the campaign to distance themselves from the more unsavory forms of publicity: “loan sharks, real-estate speculators, and mail-order frauds—confidence men on the margins of business respectability.”<sup>32</sup> Like Sweet’s Catalogue, the advertising industry pitched its campaign to clean up advertising in terms of efficiency and public service. They cast themselves as advocates for the public, not as pitchmen for the manufacturers.<sup>33</sup> They essentially dressed up advertising in progressive clothing, recasting their medium as a form of reform, a solution to the wastefulness of industrial capitalism and its inefficient means of distribution and communication.

### Efficiency

Having lambasted advertising for the first five years of its existence, Sweet’s Catalogue now couched advertising in terms of inquiry, an elaboration of its focus on information. Inquiry bundled the spirit behind truth in advertising with another progressive ideal, efficiency. Their inquiry, which would take on the tone of an exposé, revealed the inefficiency of the building trades. The traditional arrangement, Sweet’s claimed, with “the architect high up and the builder below did not make a splendidly efficient team.”<sup>34</sup> Although the writer found no fault with the “esthetic part of the problem,” he concluded that “architecture had to be treated more as a business .... Today the architect’s office is coming to be regarded as less of a personal sanctum and more of a meeting place and working room of co-ordinate experts.”<sup>35</sup> The problem drove to the core of architectural practice, contradicting the prevalent model of the artist-architect. The artist-architect was not part of the *Zeitgeist*, because he had not adopted the efficiency of Frederick Winslow Taylor’s theories of Scientific Management. While Sweet’s did not name Taylor explicitly, his *Principles of Scientific Management* also was published in 1911, although his ideas were common currency in business for years before its publication.<sup>36</sup>

The manufacturers who advertised in Sweet’s had all but given in to the catalogue’s demands for rationalization. The editors now implored architects to do the same. “What does this spirit portend for the architectural profession?” The editor began:

It has really commenced its work, not only in architecture, but in medicine, law and all other professions. The new spirit has directed its attack upon the old kind of professionalism, the kind that is equivalent to prerogative; the species that affects to be erudite rather than common sense.

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31 Jackson Lears, *Fables of Abundance: A Cultural History of American Advertising* (New York: Basic Books, 1994), 204; and Otis Pease, *The Responsibilities of American Advertising: Private Control and Public Influence, 1920–1940* (New Haven, CT: Yale University Press, 1958), 72, 145.

32 *Ibid.*, 204–5.

33 *Ibid.*, 205.

34 *Sweet’s Indexed Catalogue of Building Construction*, (1911), v.

35 *Ibid.*

36 F. W. Taylor, *The Principles of Scientific Management* (New York: Harper, 1911).

There are spiritual lords and lords temporal, but, says the new doctrine, there are also “professional” lords who claim, like the others, to be the possessors of a special privilege. They do not feel bound to account for themselves on the sole basis of efficiency, and it is that that has raised the present revolutionary hue and cry. The architect, for instance, is compared with the engineer, not always to the former’s advantage. We are told that the latter rules the world today in conjunction with the scientist, because he has carried his conception of efficiency to the fourth decimal point. He has rid the world wherever he works of a vast amount of purely superfluous material.

The writer knew that a reference to the long-standing competition between architects and engineers would rouse the reader. Architects feared that the public thought of them as too artistic, as elite brokers of culture who lacked the practical frame of mind and acumen to carry out commissions efficiently. Now their own advocate, an increasingly powerful voice in the building industry, accused them of being out of step with the spirit of the age. “The architect of the old type is dead,” wrote the editor:

Nevertheless that will occasion few regrets, because it will be clearly seen that by the changes that have occurred the modern practitioner has been brought into “closer touch with his subject.” This is of the very spirit of modern efficiency; it means that the problems of architecture will be treated with greater immediacy, and with greater virility and reality of style.<sup>37</sup>

Architecture had to be “an adjunct of some real necessity,” and not a high-minded pursuit abstracted from daily life: “The more it is an integral part of a fiercely utilitarian purpose the better it is essentially. What our architecture needed was that it should be brought into strict subserviency to that useful purpose.”<sup>38</sup> The rhetoric easily could have come from Louis Sullivan, who signed the “Endorsement” that prefaced the first two years of Sweet’s Catalogue.

The unnamed writer of “The New Spirit of Efficiency” married “truth in advertising” and Taylor to Sullivan, weaving honesty and efficiency together with a lecture on aesthetics, stopping just short of “form ever follows function.” “How many of our buildings throughout the country,” he asked rhetorically,

are poor in substance because they are tawdry in decoration. The non-essential has been allowed to kill the essential. It ought not to be difficult to see that a poor building is most often a dishonest building—poor roofing, scant plumbing, in short, a “house of a thousand imitations.” All the pestiferous “near” products, “near-oak,” “near-silk,” “near-metal” dross and tinsel, all of them, threaten to oust,

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37 *Sweet’s Indexed Catalogue of Building Construction*, (1911), v.

38 *Ibid.*

in an unmannerly fashion, all real beauty from the land. An article can not be damned by the charge of cheapness, but it can be by the imputation of unreality and “fake.”<sup>39</sup>

This is typical purple prose of the Sullivanian sort. What makes this statement exceptional is the way the author linked the call for an honest architecture, then one of the most important terms in professional discussions, to consumer culture. The architect, he argued, had made strides towards efficiency, but had not gone far enough. “He will have to study the market that lies at his command,” not just to avoid the “crime” of “extravagance,” but also because “what may be termed the *making of the specification* is so much more complex and important than it ever was that it threatens to relegate the element of design to an inferior position.”<sup>40</sup> As of a “new code,” efficiency dictated the matter. This amounted to a paradigm shift in the model of the architect: “The architect has become the trustee of the owner in the application of the new science of economic efficiency; and in this humbler spirit he must leave a great deal of his fine baggage behind him. Almost the first of his duties is that of *becoming completely familiar with the modern market.*”<sup>41</sup> Sweet’s Catalogue presented itself not as an inert directory to refer architects to manufacturers, but as a symbolic device that would let architects join “the great revolution” of their times: efficiency, and its corollaries, truth and beauty.

### Consumer Research

The other element of efficiency that Sweet’s shared with Taylor’s practice of Scientific Management was a dedication to measurement, of which the charts and diagrams in Sweet’s Catalogue were only one manifestation. By 1912, the catalogue, now part of F. W. Dodge, expanded its interest in consumer advocacy by keeping detailed files on products through its Statistical Research Service and the F. W. Dodge Corporation’s *Building Statistics*. Alongside these, the *Graphic Review*, an analysis of statistics in the building industry put out by the Statistical Division of the F. W. Dodge Corporation beginning in 1920, became standard sources for specifications and forecasting in the building industry. These services grew directly out of the consumer movement of the 1920s and 1930s, serving as a form of consumer reports for the building industry, accessible to practitioners in need of a purportedly impartial source of information on a given product or material. This service lent credibility to its main enterprise, which, in spite of its efforts to tame advertising into objective information, remained a matter of promotion.

In fact, through the 1930s, Sweet’s gradually abandoned its strict guidelines. Manufacturers began to interject more promotional materials into the generic, informational trade catalogues that established Sweet’s reputation. Quite possibly, it was on the strength of its consumer research that F. W. Dodge admitted “ballyhoo” back into the Catalogue. By 1935, manufacturers began publishing self-

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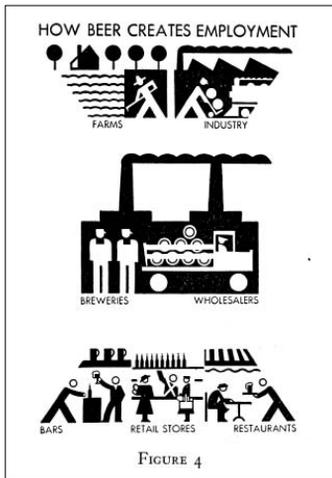
39 *Ibid.*, vi.

40 *Ibid.*, vi.

41 *Ibid.*, vi.

Figure 4

Isotype showing "How Beer Creates Employment," 1938, from *Public Opinion Quarterly* 2 (Oct., 1938): 664.



contained catalogues in Sweet's, complete with front and rear covers splashed with colored logos, slogans, and what Jackson Lears calls "atmospheric" advertising, the sort of appeal that works through a dramatic presentation rather than through the "plain speak" of facts.<sup>42</sup> In 1936, United States Gypsum published a thirty-nine-page catalogue in Sweet's, producing more of a promotional pamphlet than a catalogue. The change altered the reading of the catalogue profoundly. Now a cardstock cover announced the beginning and end of a given pamphlet, each cover being an opportunity to catch the eye of the reader. The size and visual heterogeneity of each pamphlet, and also the visual change from pamphlet to pamphlet, restored much of the promotional quality of trade catalogs in the days before Sweet's rationalized the system.

### Knud Lönberg-Holm

The new organization of Sweet's as a compiler of promotional pamphlets did more than return a promotional spirit to the trade catalogue. In the 1930s, Knud Lönberg-Holm produced what has been called a "quiet revolution" in graphic display in Sweet's and *Architectural Record*, a change that should be regarded as comparable to the initial "revolution" of Sweet's Catalogue in 1906.<sup>43</sup> K. Lönberg-Holm was a Danish architect who emerged out of constructivist and De Stijl circles. In 1924, he immigrated to the United States, where he taught for a year at the University of Michigan, becoming one of the few radical European modernists in the United States. He joined the editorial board of *Architectural Record* in 1927, edited the Technical News and Research Section, and soon became part of the ferment around *Shelter* magazine after Buckminster Fuller took over its publication. Holm, as he was often called, became the director of the Research Department at F. W. Dodge in the mid-1930s, and began reorganizing Sweet's Catalogue along new, explicitly modernist lines.

Lönberg-Holm distilled European ideas on graphic art, including those of Otto Neurath, the Vienna School philosopher and inventor of the Isotype (International System of Typographic Picture Education), a graphic system created for universal communication after World War I that now is so common that we tend to forget its origins (figure 4).<sup>44</sup> The *Record*, for instance, began publishing graphics based on Neurath's ideas in the late 1930s, including an article by Neurath himself (figure 5).<sup>45</sup> The application of the Isotype to architecture was scarcely novel. Neurath himself had been an integral member of the International Congress of Modern Architecture (CIAM), and, as his article in the *Record* demonstrates, he already had tapped architecture as a natural outlet for his system. But Lönberg-Holm synthesized Neurath's ideas with other currents in graphic design, including commonplace advertising strategies, and applied them to the entire publication of *Architectural Record* and to Sweet's Catalogue. The effect on the printed page was enormous,

42 Jackson Lears, *Fables of Abundance: A Cultural History of Advertising in America* (New York: Basic Books, 1994). Lears discusses the plain speech tradition throughout the book.

43 From an interview with the architect Simon Breines, August, 2003. Breines was both a colleague and a friend of Lönberg-Holm.

44 For Neurath, see the catalogue from the exhibition *Graphic Communication through Isotype* (Reading, UK: University of Reading, 1975); also Eve Blau, *The Architecture of Red Vienna, 1919–1934* (Cambridge, MA: MIT Press, 1999).

45 Otto Neurath, "Visual Representation of Architectural Problems," *Architectural Record* 82 (July, 1937): 56–61.



Figure 5  
Otto Neurath, Planning using Isotype, from  
*Architectural Record* 82 (July, 1937)

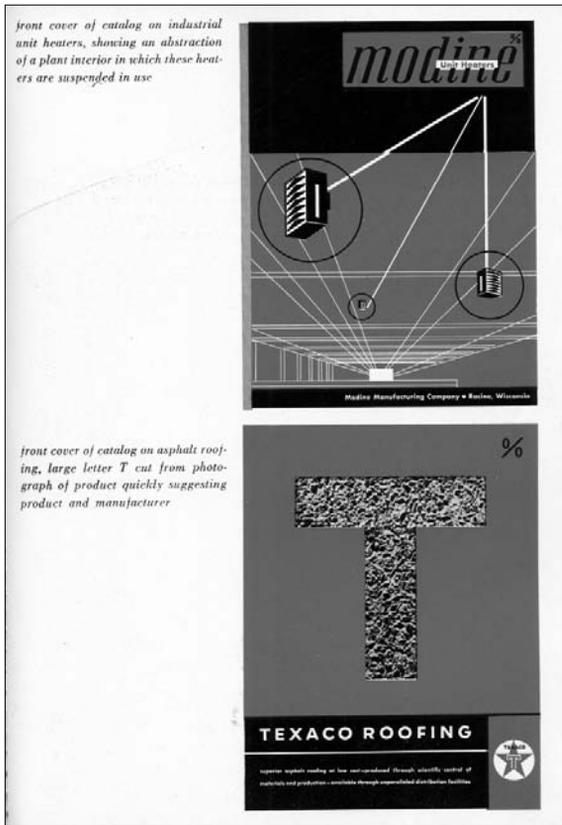


Figure 6  
Modern Sweet's Catalog Covers, from *Catalog Design*. Sweet's Catalog Service, 1944.

transforming a dull, text-based format into a startling fresh *iconic* page (figure 6), sublimating the text itself to the overall effect. This turned the pages of Sweet's Catalog back into tools for selling, finally reconciling architecture with consumer culture.<sup>46</sup>

In a 1938 report for F. W. Dodge, Lönberg-Holm detailed his ideas for these changes, calling for "maximum readability and pattern," which he defined according to the "mechanics of reading" and the "mechanics of comprehending."<sup>47</sup> The architect-cum-researcher attempted to transform Sweet's according to the latest "science" of graphic display. He wrote of the "visual flow-pattern" and the design of the printed page in terms of the "integration of half-tones, line drawings and text matter" so that the reader would "comprehend the presentation in the shortest possible time."<sup>48</sup> The idea of "readability" emerged from earlier studies Holm had conducted for Sweet's in the mid-1930s. Basing his claims on a new machine called an Ophthalm-O-Graph, which measured "the exact efficiency of one's vision" through photography, he attempted to revise the format of the standard trade catalogue.<sup>49</sup> "Current research," he wrote, "shows that efficient reading is rhythmic reading with a minimum number of fixations and regressions."<sup>50</sup> The eyes, he believed, move across the page in "short jerks," jumping from point to point, "making numerous stops for perception." Using the insights offered by the Ophthalm-O-Graph, Holm began to diagram the plane

46 Holm's work also transformed the *Record*, introducing a new aesthetic to its layout and graphics that soon spread to *Architectural Forum* and *Pencil Points*. Simon Breines pointed to Lönberg-Holm as the main instigator of this change.

47 K. L. Holm, "From Research Department Report, March 15, 1938." The Ladislav Sutnar Papers, Box 10, Folder 5, Design Archives of the Cooper-Hewitt National Design Museum, hereafter shortened to the Sutnar Papers.

48 K. L. Holm, "From Research Department Report."

49 K. Lönberg-Holm, *Catalog Design Standards* (1936), no page numbers. This is an in-house typescript that can be found in the Theodore Larson Papers at the Bentley Historical Library, University of Michigan, Box 1.

50 Ibid.

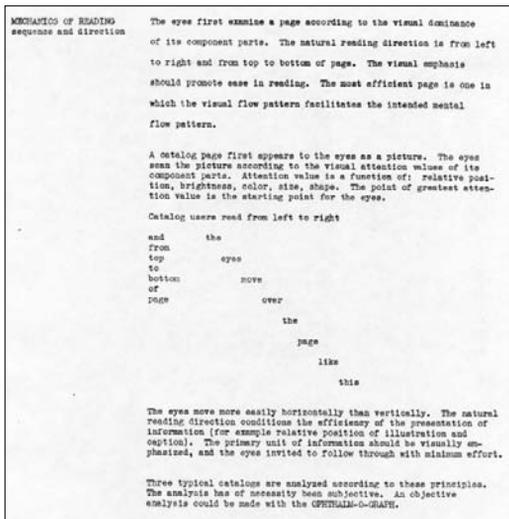
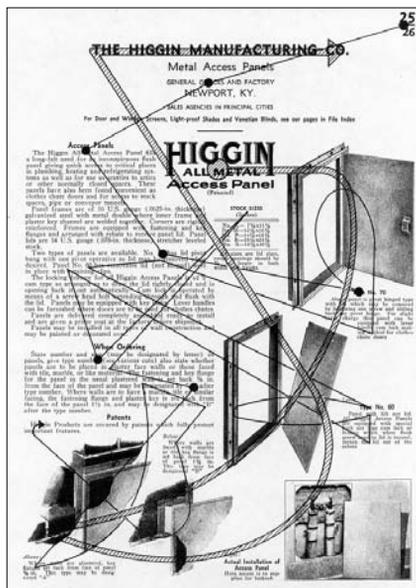


Figure 7  
 "The Mechanics of Sight," from Catalog Design Standards. F. W. Dodge, 1936.

Figure 8  
 The Higgin Manufacturing Co., parsed by Lönberg-Holm, from Catalog Design Standards. F. W. Dodge, 1936.



of the page according to the "mechanics of sight" (figure 7), and to parse the old Sweet's format (figure 8), revealing the visual chaos of the regularized layout. Applying the new idea of visual efficiency to the catalogue, he theorized a new format based on the proper use of photographs, drawings, Neurath's isotypes, mechanical drawings, and a series of formal qualities such as color, texture, and the weighting of font to create "visual flow patterns."<sup>51</sup> "The function of catalog design," he wrote, "is the arrangement of catalog content and format into design flow patterns which will condition the user's mental flow pattern."<sup>52</sup> The ideas extended the original ethic of efficiency of Sweet's, but now within the context of mid-twentieth-century theories of visuality and advertising, imposing a kind of functionalism on graphic design. It was surely under Lönberg-Holm's direction that Sweet's Catalogue became Sweet's Catalog, dropping the extraneous final letters that impeded "readability."<sup>53</sup>

Soon F. W. Dodge created an in-house service that produced trade catalogues for its clientele, relieving manufacturers of the burden of creating their own catalogues.<sup>54</sup> The dry directory became a smorgasbord of visual delights, as each company once again competed for attention through the design of its catalogue, a change that Sweet's found fit to advertise (figure 1). Alongside the visual change came an important organizational shift. Through the service, Sweet's could now streamline marketing for their corporate clients by combining market research, advertising, and catalogue production and distribution. By the early 1940s, the company had teams of graphic artists, engineers, copywriters, layout and production specialists, and architects in several cities, producing many of the catalogues that went into Sweet's.<sup>55</sup> The service fulfilled Holm's vision of creating "a continuous flow of information" between

51 Ibid.  
 52 Ibid.  
 53 Lönberg-Holm may have been emulating Melvil Dewey, who shortened his name from Melville.  
 54 Because no archive exists for Sweet's, the exact date of its inception remains murky. It seems to have started in the 1930s as a full-service trade catalogue department.  
 55 *Getting Your Catalog Used* (New York: Sweet's Catalog Service, undated). This undated pamphlet can be found in the Sutnar Papers, Box 10, Folder 5.

56 K. Lönberg-Holm, "A New Technique for Catalog Design," an undated flier published by the Research Department of Sweet's Catalog Service, Sutnar Papers, Box 10, Folder 5.

57 Ibid.

58 Ibid.

59 His first work to anticipate systems theory was *Modern Theories of Development: An Introduction to Theoretical Biology*, Trans. J. H. Woodger (London: Oxford University Press, 1933). See Robert Lilienfeld, *The Rise of Systems Theory: An Ideological Analysis* (New York: John Wiley and Sons, 1978), 17. Bertalanffy had attended meetings of the Vienna Circle, which connects him indirectly with Lönberg-Holm through Otto Neurath. Buckminster Fuller also maintained close intellectual connections to Bertalanffy, raising another possible connection to Lönberg-Holm. For Bertalanffy, see Ludwig von Bertalanffy, *A Systems View of Man*, Paul A. LaViolette, ed. (Boulder, CO: Westview Press, 1981).

60 The key figures would assemble around Bertalanffy after the war, including Anatol Rapoport and Kenneth Boulding. Also included in the constellation of systems theory is Claude Shannon's work on information theory; operations research under E. C. Williams in England; and games theory of John Von Neumann. No good general history of systems theory has been written. Robert Lilienfeld, 1.

61 Because of Wiener's work, cybernetics was the first field in systems theory to gain attention. See Norbert Wiener, *Cybernetics: Or, Control and Communication in the Animal and the Machine* (Cambridge, MA: Technology press, 1948).

62 This meaning of the term "feedback" seems to postdate the war slightly, although the *Oxford English Dictionary* cites at least one example from 1943, which suggests that the term, or at least the idea, may have been in currency before the war. As far as I know, Lönberg-Holm did not use the term.

63 K. Lönberg-Holm and C. Theodore Larsen, *Planning for Productivity* (International Industrial Relations Institute, 1940).

64 Ibid., 8.

buyers and sellers, cutting down the time between the realization of a material need in business and its fulfillment via the catalogue.<sup>56</sup> F. W. Dodge assumed a special position in the building industry, producing, according to Lönberg-Holm, "information forms specialized according to time and place of use, and the integration of such forms into information systems."<sup>57</sup> In an industry in which production and buying had become highly specialized, information too had to be highly attuned to the market. He proposed keying pamphlets to particular markets through in-house analysis, "specializing" industrial production and buying in order to streamline the business of communication. The catalogue system "centralized control over all phases of catalogue procedure."<sup>58</sup>

The idea of a system had been implicit in the first years of Sweet's attempts to rationalize information for architects from the manufacturers of building materials. Lönberg-Holm now put the matter in terms of the emerging field of systems theory, which grew in part out of the Ludwig von Bertalanffy's work in biology.<sup>59</sup> Systems theory enabled people to understand complex organizations in nature, communication, economics, and other fields, in part to try to predict and control behaviors within those systems. The war catalyzed the sleepy subject into a matter of national importance, bringing together scholars from various fields and giving them opportunities to explore their ideas in the context of war research.<sup>60</sup> Norbert Wiener, a pioneer of cybernetics, who was at the center of a group at MIT in the 1940s, researched antiaircraft guns during the war. The key problem centered on creating a mechanism that would "communicate" the changing position of an airplane to the antiaircraft gun, a particularly physical example of a feedback loop.<sup>61</sup> Systems theory also was well suited for a purportedly self-regulating system such as the market, the milieu in which Sweet's operated.

It seems unlikely that Lönberg-Holm knew of Wiener's research or of the flowering of systems theory at the time, although his ideas and the language that he used to express them suggest strong affinities. In what might best be seen as a parallel development, Lönberg-Holm envisioned Sweet's Catalogue as the feedback loop between manufacturers and builders.<sup>62</sup> In fact, his idea dated back to 1940, when he co-authored *Planning for Productivity* with Theodore Larsen, another architect from the *Shelter* group who worked briefly at F. W. Dodge.<sup>63</sup> The book was the result of their work on reorganizing Sweet's as a tool for integrating all industry, science, and production. In it they argued for the total reorganization of the building industry to achieve higher standards of productivity, which came with some radical implications. First, efficiency depended on the elimination of obsolescent forms, which the authors understood in terms of a "continuous process," a cycle of research, design, reproduction, distribution, utilization, and elimination; each of which was "subject to production control."<sup>64</sup> The continuous flow of the system was a distant cousin both to Wiener's feedback loop

and to Lönberg-Holm's "visual flow." But in the larger system of production, "a continuous output of new and more desirable buildings thus implies a centralized production control that will permit a continuous elimination of obsolete buildings."<sup>65</sup> The ideas must have disturbed the editors at Sweet's: research emanating from one of the key industries of capitalism—the building industry—promoted a plan that more closely resembled fascist or communist control of industry, even if the economics behind obsolescence might just as easily have come from Keynesian economics. Sweet's refused to publish their report, and the authors turned to a Dutch publisher.<sup>66</sup>

Like the originators of systems theory, Lönberg-Holm and Larsen believed that their program applied to "the development of forms in any field of production."<sup>67</sup> They created a "production index," an abstract chart linking the relationship between production fields (transportation, housing, manufacturing, etc.), "control forms" (services such as administration, finance, and education), man, "animates" (animals, plants, cells), matter (solids, liquids, and gases), and "cosmos" (atmosphere, subsurface structure, the solar system, and beyond). In their view, production fanned out far beyond an artificially closed system of industry to include all forms of matter, seen and unseen, although the index certainly covered the banal as well. The index, they wrote, "will be a common denominator of all the specialized sciences and technologies," bringing "into an operational unity the various specialists in the various fields of production," and supplying "a classification system for the filing of reference data which could be continuously adapted to meet changing conditions."<sup>68</sup> The ethereal, revolutionary language and ideology of *Shelter* met the more earth-bound considerations of industry for greater efficiency.

Lönberg-Holm applied similar considerations to the visual conventions of Sweet's Catalogue, submitting it to the idea of continuous flow. Graphically, this meant the use of color to control reading direction,<sup>69</sup> and the use of size, blank space, line, and shape to control the "visual flow of information."<sup>70</sup> Design also could stimulate a working feedback loop between the page and the reader. The idea opened the door to all manner of graphic techniques, privileging the visual over the textual. The first Sweet's "revolution" began with the exorcism of graphics from the pages of catalogues. The second "revolution" brought it back, bolstered now by theory rather than mere salesmanship. The basic ideas of simplicity and visual flow seem to have come from Lönberg-Holm's interest in Otto Neurath's work on visual communication, and perhaps from the concurrent invention of systems theory, but Lönberg-Holm's interest also intersected with two other important events: World War II and the arrival of the Czech graphic designer Ladislav Sutnar (1897–1976) as the art director at Sweet's in 1941.

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65 Ibid., 8.

66 From a conversation with Paul McCofsky, September 24, 2003. McCofsky is an editor at *Metropolis Magazine* who wrote an essay for a recent exhibition on Ladislav Sutnar in Prague: "Ladislav Sutnar—Prague—New York—Design in Action," June 20–Oct. 26, 2003 at the Prague Castle Riding School.

67 K. Lönberg-Holm and C. Theodore Larsen, *Planning for Productivity*, 18.

68 Ibid., 18.

69 "Visual Flow Pattern," undated document in the Sutnar Papers, Box 10, Folder 5.

70 Unlabeled document, Sutnar Papers, Box 10, Folder 5.

71 L. V. Brooks, "An Experiment in Sweet's Advertising" (April 30, 1942), Sutnar Papers, Box 10, Folder 5.

72 The quote comes from *Product Design* (New York: Sweet's Catalogue Service, 1943). It is not signed by Brooks, but the tone is very close to his memorandum of April 30, 1942.

73 Ibid.

74 Ibid.

75 L. V. Brooks, "An Experiment in Sweet's Advertising"

76 *Product Design*.

77 This advertisement appeared in *Industrial Marketing* 27 (July, 1942), inserted between pages 40 and 41.

78 L. V. Brooks, "An Experiment in Sweet's Advertising"

79 This advertisement appeared in *Industrial Marketing* 27 (July, 1942): 73.

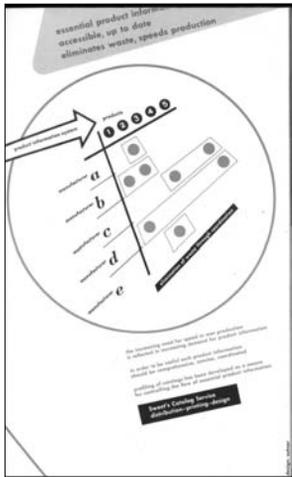
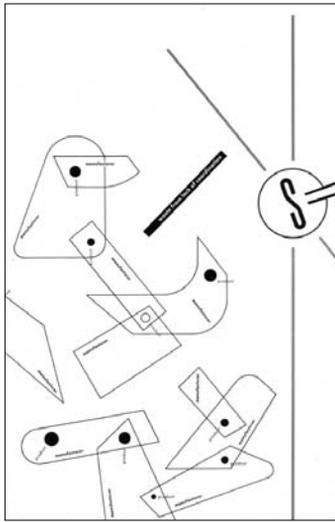


Figure 9 (page 1 & 2)  
Sweet's Advertisement  
from *Industrial Marketing*, 1942  
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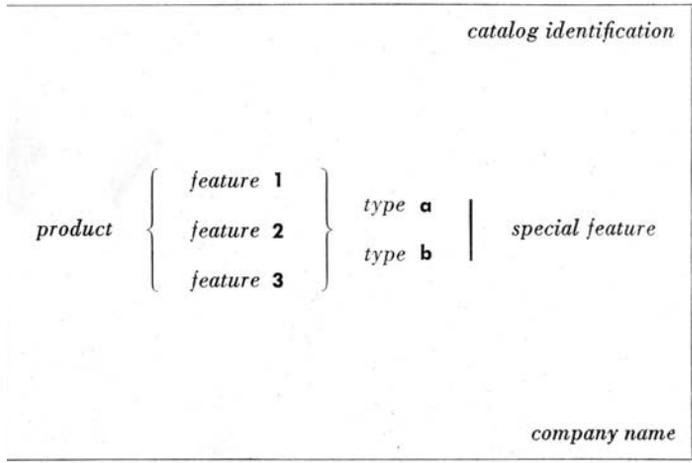
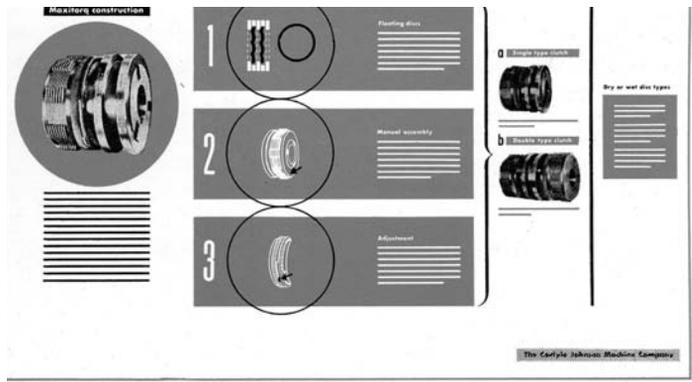
## World War II

The war provided a direct model for the organization of information. World War II remains as one of the most sophisticated logistical operations in human history, organizing the flow of people, materiel, supplies, and information across the globe using multiple forms of communication and conveyance. L. V. Brooks, the advertising manager at F. W. Dodge, spelled out the connection in a memorandum to Sweet's district managers in 1942. The war, he began, had created a new era of speed.<sup>71</sup> Planes soon would reach 400 miles per hour. Reconversion, when it came, would involve "inconceivably vast totals of manpower, production tonnages and dollars," which he pointed out, "constitutes an industrial revolution such as the world has never before seen."<sup>72</sup> The failure to find forms of communication to guide this new revolution could have "as crushing an effect on our economy as losing the war."<sup>73</sup> He called for the "immediate manufacturing and distribution of great quantities of needed peacetime products" as "contributions to speedy postwar recovery," as a kind of preparation for reconversion.<sup>74</sup>

What seems like a ludicrous suggestion—to step up domestic production when all of the energies of the nation were focused on war—derived directly from the current vogue for Keynesian economics, which placed a premium on consumption as the engine of the economy. In this belief, he joined hundreds of other advertisers and manufacturers who, by 1943, squarely faced the fear of the return to depression after the war. The most popular theory of staving off depression centered on stimulating vast programs of consumption intended to offset the decline of war production. But Brooks had ulterior motives as well. The anticipated "revolution of production" necessitated "an overhauling" in marketing.<sup>75</sup> The engineer, he argued, once the chief product designer, was being supplanted by "technical specialists," who "devote their entire time to developing new materials and designing new equipment." These "pioneers of industry" need information, he wrote, and Sweet's had to meet their needs.<sup>76</sup> He began by changing Sweet's advertisements, introducing strong diagonals, upsetting static typography, and at times sacrificing legibility for visual appeal. (figure 9)<sup>77</sup> "In trying this experiment," he concluded, "we are consciously violating all past theories of advertising—that you must address yourself to an eleven-year[old] mentality; that your advertisement should show in three seconds what it is about."<sup>78</sup> The new ads were the work of the internationally-known Czech designer, Ladislav Sutnar, who had been hired in 1941 to lead the Art Department at F. W. Dodge. They introduced an utterly novel aesthetic, especially when compared with the advertisements of their competition (figure 10), which is why Brooks took care to warn his managers.<sup>79</sup>



Figure 12  
 Visual Unit, Example from *Catalog Design*.  
 Sweet's Catalog Service, 1944.



Sutnar knew firsthand from Europe, and to which he had contributed as a leading designer. They laid out all of their graphic design “tricks,” showing how to create “visual selectivity” through the use of color, size, font, shading, outlining, blank space, and numerous other graphic techniques (figure 14).<sup>84</sup> The article featured Sutnar’s designs from the 1930s and 1940s, including magazine covers for *Fortune*, Sweet’s trade catalogues, and his diagrams showing the flow of information in his designs.<sup>85</sup> (figure 15) The three designs for Nupercainal sunburn lotion show how they worked out the idea of visual flow. The first design created a circuitous path that deposited the reader at the bottom right of the page, which “clashed with [the] reading direction of [the] text” at the bottom of the page.<sup>86</sup> The second design simplified the flow, but it still forced the reader to backtrack, making the text less effective. In the final design, Sutnar tilted the text, brand name, and image into a kind of mobile, dangled by the abstracted sun, whose longest ray directs the reader through the image to the text. The final installment of the article extended their ideas on visual flow to books, films, and exhibitions, suggesting its universal application for all visual media. By 1947, the content of

84 “Designing Information,” Part I, 96–97.  
 85 “Designing Information,” Part II, 120.  
 86 “Designing Information,” Part II, 120–121.

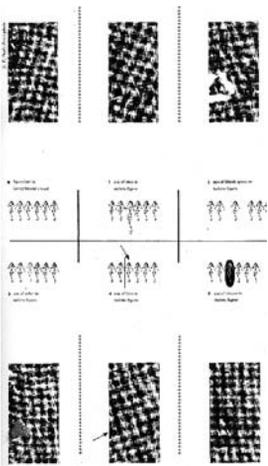
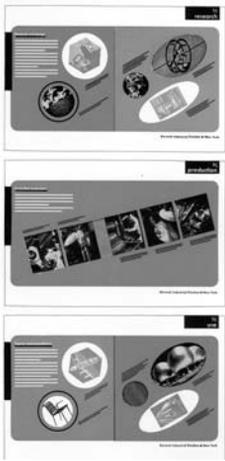


Figure 13  
Sweet's Catalogue for General Industrial  
Finishes, *Catalog Design*.  
Sweet's Catalog Service, 1944.

Figure 14  
Visual Selectivity from  
"Designing Information," 1947.  
Courtesy of Billboard Publications.

these articles was hardly new. Their importance lies in the fact that they consolidated the scattered material that had come out in limited pamphlets put out by Sweet's, and did so with stunning graphics in a leading design journal. Their ideas, which had been fresh in the early 1940s, had become standard, conventionalized in part through Sweet's catalogues, *Architectural Record*, and other magazines that placed a premium on modern design.

### Conclusion

Sweet's Catalogue began as a progressive era attempt to standardize and rationalize information in the building trades. As national advertising emerged alongside a national economy, Sweet's provided a conduit between manufacturers and architects in a chaotic moment of industrial growth. The sober layout, modeled on a directory, chastened the extravagant advertising of the era at the very moment when advertising was beginning to regulate itself through truth-in-advertising campaigns. Yet Sweet's quest for efficiency upstaged its gentle moralism. The ethic of efficiency touched every facet of life in early twentieth-century America, but Sweet's pushed the idea with particular zeal, connecting the efficiency of information with that of building. They were both part of sopping up the excesses of capitalism, a Taylorization of information that would enable the Taylorization of building itself. In time, the catalogue service joined forces with F. W. Dodge, creating a much more complex organization that added research, along with building statistics and records, to the already standard catalogue service. By the 1930s, Sweet's began to compete with advertising firms themselves, liberating the reserved design from the strictures of the progressive era, and creating an in-house catalogue design service that tapped into the leading trends in graphic design. Once again, Sweet's joined the advanced guard, marrying sophisticated theories of information flow to sharp modernist graphics, in particular those of Ladislav Sutnar. The catalogue's graphics changed just ahead of architecture itself, presenting

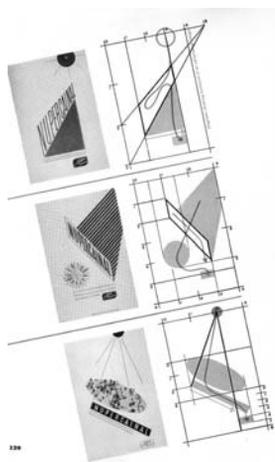


Figure 15  
Nupercainal Catalogue,  
“Designing Information,” 1947.  
Courtesy of Billboard Publications.

87 James Sloan Allen, *The Romance of Commerce and Culture: Capitalism, Modernism, and the Chicago-Aspen Crusade for Cultural Reform* (Chicago: The University of Chicago Press, 1983); and Michele H. Bogart, *Artists, Advertising, and the Borders of Art* (Chicago: The University of Chicago Press, 1995).

88 Richard Neutra, *Survival through Design* (New York: Oxford University Press, 1954), 51.

the architectural profession in the 1930s with a modernist vision of its products before their buildings completely reflected the changes being wrought by the modern movement.

The point is of considerable importance. Magazines, and print media in general, can take chances that architecture cannot. They're cheap, ephemeral, and easy to change from one printing to the next, which makes them more susceptible to experimentation than their more cumbersome three-dimensional masters, buildings. Before the American built environment could be called modernist—before the progeny of Lever House and other unmistakably modern buildings came to dominate urban landscapes—Sweet's Catalogue provided a modernist visual environment constructed (1) of ideas and images that came directly from the same intellectual and cultural sources that were then changing architecture, and (2) of the products that were doing the same. Lönberg-Holm, Theodore Larsen, and Ladislav Sutnar brought together a fertile mix of constructivism, De Stijl, the Bauhaus, American ideas including those of Buckminster Fuller, and the latest ideas on graphic design. It now seems strange that Lönberg-Holm, a radical intellectual and architect, would inject modernism into Sweet's, a servant to the conservative building industry, and more generally to laissez-faire capitalism. But the alliance postdates the well-known co-option of modernist art for advertising at the Container Corporation of America, and it prefigures the corporate patronage of modern architects in the 1950s.<sup>87</sup> In fact, Sweet's efficiency enabled a kind of consumerist emulation in architecture, whereby products—as opposed to formal gestures of design—could attain instant significance and quick exhaustion through overuse. It is difficult to imagine the rapid “triumph” of modern architecture without an administrative tool such as Sweet's Catalog, which is why Richard Neutra called it, with a note of lament, the modern quarry.<sup>88</sup>

### Acknowledgment

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