The Uncharted Kahn: The Visuality of Planning and Promotion in the 1930s and 1940s

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An often overlooked change occurred in urban planning between the 1920s and the 1940s, one represented in the following two images. In the first, the frontispiece of a 1936 report on city planning in New York City, the allegorical figure of city planning, in her guise as "Enlightment," strides down a New York City avenue toppling buildings and eradicating slums (Fig. 1).[1] In her wake emerges a shining, white city: the gossamer of her dress sweeps away the human stain. It is an image of beautification, a term associated with city planning in the first decades of the twentieth century. The City Beautiful Movement emerged in name and practice from this rhetoric, growing out of the French *embellisement,* a word used to describe Georges Haussmann's accomplishment in Paris. This is why the artist, Howard Chandler Christy, allegorized city planning by way of Eugène Delacroix's painting *Liberty Leading the People,* dressing Liberty in the raiment of Chicago's White City and the City Beautiful Movement that took shape after the 1893 World's Columbian Exposition. Like Delacroix's Liberty, who charges over the barricades of Paris, Chandler's Enlightment storms the tenements of New York City. Slum clearance becomes an urban "revolution" of genteel beautification.

The second image represents planning of a different sort (Fig. 2). The Philadelphia architect Louis I. Kahn drew it during World War II as part of an attempt to propagandize urban planning to the public—essentially the same purpose as the first image. By then, ten years later, urban planning had dropped its allegorical pretensions. Where Lady Enlightment seems focused on slum clearance—one of the central concerns of planning in the 1920s—Kahn moved beyond slum clearance to a wider view of planning, which he expressed in the form of a chart or diagram. Its visual ambiguity gets right to the heart of the matter. Kahn was searching for a visual language to express planning in a moment of shifting conventions in art, architecture, and planning. In painting, Jackson Pollock, Adolph Gottlieb, and others were making their first forays into Abstract Expressionism. In architecture, the Modern Movement was supplanting the École des Beaux-Arts; in the related realm of planning, then still very much a nascent field, visual conventions were even more unsettled. Architects and planners in the 1940s experimented with a range of visual strategies, from the biomorphism then current in late Surrealist art to bubble diagrams, such as J. Davidson Stephen's elaboration for a 1944 plan of Detroit that transforms city planning into a will-o'-the-wisp, graphically and metaphorically (Fig. 3).[2] While the broader search for new conventions deserves more attention in its own right, the focus here will remain on Kahn's diagram in order to draw attention to the visuality of urban planning and to examine the graphic strategies that architects and planners invented in the mid-twentieth century to translate the often arcane and technical languages of urban planning to the lay public.

Kahn's engagement with diagrams offers an illuminating study of a larger international phenomenon in which an array of graphic techniques drawn from other fields altered the representational basis of architecture and planning. In the 1930s, architects worked extensively with images that one is tempted to call *un*architectural: graphs, charts, diagrams, and the promotional material put out by city planning organizations, materials that described neither the architectonic nor the spatial qualities of buildings. Naturally, charts and diagrams have played a role in architecture and planning throughout history. But their use intensified in the 1930s with the rise of the government as the largest client, the emergence of the social sciences and a society of experts, and the increasing complexity of bureaucracy in the period.[3] Additionally, architects had to contend with the maturation of corporate culture and the advertising and public relations campaigns that went with it. In order to assert authority in this changing milieu, architects reached beyond the prevailing forms of architectural representation—plan, section, and elevation—for an abstract, popular, resolutely modern, and purportedly universal language in which to engage the public in thinking about planning.

From Beaux-Arts to New Deal and War

The shifting context necessitated a broad reeducation for Kahn, as it did for many of his contemporaries, who had to adapt their Beaux-Arts training to the conditions of the New Deal and World War II, as well as to the rise of the Modern Movement. After studying with Beaux-Arts master Paul Cret at the University of Pennsylvania (1920–24), Kahn made the requisite tour of Europe, and then spent the next fifteen years in various Philadelphia firms.[4] During the extended lull of the Great Depression, he reinvented himself as a modernist. In 1932 he formed the Architectural Resources Group (ARG), a kind of informal salon for young modernists, with the charismatic Kahn at its center. At first blush, ARG would seem to have been an architectural *Kaffeeklatsch* of unemployed draftspeople aroused to revolution by hard times. In reality the group served as a modernist crucible, mixing the technical bent of Buckminster Fuller with the latest ideas from Europe—*Modern Architecture: International Exhibition* opened at the Museum of Modern Art a month after ARG formed—and a strong influence from Soviet architecture. The Depression, in exacerbating the need for low-cost housing and public projects of all sorts, stimulated the interest of progressive architects in social responsibility and, consequently, in larger planning issues. Soon these varied interests and influences focused on social housing, which lined up with a central concern of the New Deal. In fact, ARG folded in 1934 as real commissions for New Deal projects once again

engaged the energies of the architectural profession.[5] The New Deal set Kahn on a more deliberate, if no less fraught, career path. In addition to stints with the City Planning Commission in Philadelphia and the Philadelphia Housing Authority, he worked for the Hamburg-trained Alfred Kastner on Jersey Homesteads (1935–37), a project of the Resettlement Administration near Hightstown, New Jersey, where two hundred Jewish garment workers were moved as part of a back-to-the-land movement.[6] In 1941, he became associated with George Howe, an important convert to modernism with the gravitas and connections to secure government commissions for wartime housing. Their partnership dissolved in 1942, but not before Howe and Kahn had designed several defense housing complexes. The association also put him in contact with Oscar Stonorov, a Zurich-trained modernist with whom he would continue in partnership through 1947.

Any one of these experiences would have introduced Kahn to an emerging visual language used increasingly by various organizations to lend their work the authority of a technical pursuit, or improvised by New Deal agencies to report their work and to advance their cause, a cause that meshed well with the concerns of the Modern Movement.[7] Images like the pictograph of the hydrologic cycle used in Rudolf Modley's article of 1938 (Fig. 4) attempted to condense explanations that would cost many pages of prose into tidy charts.[8] They impressed more with their aura of technical authority than with their ability to communicate specific information. It is not difficult to understand why an architect would be drawn to such illustrations. The Beaux-Arts fascination with the plan in which architects of Kahn's generation were steeped found a new outlet in the ostensibly technical, but quasi-mystical language of charts and graphs that filled New Deal literature.

The young architect's attraction to these techniques was also born of failure. His work in the late 1930s with the Philadelphia Housing Authority foundered on political opposition. One project planned to displace the crowded alleyways of South Philadelphia's Southwark section with 950 new units in both low- and high-rise blocks. The other, designed primarily by Kahn, was for a 1,500-unit project on open land in West Philadelphia. Builders and real estate interests opposed both in a local attempt to block government involvement in housing.[9] In 1940, Mayor Robert E. Lamberton publicly opposed the plan, and the City Council dropped the projects. This experience with public housing politicized the architect, stirring in him a more activist approach to his social ideals and increasing his awareness of the role of public relations.[10] Good design and social responsibility failed to get the projects done; the architect-planner needed better tools of persuasion.

Kahn's planning diagram shows him collecting those tools, melding several graphic strategies together. The concentric rings—a billowing cloud of planning—fill the frame (Fig. 2). Where the eye sees concentric ellipses, the mind reads variously a tornado or a bomb, the iconic mushroom cloud that ended World War II, an unsettling association for an image created during the war. This actually helps to date the piece, since it seems inconceivable that he would have adopted it after August 1945, when the atomic bomb rendered it temporarily unusable. Kahn cut the image of the crowd from of a 1943 magazine, which brackets the earliest possible date of

1 Howard Chandler Christy, *Enlightment*, frontispiece to Mayor's Committee on City Planning, *Progress Report*, 1936 (photograph provided by NYC City Hall Library)

the image, making it a home-front argument for postwar planning.[11]

Kahn's collage gave diagrammatic expression to the multitude of planning ideas threaded through the architectural profession in a moment when New Deal and wartime planning heightened American interest in the subject. The diagram reveals Kahn to be as omnivorous conceptually as he was visually, moving freely between both visual and planning paradigms, as might the art director of an advertising firm. This is to say that Kahn approached planning less as a specific technical practice or a social movement—although it was surely both—than as a cultural force in need of a publicist. He sketched his diagram as an act of persuasion, not of precision. In fact, Kahn filtered planning through public relations techniques and advertising strategies, which he borrowed from sources as varied as the United States Housing Authority, the Vienna Circle, and advertisements themselves. His diagram demonstrates the convergence of popular visual techniques for selling and less widespread planning ideologies during the war.

While Ebenezer Howard's diagrams for the Garden City and the various Bauhaus diagrams may have been precedents for Kahn, his effort to chart planning derives both visually and conceptually from sources closer at hand—in particular,
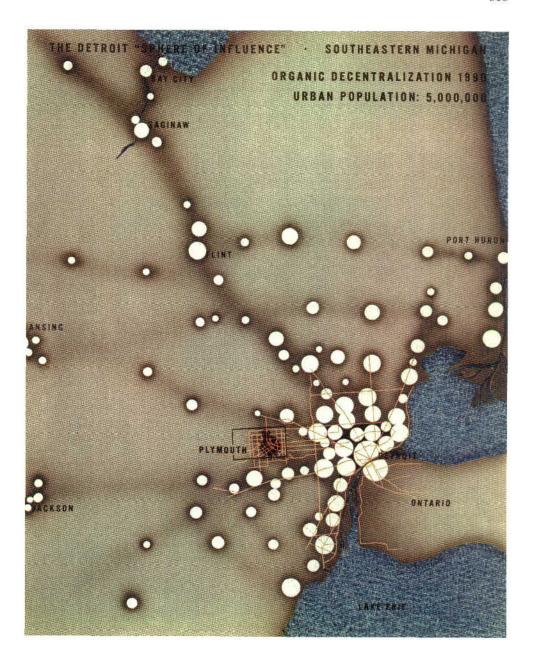
2 Louis I. Kahn, planning diagram, ca. 1944. Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia (artwork © Louis I. Kahn Collection)

organization charts, collage and cartoon, and the ISOTYPE (International System of Typographical Picture Education), an Austrian system of pictographs that New Deal literature adopted.[12]

Organization Charts

Organization charts display hierarchies of professional organization (Fig. 5). New Deal literature made them a staple for reporting the organization of bureaucracy to the public, and also for creating a greater sense of stability than existed in these fledgling agencies. The expansion of modern corporate and government bureaucracies led to the codification of organization charts in the early years of the twentieth century, but they also derived from the progressive-era interest in

quantifying social problems.[13] Although they arose amid the optimism of the progressive era, they were well suited to charting order in a moment of upheaval, making them a useful tool for a struggling architect like Kahn, who knew them well.[14] He carefully copied an example into a notebook he kept while taking a wartime class on camouflage for architects (Fig. 6). One need not stretch too far to find visual affinities between this chart, which creates a hierarchy for the "allocation of camouflage," and his planning diagram. Both attempt to organize a complex operation from the local to the national level. Both fan out from a single source, although the camouflage chart then spreads out again at its base, stacking up a pyramid of committees, commissions, zones, and offices analogous formally to the horizontal swath
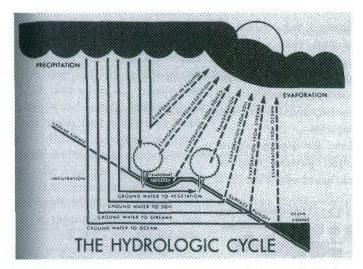
3 J. Davidson Stephen, plan of
Detroit, 1944

of the people in his planning diagram. Both swell as they rise vertically with more regard for aesthetic balance than for the communication of scale. Most important, the camouflage chart uses redundant lines to connect various elements, especially numbers six and seven, which is a kind of celestial orb whose gravitational pull holds the rest of the chart in orbit. It operates much as a round or polygonal space in a Beaux-Arts plan collects, pivots, and redistributes the circulation of a building.

Organization charts, however, assert bureaucratic rather than spatial organization, becoming two-dimensional representations of a conceptual ordering system. This fact obscures how visually complex they can be. For example, redundancy is the key to the visual power of Kahn's camouflage chart. One can imagine him redeploying these extra diagonal lines from the camouflage chart as the white shafts in his planning diagram, tilting them into the vertical and detaching them from the flow of the chart, which they served only halfheartedly to begin with.[15] This is not to suggest that the one chart

served as the source for the other, only that he had intimate knowledge of the organization chart—it was in his hand, so to speak. In his planning chart, Kahn took greater aesthetic advantage of visual redundancy and, at the same time, by adding the mushroom device maintained the sense of intensification as the eye moves up the hierarchy of the chart.
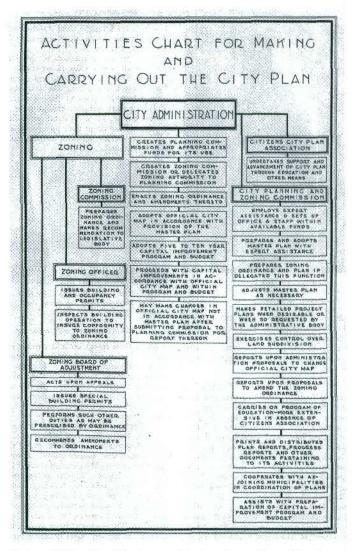
The formal connections are interesting insofar as they suggest deeper cultural connections: namely, the ways in which wartime planning and military and civilian organization became a model for peacetime planning and social organization. The branches of the military at the base of the camouflage chart become the people in his collage. The strict phalanx of commissions, districts, and boards of inspection, linked with rather incommunicative lines, becomes an organization of social and urban planning needs, swelling from the house to the nation. The people become the domestic army of the home front, the civilian planners on the front lines of postwar planning. What may seem far-fetched was a common analogy in the period. The home front frequently

4 Hydrology isotype, from Rudolf Modley, "Pictographs Today and Tomorrow," *Public Opinion Quarterly* 2, no. 4 (October 1938): 663 (image reproduced by permission of Oxford University Press)

5 Russell Van Nest Black, organization chart (from *Planning for the Small American City* [Chicago: Public Administration Service, 1933]; photograph provided by the Van Nest Black Papers, Collection 3018, Cornell University Library, the Division of Rare and Manuscript Collections)

modeled itself patriotically on war planning, from the strict control of resources in the household to the self-conscious use of wartime organization as a model for civilian life after the war.[16] In fact, even before the war, military metaphors provided the New Deal with a language to discuss the severity of the Depression and to argue for central control in stemming its effects.[17] New Deal organizations like the National Resources Planning Board (NRPB), the Farm Security Administration, or the Works Project Administration (WPA) extended martial metaphors from World War I, infusing planning in the 1930s with the dramatic language of war. For instance, in 1940, the NRPB, a centralized clearinghouse for planning ideas that Kahn knew well, supported its proposal for full employment and social insurance with direct appeals to war: "If we take these objectives as seriously as we take national defense—and they are indeed a fundamental part of defense—the ways and means of obtaining the objectives are ready at hand."[18] New Deal organizations carried such rhetoric into their literature during World War II, when planning again became tightly braided with war. In this context, Kahn's use of the diagram seems almost a natural progression from his work in the 1930s.
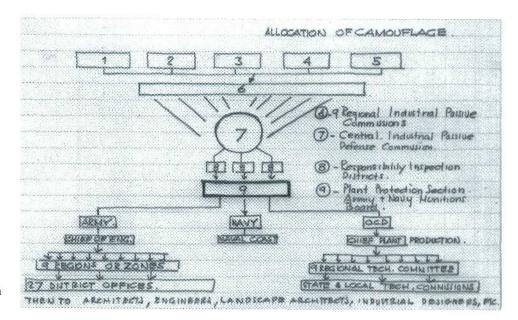
The artistic—as opposed to the arid and strictly informational—use of the organization chart has become a fairly common technique in graphic art. But in Kahn's day, this sort of appropriation was just beginning. The proliferation of charts in the 1930s grew out of the wider context of the Depression. The very need to reconsider the underlying structure of how the built environment got built became acute only after December 1929, and increasingly so after the "Roosevelt Recession" of 1937, when the bank failures of that year dealt a blow to the gains of the New Deal. It is no wonder, then, that they convey more than a little doubt. Hypothetical diagrams represented all too accurately the "make-work" aspect of New Deal planning. Enough of these plans died in two dimensions to shake the faith of their authors, and the unsteady lives of many New Deal agencies would not have helped. At the same time, their technical

character arises as much from the insecurity any field experiences in its early stages.[19]

Organization charts like the one by planner Russell Van Nest Black attempted to bring order in a moment of instability (Fig. 5).[20] As images, they borrowed their means of expression from the flowcharts and organization charts of scientific management, bolstering the uncertainties of city planning with representational strategies that evoke calculation, measurement, streamlining—in short, with the authority of engineering. Musing becomes math of a sort. They are visual kin to Taylorization, the early-twentieth-century rationalization of movement in the complex process of work, and more distant relatives of René Descartes's attempt to organize the world into axes, a form of mathematical housecleaning whose essence comes close to a certain kind of city planning. These charts layer and order ideas, giving them the appearance of data. White space is not so much a background as a medium itself, what Edward Tufte calls the "felicitous subtraction of weight."[21]

6 Kahn, camouflage chart. Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia (artwork © Louis I. Kahn Collection)

Planners produced them in the first place under conditions of extreme duress, playing with the chaotic pieces of municipal and state government (both of which were stressed by depression) and with the hazy professional boundaries between architecture, planning, and engineering. This makes a chart like Black's fundamentally different from Kahn's diagram. Of course, the latter intended his diagram for a substantially different context and purpose. Superficially, they organize different things: Black's chart organizes committees, policy and law makers, and citizen groups into a hierarchy, while Kahn's diagram organizes planning, less as a process than as a conceptual framework for American society. The earlier organization charts speak to the control of resources, especially human resources, in an age of bureaucracy and experts, while Kahn drew a poetic chart, a collage gravid with potential readings. Kahn's image radiates confidence and hope, graphically describing not the Depression but the anticipatory fervor of the home front. Great white beams—searchlights or a new architectural order?—issue from "the people," who supply their energy and who embrace the central pyramid of figures at the base of the mushroom, as in some Neoclassical painting: the family.[22]
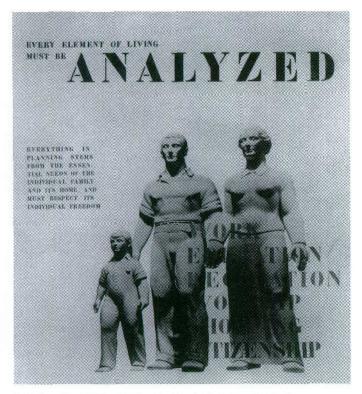
Collage and Cartoon

Kahn made the people the key players. They form the base of planning, and they act as its beneficiaries. But they are no rabble, neither the revolutionary crowd that the sociologist Gustave Le Bon examined in his well-known study, nor Le Corbusier's "dangerous magma of human beings gathered from every quarter by conquest, growth and immigration."[23] Historian Warren Susman noticed that Americans won their definite article beginning in the 1930s, becoming "the people," a usage that continues today in the often-used phrase in political stump speeches, "the American people."[24] At about the same time, images of "the people" proliferated in popular magazines. Kahn incorporated this image of "the people," which he cut from the May 1943 cover of *Architectural Forum*, into a stringcourse in whose stable horizontal shelf he sank the pier of the family and house planning, setting it up as the

central activity of all planning. Kahn knew this issue of the periodical well because it contained his project with Oscar Stonorov for a "Hotel in 194X." The issue featured "New Buildings for 194X," which anticipated an array of postwar buildings for a hypothetical town of seventy thousand people, loosely based on Syracuse, New York. The project attempted to establish a universal model for urban planning, which may have encouraged Kahn to go beyond the physical plan and think abstractly about the means or process that creating such a model involved.

Yet his diagram is no flowchart, no *Gray's Anatomy* of bureaucracy. It has one visible actor, the people, with their smallest unit of action, the family, posing in a cartoonlike portrait. The family acts neither through a narrative device like allegory nor through textual description, but instead through the juxtapositions of collage. Scale here is a symbolic matter, a means of measuring ideals, not built form. Kahn used the family as the basis for all larger planning efforts. Its object is house planning, but by extension, its work radiates through the rings to neighborhood, city, regional, and national planning, connecting them all. The larger actor, "the people," stands behind the broadest planning efforts: national resources planning, farm programs, air and land transportation, social security, and so on. The architect thus charted a vision of American democratic planning.

Kahn scaled the family larger than life. It serves both as a building block for planning and a bulwark against antagonism to planning as antidemocratic or totalitarian. In another undated document from Kahn's papers, consisting of a text page followed by an illustration, the architect used the family in a similar way (Fig. 7). Echoing the grand projects of New Deal planners for square-mile planning espoused by the NRPB, he began by arguing that planning could not be done by the block but only on the scale of the community. However, the next page presents a counterpoint: the sort of overscale family of 1930s Social Realism, heroic, nearly *contrapposto*, boldly fills the white of the page. Kahn's message changed little from his planning diagram: "Everything in planning stems from the essential needs of the individual

7 Kahn, Social Realist family. Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia (artwork © Louis I. Kahn Collection)

8 Oscar Stonorov and Kahn, advertisement for Revere Copper and Brass (image used by permission of the Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia)

family and its home. And must respect its individual freedom."[25] The idea came straight out of New Deal attempts to define American identity and to sell the New Deal. The family, of course, offered an easily defended ideal. Focusing large, controversial, deficit-spending programs on a denominator beyond reproach moored national planning to the anchor of individualism.[26] The cartoon family that the architect sank into the plinth of "the people" suggests as much.
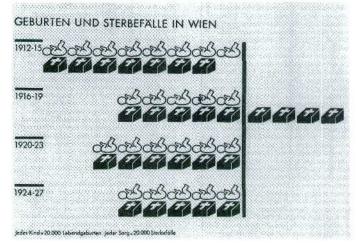
Kahn's interest in cartoon or caricature may have been encouraged by his work with Revere Copper and Brass, for which he and Stonorov made two advertisements and pamphlets during the war as part of the company's unusual promotion of progressive architecture and planning.[27] Wartime studies had shown that people read ads with cartoons more readily than any other type.[28] In one of the Revere ads, the advertising firm St. Georges and Keyes transformed Kahn and Stonorov's planning ideas into the sort of cartoonlike illustrations common in the *Saturday Evening Post*, where the ad ran. In one image, people set up a neighborhood planning council, and in the other image a bulldozerlike hand rips up the slum and another hand replaces it with a snap-on city block—here was an illustration of square-mile or, at least, neighborhood planning (Fig. 8). In the pamphlet that went with this advertisement, *You and Your Neighborhood*, Stonorov and Kahn produced a comic-book primer on planning (Figs. 10, 16–18).
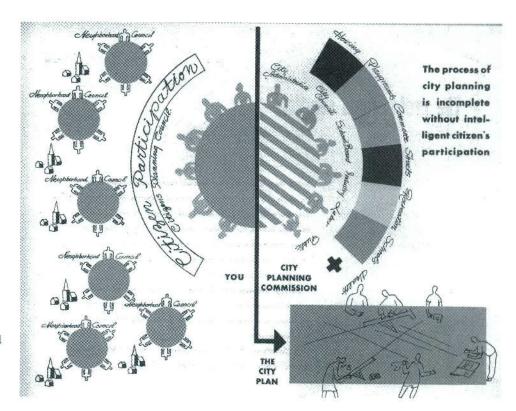
Isotypes

In using cartoons, ads like those for Revere Copper and Brass and New Deal organizations translated the obscure language of bureaucracy and planning into a popular form. The tech-

9 Isotype of births and deaths in Vienna (from *Graphic Communication through ISOTYPE* [University of Reading, 1975], by permission of the Otto and Marie Neurath Isotype Collection, Department of Typography and Graphic Communication, the University of Reading)

10 Stonorov and Kahn, diagram from *You and Your Neighborhood* (image used by permission of the Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia)
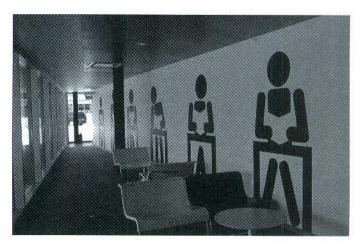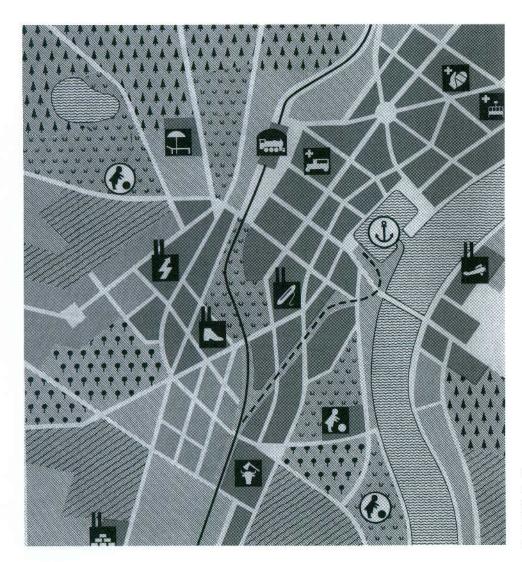
nique, while hardly new, certainly proliferated in the 1930s, not least of all through the popularization of a relatively new form of visual language called an ISOTYPE, or International System of Typographic Picture Education, a system of simplified icons created to express statistical data (Fig. 9). The Vienna Circle philosopher Otto Neurath invented the isotype in the aftermath of World War I in order "to get the cooperation of the whole population in reconstructing the tax system, in building new houses, in creating new welfare and health administration."[29] Neurath, who was involved in planning in Germany and Austria after World War I, believed that conventional charts were inaccessible to the public, and he attempted to overcome their shortcomings by creating universal, self-explanatory icons.[30] An isotype-based chart following the so-called Vienna Method expressed quantitative information by repeating equal-sized figures, each of which represented the same amount, rather than by changing scale to represent quantity. For instance, in the chart of births and deaths in Vienna, each baby represented twenty thousand births, each coffin twenty thousand deaths. Neurath believed that, in the same way that the cathedral was the bible of the illiterate in the Middle Ages, his visual system would allow common people to grasp statistical data, making them more informed and better citizens. The technique is thus very close in spirit to Kahn's efforts to create a visual means of selling people on planning. Stonorov and Kahn created isotypelike icons for *You and Your Neighborhood*, reducing the cartoon planning committee to stiff isotype-inspired figures sitting around tables (Fig. 10).

The influence of this system in the United States has not been fully explored, even though isotypes have become ubiquitous since the 1930s, painted on restroom doors, used in traffic signage, and recently deployed as a modernist reference in Rem Koolhaas's McCormick Tribune Campus Center

11 Rem Koolhaas, isotypes on the walls of the McCormick Tribune Campus Center, Illinois Institute of Technology

at the Illinois Institute of Technology in Chicago (Fig. 11).[31] Rudolf Modley, a disciple of Neurath, disseminated the system in the United States, introducing isotypes first to the Chicago Museum of Science and Industry in 1930. He also wrote on the subject in the 1930s, including *How to Use Pictorial Statistics*.[32] The design periodical *Survey Graphic* published two of the earliest pieces on Neurath and his system, in 1932 and 1936.[33] The icons soon spread throughout the United States, and conspicuously into American architecture, which quickly took liberties with the isotype. As early as 1937 Neurath himself published an article on their use in planning in *Architectural Record* (Fig. 12).[34] *Pencil Points*, another leading architectural magazine of the day, used isotypes as a purely aesthetic device on its cover in 1945 (Fig. 13).[35] For this issue, on new factories and office buildings, architect Stamo Papadaki, who designed the cover, stacked seven sto-
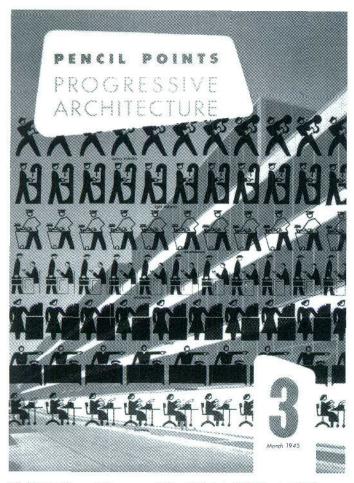
12 Otto Neurath, isotype mapping (image used by permission of the Otto and Marie Neurath Isotype Collection, Department of Typography and Graphic Communication, the University of Reading)

ries of isotypes of workers and superimposed them over an office building. The floating horizontals of the building and the rows of icons sprang from similar sources, endowing the cover of the magazine with the same modernist aesthetic as the architecture within. Papadaki had close ties with avant-garde architects and planners, especially with the International Congress of Modern Architecture (CIAM) and Le Corbusier (Papadaki later helped with the graphics for the latter's book *The Modulor*).[36]

The statistical icons were absorbed into organization charts, as the image created by Neurath's Isotype Institute on China's prewar government shows (Fig. 14). The masses are less quantitative—no scale is provided—but they still represent an idea of population, now inserted into a bureaucratic chart of the structure of the Chinese government. Literature from the period adopted the aesthetic of Neurath's system while it jettisoned the principles. In another example, from 1944, the family stands, like Kahn's family, under an abstract, flat-roofed shelter, taking center stage amid the grand programs of the New Deal, which they overshadow in size and visual interest (Fig. 15). They provide the ballast for the federal government as it tries to balance the Tennessee Valley Authority with the various projects of the Public Works Administration (PWA), implying that the programs grew out of the needs of the family rather than out of the macroeco-

nomic stresses of the Depression. This chart, however, never attempts to express anything quantitative or statistical. It is more or less a cartoon that has borrowed from the visual language then in vogue. The argument is not about the weight of evidence but about the symbolic weight of the family. Simplifying this group of people into an icon makes them blank, easily filled in by the imagination of the viewer. Kahn's collage, tracing the family with one bumpy line, does the same thing. The architect did not have to look far to be influenced by isotypes. In addition to the *Pencil Points* cover and New Deal literature, they were also common fare in British planning pamphlets published during the war, which strongly influenced American architects and planners.[37] He would have also encountered Neurath's ideas through the American Society of Planners and Architects (ASPA), a short-lived planning group in which he was involved, along with several members of CIAM, including Papadaki.

By whichever route Kahn came to know the isotype, by the war's end he had firsthand knowledge of the arsenal of propaganda techniques favored by modern architecture, government, and advertising. Stonorov and Kahn filled *You and Your Neighborhood* with nonquantitative isotypes, melding them with highly aestheticized diagrams and other graphic displays.[38] In addition to the quantitatively disengaged isotype that represents the relation between citizen participa-
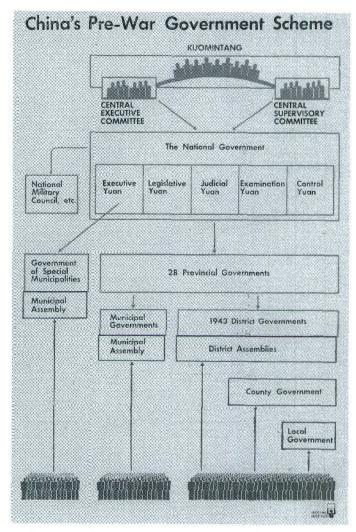
13 Stamo Papadaki, cover of *Pencil Points* 26 (March 1945) (photograph provided by Penton Media)

14 Isotype Institute, isotype of the structure of Chinese government (image used by permission of the Otto and Marie Neurath Isotype Collection, Department of Typography and Graphic Communication, the University of Reading)

tion and city planning (Fig. 10), a second diagram fanned out into an umbrella of organizations with the power of eminent domain (Fig. 16). In a third image, Stonorov and Kahn explicitly compared house planning with urban planning (Fig. 17), and elsewhere encouraged people to gather simple materials such as blocks and pins, paper, and colored pens, the sorts of materials people have lying about the house, as the basic tools of planning (Fig. 18). With these in hand and a map from the local municipality, the Neighborhood Council would be able to plan its neighborhood in the same manner that a family might plan its house. Here was a form of populist planning in the spirit of Neurath's isotype.
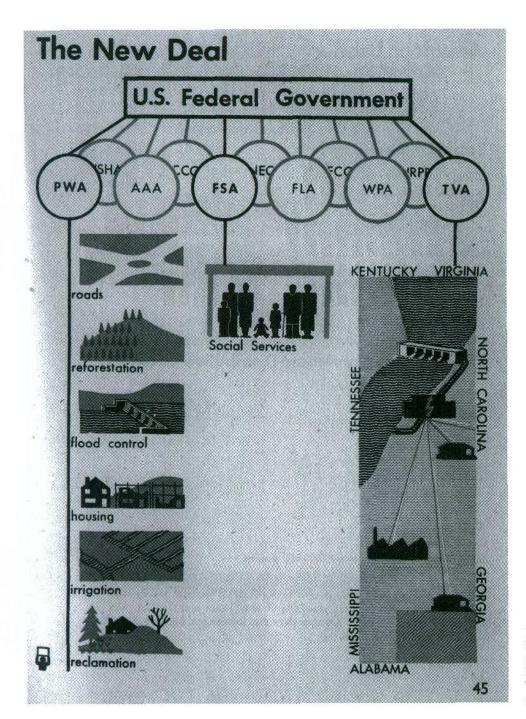
Perspective

Since Kahn's planning diagram (Fig. 2) is unpublished (and possibly unfinished), it may seem unfair to subject it to such close scrutiny. Yet the collage is more than a doodle, not simply an absentminded "sketch" of his vision of postwar planning. Its lines are too careful, too deliberate, and the process of its making (collage, sketch, a structured diagram on a background) too involved to be just a diaristic revelation of his thinking in 1944–45. He intended it to be seen in some form. Its audience thus becomes important for understanding its visual strategies. In this regard, the inventive—and somewhat serendipitous—use of clashing systems of perspec-

tive suggests something about the intended audience. As an accomplished draftsman trained in the methods of the École des Beaux-Arts, Kahn knew how to use perspective in architectural renderings, yet he chose to use neither traditional methods nor the compositional strategies of modern architecture. The people, deliberately placed at the base of the diagram, look up with anticipation. They are waiting, a stance appropriate for people coming out of a depression and sitting out the war on the home front. As a kind of group photograph of "the people," they all stare past the superimposed family at an absent camera, calling into question what they are waiting for or, more probably, for whom they are waiting. Read like a painting, it reverses one-point perspective. The orthogonals pass from the background, composed of the horizon of the people (and national planning), through the foreground of the family (and house planning) to an invisible and assumed point in *front* of the image filled either by Kahn himself, as the creator of the image, or by the viewer. Neither possibility need be mutually exclusive. In the first reading, Kahn, as architect, becomes the focus of a complex set of planning ventures to be enacted after the war.
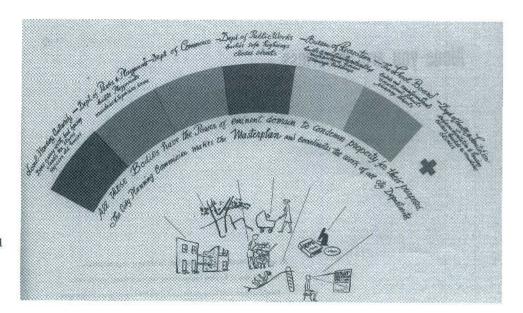
15 Isotype Institute, structure of the New Deal (image used by permission of the Otto and Marie Neurath Isotype Collection, Department of Typography and Graphic Communication, the University of Reading)

This is the coveted position of the architect, master builder-*cum*-master planner, the hand behind a comprehensive world design. The architect, as Spiro Kostof noted in his history of the architectural profession, becomes a demiurgic figure.[39]
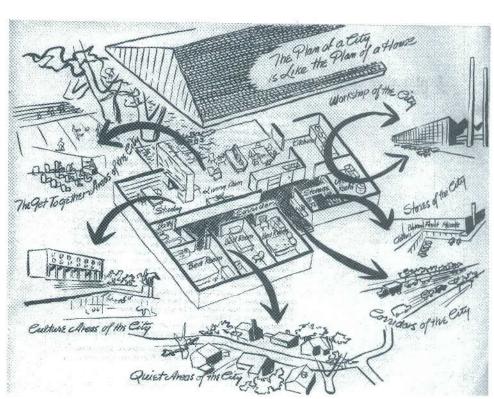
The choppy play with perspective, partly a result of the rough collage technique, ends up being an important device for locating the reader, who would have had two major points of entry, two different scales in which to put planning into perspective: through the family and through "the people." Since the diagram links the two inextricably, either point of entry would lead to the other and, via the "orthogonals," back to the viewer. The people await their own democratic transformation through communal organization and action, which was the responsibility of every citizen.

The issue takes on a greater urgency in the context of

fascism and Kahn's involvement at precisely this moment in the discussions about the New Monumentality. This debate has been rehearsed thoroughly elsewhere, but its key issues concerned Kahn directly.[40] Sigfried Giedion, the architectural historian and apologist for the Modern Movement, along with the artist Fernand Léger and the architect José Luis Sert, argued that modern architecture had failed to capture the popular spirit, and they sought an architecture and urbanism with mass appeal to counter or contend with fascist architecture.[41] Kahn himself had contributed an article to the debate, and he illustrated his ideas with monumental steel sculptures as open, free-form frames for large civic spaces.[42] While his planning diagram would seem to add little to this discussion, it demonstrates a similar set of concerns about the emotional appeal of rooting urban planning in the

16 Stonorov and Kahn, diagram explaining eminent domain, from *You and Your Neighborhood* (image used by permission of the Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia)

17 Stonorov and Kahn, the house compared to the city, from *You and Your Neighborhood* (image used by permission of the Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia)

people as a democratic effort, rather than as an imposition from above by an all-powerful government.
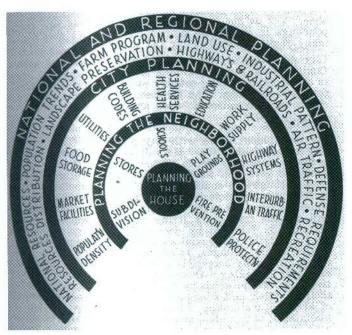
A final source for the planning diagram reinforces the argument about the place of the reader. The general form and idea of the diagram came from one by Konrad Wittman accompanying his article "Education for Planning," which appeared in the May 1944 issue of *Pencil Points* (Fig. 19). Kahn encountered Wittman, a German-born émigré who taught at Pratt Institute, when Wittman delivered several lectures in the course on camouflage that Kahn took at the University of Pennsylvania in 1943.[43] In his article, Wittman advocated a broad program of postwar planning and planning education, which he illustrated with several types of charts.[44] Wittman's chart mirrors Kahn's method almost ex-

actly, beginning with house planning and expanding through concentric rings to national planning.[45]

Kahn bifurcated the last ring of Wittman's diagram, adding a discrete level of regional planning. Even the smaller elements in between each ring are virtually identical. The appropriation tells us something about Kahn's working method: he adapted Wittman's diagram from *Pencil Points* and married it to the swath of people cut from *Architectural Forum*, plugging them together with his sketch of the family (whose original source, the Social Realist family, comes from yet another unknown source), and provided a background of sky for the diagram. If one reverses the shape of the white space of Wittman's diagram, Kahn's family fills it. Yet the graphic means distinguish the two plans. Kahn distorted the compass

THESE ARE SIMPLE TOOLS. YOU MIGHT FIND BETTER ONES.

18 Stonorov and Kahn, tools of planning, from *You and Your Neighborhood* (image used by permission of the Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia)

19 Konrad Wittman, diagram on planning, from Wittman, "Education for Planning," *Pencil Points* 25 (May 1944): 61 (image provided by Penton Media)

of Wittman's diagram into elliptical waves, and he did so not incidentally or whimsically but specifically, in order to include the family and the people—in order, in short, to fill in what Wittman had omitted: a democratic basis and a common denominator for planning. Kahn's experience with New Deal programs and publicity and his involvement with the New Monumentality made him savvier than Wittman, whose cold diagrams ache for a human form to warm them.

That human form, however, stepped awkwardly into the space of the diagram. Kahn's attempt to insert images into his distended circles reveals how incommensurable these two visual modes are in spirit. Perspective abets spatial illusion; diagrams, by contrast, reduce complex relations to two dimensions. They swallow the illusion of space, digesting it into an abstract order. Historically, perspective developed to ex-

plore mimesis, the premodern interest in reproducing nature, while diagrams arose to describe the invisible realities or ideal orders hidden beneath the surface. Hyungmin Pai, in a challenging essay on the diagram and scientific management, linked the diagram to "the modern crisis of representation," by which he meant the reduction of scientific knowledge to "'sign manipulation'" and its instrumental use for social betterment or social control.[46] While the specific assertion minimizes the semiotic richness of diagrams, the larger point stands: the diagram had the makings of an epochal system of representation, furnishing a rational, utilitarian mode of expression analogous to the functionalist strand of modern architecture. Like Renaissance perspective, it purported to provide a new purchase on reality, a universal form of communication.

Abstraction and Planning

Beyond the visual pieces of Kahn's collage lay the more holistic and profound search for a new language to express urban planning. Many planning images in this period explored the problem through abstraction, connecting currents in painting and architecture. Sigfried Giedion, for instance, wrote that the modern planner required a new feeling: "When he is seeking, for instance, the proper location of a cemetery or a market hall, he must be able to go over his plan with almost tactile perceptiveness, sensing the contrasting character of its districts as plainly as though they were velvet or emery beneath his fingers."[47] The image recalls Wassily Kandinsky's assertion that "man has developed a new faculty which permits him to go beneath the skin of nature and touch its essence, its content."[48] Giedion, who held that Cubism and other early-twentieth-century movements in painting were evidence of the "invention of a new approach, of a new spatial representation," applied the idea to shaping the city.[49] Giedion envisioned a highly evolved planner who would eventually create environments that would overcome "the schism" between thinking and feeling.[50]

Architects and planners adopted abstraction for some other obvious, if less explored, reasons. Abstraction was the *cri de guerre* of modernism in the 1930s—or, at least, one of the cries of this very vocal collection of movements.[51] In other words, artists and architects brandished abstraction. Far from an inert visual mode or a fashion, abstraction seemed to possess force in and of itself, to be endowed with the power of erasure, the ability to sweep out the old and usher in new modes of communication and behavior. In some sense, this is the nature of any new paradigm. As Meyer Schapiro claimed in his seminal essay "Nature of Abstract Art," written contemporaneously with the advent of the isotype into American architecture and New Deal literature, abstract art had "the value of a practical demonstration."[52] It unmasked image making of the "extraneous content" of figurative painting, revealing what he believed to be "pure form."[53] The promise of abstraction for planning would have been seductive, especially where the clutter of slums and the intractable problem of weak eminent domain laws made pure form and, therefore, pure design virtually impossible. In a nation "one-third ill housed," as President Franklin D. Roosevelt famously put it, this meant much of the United States.

Schapiro takes us further: "The art of the whole world," he

claimed triumphantly, "was now available on a single unhistorical and universal plane as a panorama of the formalizing energies of man."[54] Abstraction, as a form of image making with the nature of a "practical demonstration," yet bubbling over with the "formalizing energies of man," parallels the presumed tabula rasa of urban planning that lies beneath many of the schemes in this period, from Kahn's planning diagram to Stephen's plan for Detroit. These abstractions aimed at the universal at the same time that they reveled in the ahistorical, in the possibility of liberation from the drag of history—and from the obstacle of preexisting buildings. A similar spirit emanates from Neurath's isotype, which creates abstract figures as universal signs, with the ultimate goal of putting them to practical use. Armed with the incredibly rich and varied language of abstraction, architects and planners painted over Le Corbusier's brazen and far more literal plans to destroy the heart of Paris in *The City of To-Morrow and Its Planning*, which since its publication in 1924 had become one of the leading paradigms of urban planning.[55]

Abstraction, in other words, was tantamount to revolution. For architect-planners who advocated the "square-mile" rehabilitation of cities rather than the timid beautification projects of the previous generation, abstraction supplied a bold language, bolder than the Social Realist figures that Kahn jettisoned. It is perhaps more apt to maintain that abstraction could be a gentle revolutionary, double coded to signify radical sympathies to modernists of a certain stripe or simply to appear beautiful or appealing to an untutored reader. Compared with Howard Chandler Christy's image of "Lady Enlightment" straight-arming slums to the ground (Fig. 1), diagrams presented the demeanor of a technical demonstration, while harboring more complex ideas and intentions. Yet when artfully rendered, they achieved what great illustrations had once performed for earlier urban plans, aestheticizing the ideological content that lay beneath the technical, abstract graphics. For Kahn, who straddled groups like ARG, which had clear Soviet sympathies, and New Deal organizations, which had to remain ideologically uncommitted, the modern but ambiguous mode of expression sheltered his forays into the dangerous politics of planning in a United States alarmed by fascist and communist planning.
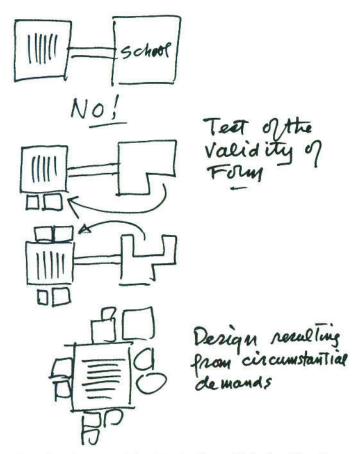
As the lingua franca of modernists, an Esperanto for the brave new world, abstraction was seen as ameliorative, instrumental, and revelatory. Its claim to universality provided an ideal mode for planning, whose very nature remained, even at this late date, an abstraction, and which, in its most radical form, aimed to liberate the masses. Abstraction conveniently hid planning's most violent aspect, namely, its assertive destruction of the city of the present, which many architects believed was stuck in the straitjacket of the past.[56] Planning, the social abstraction that would rid the world of slums, create equality, reconstruct cities into ideal urban fabrics, and, as Kahn's diagram shows, extend the city's organization to region and nation, called on visual abstraction as its mouthpiece, as its promoter. The promise of this gestalt of planning, in the context of war, takes us a good deal beyond the realm of the New Deal, which grappled with regional and national planning, to a form of postwar internationalism, a world order that lies tacitly behind Kahn's diagram. The United Nations, after all, orbits the concentric ring beyond

Kahn's (and the atomic) bomb, and, in fact, Kahn would tackle the UN as a project after the war through the short-lived American Society of Planners and Architects, which he served as vice president (1946) and president (1947–48).[57]

Whither Diagrams?

By the late 1940s, Kahn's architectural practice was brisk and he was nearing maturity as an architect. Within a few years he would design several of the buildings that would earn him a lasting place in architectural history. This leap from activist planner in the 1930s to form giver in the 1950s has presented some difficulty to architectural historians. David Brownlee and David De Long, in their exhibition catalog of 1991, and Sarah Goldhagen in her recent book on Kahn suggest continuities in his design work and in his politics.[58] While this essay poses no disagreement with previous scholarship, it demonstrates that Kahn had a kind of double training in this period, cultivating himself as a modern architect *and* as a planner, and a similar story may be told about any number of his contemporaries. With few opportunities to practice architecture in the conventional sense—as a designer of individual buildings—like so many other architects in the 1930s and during World War II, Kahn shifted his weight toward planning. Many progressive architects at the time sought to dissolve the difference between architecture and planning, a blurring of lines that troubled planners but served the modernist interest in the social mission of the built environment.[59] Kahn's work for New Deal organizations and for Revere Copper and Brass and his role in the American Society of Planners and Architects, which was essentially an attempt to carve out a professional niche for the architect-planner and to organize architects into a force for social action through planning, bear out this thesis.

The emerging graphic methods of the 1940s armed Kahn and his contemporaries with the visual language to perform the new work. A significant part of Kahn's informal education came from these less acknowledged sources. The charts and diagrams of New Deal and wartime organizations provided techniques of persuasion that Kahn used as he wended his way through his early career. It scarcely seems unusual that an architect who spent several years with little work would be attentive to how organizations presented themselves, nor is it strange to find him borrowing their strategies for his own work as a proselytizer for planning for his Revere pamphlets and the planning diagram. One might even say that Kahn became an architect in spite of his best efforts to become a planner, since so much of his professional biography before the 1950s points to an engagement with planning. The end of World War II and the building boom led him in a different direction. While his faith in social responsibility perhaps never dimmed, as Brownlee has recently reminded us, the building boom served a soft opiate to the revolutionary architect.[60] With abundant building opportunities at hand, the flexible Kahn again shifted his weight back toward architectural design proper. To be sure, he continued to straddle the two fields throughout his career, but the lessons of New Deal charts and literature and of wartime advertising were thereafter folded into his design work, where a more intimate and architectural form of persuasion was needed.
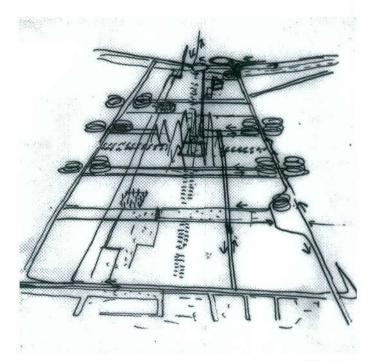
I hesitate to draw direct lines between Kahn's diagram-

20 Kahn, diagram of the First Rochester Unitarian Church, New York, 1959–69. Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia (artwork © Louis I. Kahn Collection)

21 Kahn and Anne Tyng, Philadelphia traffic study, 1951–53. Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia (artwork © Louis I. Kahn Collection)

matic play in the 1930s and 1940s and his mature design process, although Alan Plattus has recently done so with some success.[61] The reservation rests on the fact that many of these diagrams described organization. As rhetorical strategies, as opposed to elements of the design process, they lack the spatial qualities of Kahn's later, admittedly diagrammatic, method of design. Even though flowcharts were tortured into this very purpose in the period, when Kahn forced spatial ideas into his planning diagram, the perspectival cues come off as interlopers in a two-dimensional plane.[62] Line remains connective rather than descriptive of form or space. Only when he departed from the rigorous purpose of the diagram—when he was unfaithful to its internal logic—did it begin to perform spatially or architecturally. With this caveat, a diagrammatic method can be seen throughout his later work.
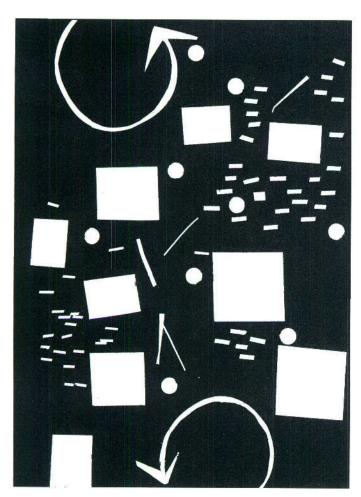
For example, in his analytical drawings for the First Rochester Unitarian Church (Rochester, New York, 1959–69), Kahn dissolved the rote solution of a school appended to the preexisting church, breaking the school down into its parts and reassembling them around the church so that the two, church and school, had become one (Fig. 20). The sketch shows him chipping away at the "school" until he had an array of rooms that he could shift around. The diagram allowed him to reimagine the nature of the project, and also of the building type. Anne Tyng called the process an analytical

demonstration done after the fact, to reveal what had been an intuitive leap.[63] These terpsichorean games with the plan, akin perhaps to the way he played with the elements of his planning diagram, would remain central to his method of design—or at least to his method of explaining his designs—until the end of his career.

Kahn continued to employ diagrams as modes of expression for urban planning as well. The most notable examples are the Philadelphia Traffic Studies of 1951–53, which he made with Tyng and others as visionary designs for a committee of the Philadelphia chapter of the American Institute of Architects (Fig. 21). They were first published in the periodical *Perspecta* in 1953.[64] Arrows and lines and a range of other figures represent the movement of people and vehicles, the size and value of the line matching that of its object. In the more elaborate diagrams, Kahn even furnished a key that explained the figures, forming the basis for the beginnings of a universal language for urban planning even more elementary than that attempted by Neurath in the 1930s (Fig. 23). Yet the whole is more vital than the parts. These urban diagrams performed like the old Beaux-Arts *esquisse*, or sketch, now transformed by the graphic methods he had acquired in the 1930s and 1940s. According to Tyng, who worked out the geometry of the traffic flow, Kahn arrived at the method quickly, in the spirit of a sketch, inventing the method to suit the purpose.[65] As with the *esquisse*, the diagram could be polished into a presentation drawing. Importantly, the traffic diagram is no more technical than his planning chart (Fig. 21). With a flow of arrows, Kahn aestheticized the movement of traffic in order to sell his idea, but he also introduced a sense of dynamic, pulsing movement, modernizing the static seventeenth-century grid of Philadelphia. Amid the arrows and ideal order, one scarcely
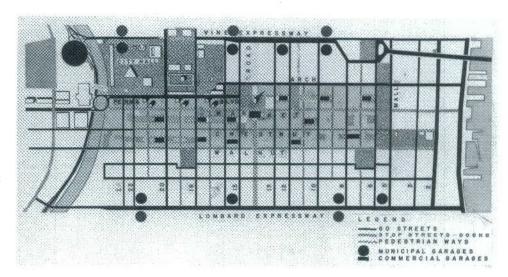
22 Kahn and Tyng, abstraction made for the Philadelphia traffic study. Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia (artwork © Louis I. Kahn Collection)

notices the obliteration of Philadelphia's City Hall, once at the center of the plan, and the excision of the City Beautiful spur that cut diagonally northwest from City Hall to the Philadelphia Museum of Art. Such destruction necessitated a compelling visual argument. The diagram once again became an artful form of persuasion.

The visual tricks were more than show. Kahn, Tyng, and others worked their way toward this diagram with a suite of other diagrams. They reduced the problem to a simple collage of pieces—squares for buildings, arrows for movement—an abstraction of mass, space, and movement (Fig. 22). Here they assembled the "simple tools" he had suggested to his neighborhood planners in the Revere pamphlet, which they massaged into an actual schematic plan of the city—quite literally, a layered collage of symbols and patterns (Fig. 23). Diagrams thus provided both the process and the product. The graphic strategy transcended mere modernist rendering. The arrows, akin to sketch marks, reveal his process of blocking out an urban hierarchy of movement with quick, seemingly disposable strokes, even if the actual design method was more laborious and self-conscious. The most developed drawings could take days to produce.[66] The symbols in his traffic diagrams convey movement and space, but they also show Kahn building up an idea from parts, in much the same way that he played with elemental geometry to work up his projects.

So what do we make of this shift in visual conventions, especially one tied so directly to politics and persuasion? Conventions tend to emerge causally, not casually: changes in visuality, like those in language, represent the coalescence of ideas. In this case, planners liberated the visual matrix of modern organization from its technical datum and aestheticized the charts and diagrams of a profession that sought its authority in science, technique, and the quantitative. Once they divorced the diagram from data, planners possessed an array of visual strategies that could be by turns iconic, linguistic, representational, and abstract. Another way of saying this is that they dismantled the very structure of charts and diagrams and reused this modernist *spolia* as a forceful visual argument for their ideas, not to mention as design tools. For Kahn, the various graphics popularized in the 1930s and 1940s offered flexible, overlapping means of expression that he synthesized into his work and working method for the rest of his career. And he was not alone.

Diagrams became a mainstay of architecture and planning after the war. The postwar decades witnessed a great proliferation of similar charts and diagrams and a refinement of

23 Kahn and Tyng, schematic plan for the Philadelphia traffic study. Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission, Philadelphia (artwork © Louis I. Kahn Collection)

visual techniques. Serge Chermayeff and Christopher Alexander based their method in *Community and Privacy* (1963) on the idea, building a plan, as it were, from abstract diagrams of the program.[67] Alexander's later essay "A City Is Not a Tree" self-consciously undermined organic metaphors for urban form, replacing them with the "semi-lattice," an import from systems theory.[68] He detailed his method with diagrams. The Philadelphia planner Edmund Bacon, with whom Kahn worked when he created his traffic diagrams, included provocative charts in the second edition of his seminal text *Design of Cities* (1976).[69] Bacon diagrammed a behaviorist feedback method for urban planning, an effort that might be traced back to Giedion's *Space, Time and Architecture* but whose immediate source was also systems theory and information theory. With the advent of systems theory in the postwar decades, diagrams became a technical grail, a way of moving the process of planning toward pure mathematics. The current fascination with networks in architecture and the proliferation of highly aestheticized representations of networks may be seen as the latest development in this trajectory.

The continuing episode speaks to the expanding array of representational techniques in the culture of architecture in the twentieth century, a relatively untapped field of study for historians of visual culture. The rise of a diagrammatic imagination reflects the absorption into design of what James Burnham called the "managerial revolution" in his 1941 book of the same title.[70] Burnham wrote that society was increasingly ruled by managers wielding power in large bureaucracies, rather than by the speculative capitalists of the pre-1929 era. These managers were the personification of organization charts, their workers the bald icons plugged in or plucked out as necessary. In other words, the rise of a service economy brought with it new visual languages and literacy. And architects, who became increasingly entangled in corporate and government bureaucracies in the period, learned that language. Art historians, who have relentlessly raked over modernity's visual forms, might do well to examine more closely the visual apparatus of one of its key institutions: bureaucracy.

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Notes

1. Mayor's Committee on City Planning, *Progress Report: A Preliminary Report upon Planning Survey and Planning Studies* (New York: Works Progress Administration, 1936).

2. Guy Greer, "So You're Going to Plan a City," *Fortune* 29 (January 1944): 122.

3. Hyungmin Pai, *The Portfolio and the Diagram: Architecture, Discourse, and Modernity in America* (Cambridge, Mass.: MIT Press, 2002).

4. The account of Kahn's early career leans on Michael J. Lewis, "Kahn's Graphic Modernism," in *Drawn from the Source: The Travel Sketches of Louis I. Kahn*, by Eugene J. Johnson and Lewis (Cambridge, Mass.: MIT Press, 1996), 1–24; and David B. Brownlee and David G. De Long, *Louis I. Kahn: In the Realm of Architecture* (Los Angeles: Museum of Contemporary Art, 1991), 24–29.

5. Brownlee and De Long, *Louis I. Kahn*, 25.

6. Ibid., 26.

7. Paul Emmons, "Diagrammatic Practices: The Office of Frederick L. Ackerman and *Architectural Graphic Standards*," *Journal of the Society of Architectural Historians* 64, no. 1 (March 2005): 4–21. See also Ellen Yi-Luen Do and Mark D. Gross, "Thinking with Diagrams in Architectural Design," *Artificial Intelligence Review* 15, nos. 1–2 (March 2001): 135–49.

8. Rudolf Modley, "Pictographs Today and Tomorrow," *Public Opinion Quarterly* 2, no. 4 (October 1938): 663.

9. Brownlee and De Long, *Louis I. Kahn*, 27.

10. Ibid., 24–29.

11. *Architectural Forum* 78 (May 1943): cover.

12. Diagrams were becoming common currency in many fields. Kahn would likely have seen Alfred H. Barr Jr.'s well-known diagram of Cubism and Abstract Art, which charted the relation between the major modernist art movements and modern architecture; Barr, *Cubism and Abstract Art* (New York: Museum of Modern Art, 1936), cover. See Edward R. Tufte's *Beautiful Evidence* (forthcoming) for an analysis of Barr's diagram. An earlier, less-known possible source is Russell Van Nest Black's diagrams in his 1930 article "Theory of Planning the Region as Exemplified by the Philadelphia Tri-State Plan," *City Planning* 6 (July 1930): 184–98.

13. See Willard C. Brinton's *Graphic Methods for Presenting Facts* (New York: Engineering Magazine Company, 1914).

14. Kahn owned Federal Housing Administration pamphlets that used organization charts. See Federal Housing Administration, *Architects, Contractors, Building Supply and Other Merchants: Your Opportunity—Your Responsibility under the National Housing Act* (Washington, D.C.: n.p., 1934). This pamphlet can be found among unprocessed materials in the Louis I. Kahn Archives at the University of Pennsylvania (hereafter LIK Archives).

15. I am indebted to Edward R. Tufte's readings of charts and diagrams in his various books on the subject. See in particular Tufte, *The Visual Display of Quantitative Information* (Cheshire, Conn.: Graphics Press, 1983).

16. Robert Westbrook, "Fighting for the American Family," in *The Power of Culture: Critical Essays in American History*, ed. Richard Wightman Fox and T. J. Jackson Lears (Chicago: University of Chicago Press, 1993), 195–222.

17. William E. Leuchtenburg, "The New Deal and the Analogue of War," in *The FDR Years: On Roosevelt and His Legacy* (New York: Columbia University Press, 1995), 35–75.

18. National Resources Planning Board, *After the War—toward Security* (Washington, D.C.: Government Printing Office, 1940), 8.

19. JoAnne Brown, *The Definition of a Profession: The Authority of Metaphor in Intelligence Testing, 1890–1930* (Princeton: Princeton University Press, 1992).

20. Russell Van Nest Black, *Planning for the Small American City* (Chicago: Public Administration Service, 1933), 58.

21. Edward R. Tufte, *Envisioning Information* (Cheshire, Conn.: Graphics Press, 1990), 60.

22. Paul Emmons has informed this reading of the image.

23. Gustave Le Bon, *The Crowd: A Study of the Popular Mind* (London: T. F. Unwin, 1903); and Le Corbusier, *The City of To-Morrow and Its Planning*, trans. Frederick Etchells (Cambridge, Mass.: MIT Press, 1971), 3.

24. Warren I. Susman, *Culture as History: The Transformation of American Society in the Twentieth Century* (New York: Pantheon Books, 1984), 178–79.

25. LIK Archives, Box 68, Folder: G.H. Appointment. The material is undated and it is not known if it was ever published or used for an exhibition. Kahn kept it in the same folder as the planning diagram (Fig. 2).

26. In addition to the Social Realist image, Kahn's visual source here may have been his own work for the United States Housing Authority (USHA), whose Information Service Division hired him in January 1939 to draw cartoons for its literature, much of which was little more than publicity efforts to sell people on its programs. See Peter Shedd Reed, "Toward Form: Louis I. Kahn's Urban Designs for Philadelphia, 1939–1962" (PhD diss., University of Pennsylvania, 1989).

27. The two pamphlets were Oscar Stonorov and Louis I. Kahn, *City Planning Is Your Responsibility* (New York: Revere Copper and Brass, 1942) and *You and Your Neighborhood* (New York: Revere Copper and Brass, 1944).

28. Marion Harper and V. M. Epes Harper, *4500 Newspaper Pictures and Their Significance for Advertisers* (N.p.: McCann Erickson, [1943]), in Warshaw Collection of the Archives Center, Smithsonian Institution, Washington, D.C., Advertising Industry, Box 9.

29. Modley, "Pictographs, Today and Tomorrow," 659. See also Nancy Cartwright et al., *Otto Neurath: Philosophy between Science and Politics* (Cambridge: Cambridge University Press, 1996).

30. Neurath was president of the Central Planning Office in Munich in 1919 and founded the Museum of Housing and Town Planning in Vienna in 1923.

31. Peter Galison has explored Neurath's complex and intimate association with the Modern Movement in Europe—he lectured at the Bauhaus and was an early member of the International Congress of Modern Architecture—and more recently Eve Blau studied the isotype in the context of Vienna in the 1920s. Galison, "Aufau/Bauhaus: Logical Positivism and Architectural Modernism," *Critical Inquiry* 16, no. 4 (Summer 1990): 709–52; and Eve Blau, *The Architecture of Red Vienna 1919–1934* (Cambridge, Mass.: MIT Press, 1999), esp. 395–400.

32. Rudolf Modley, *How to Use Pictorial Statistics* (New York: Harper's, 1937); and idem, "Pictographs Today and Tomorrow," 659–64. Also, Neurath wrote a primer, *International Picture Language: The First Rules of Isotype* (London: Kegan Paul, 1936).

33. "Otto Neurath Visits Russia," *Survey* 68 (November 1, 1932): 538–39; and "Social Showman," *Survey Graphic* 25 (November 1936): 618–19.

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

35. *Pencil Points* 26 (March 1945): cover.

36. Le Corbusier, *The Modulor: A Harmonious Measure to the Human Scale Universally Applicable to Architecture and Mechanics* (Cambridge, Mass.: Harvard University Press, 1954). Papadaki's archives and his work on *The Modulor* are in the Department of Rare Books and Special Collections, Princeton University Library.

37. See E. J. Carter and Ernö Goldfinger, *The County of London Plan* (London: Penguin Books, 1945); and Sir Ronald Davison, *Social Security: The Story of British Social Progress and the Beveridge Plan* (N.p.: G. G. Harrap, 1943), 26–27, 32–33. For an account of the importance of the Beveridge Report on American planning, see Daniel T. Rodgers, *Atlantic Crossings: Social Politics in the Progressive Age* (Cambridge, Mass.: Harvard University Press, Belknap Press, 1998), 488–501.

38. Stonorov and Kahn, *You and Your Neighborhood.* The planning diagram may be a discarded "drawing" for this pamphlet. They were made at the same time.

39. Spiro Kostof, ed., *The Architect: Chapters in the History of the Profession* (New York: Oxford University Press, 1977).

40. See Sarah Williams Goldhagen's analysis of this debate in *Louis Kahn's Situated Modernism* (New Haven: Yale University Press, 2001), 24–40.

41. Their "Nine Points on Monumentality" was written in 1943. See Sigfried Giedion, *Architecture, You and Me* (Cambridge, Mass.: Harvard University Press, 1958), 48–51.

42. Louis I. Kahn, "Monumentality" in *Architecture Culture 1943–1968,* ed. Joan Ockman (New York: Columbia Books on Architecture / Rizzoli, 1993), 47–54, originally published in *New Architecture and City Planning,* ed. Paul Zucker (New York: Philosophical Library, 1944), 577–88. This volume came out of a conference run by Zucker. In the same volume appeared Sigfried Giedion's essay "The Need for Monumentality," 549–68.

43. See Kahn's class notes from this course (among them, Fig. 6), LIK Archives, folder 030.II.A.68.16. Konrad F. Wittman wrote a number of other articles during the war on planning and camouflage. See Wittman, "The Camouflage Dilemma," *Pencil Points* 23 (January 1942): 13–14.

44. Konrad F. Wittman, "Education for Planning," *Pencil Points* 25 (May 1944): 60–64.

45. Wittman and Kahn could have borrowed the basic arrangement from Walter Gropius, who wrote: "My idea of the architect as a coordinator—whose business it is to unify the various formal, technical, social and economic problems that arise in connection with building—inevitably led me on step by step from [the] study of the function of the house to that of the street; from the street to the town; and finally to the still vaster implications of regional and national planning." Gropius, *New Architecture and the Bauhaus,* trans. P. Morton Shand (New York: Museum of Modern Art, 1936), 66.

46. Pai, *The Portfolio and the Diagram,* 164. For this assertion, Pai leans on the work of Timothy J. Reiss, *The Discourse of Modernity* (Ithaca, N.Y.: Cornell University Press, 1983), 34.

47. Sigfried Giedion, *Space, Time and Architecture: The Growth of a New Tradition* (Cambridge, Mass.: Harvard University Press, 1941), 542.

48. Wassily Kandinsky, quoted in Meyer Schapiro, "Nature of Abstract Art," *Marxist Quarterly* (January–March 1937): 93, originally published in *Cahiers d'Art* 6 (1931): 353: "Qu'il nous suffise ici de dire qu'elle est liée à cette faculté en apparence nouvelle la *peau* de la *Nature* son essence, son 'contenu.'"

49. Giedion, *Space, Time and Architecture,* 357.

50. Ibid., 17.

51. The phrasing of abstraction as the "cri de guerre" of modernism is from Irving Lavin of the Institute for Advanced Study (conversation), Princeton, 2004.

52. Schapiro, "Nature of Abstract Art," 77.

53. Ibid.

54. Ibid., 78.

55. Le Corbusier, *The City of To-Morrow and Its Planning* (New York: Dover, 1987).

56. For an early expression of this attitude, see Clarence S. Stein, "Dinosaur Cities," *Survey Graphic* 54 (May 1, 1925): 134–38.

57. Andrew M. Shanken, "Between Brotherhood to Bureaucracy: Joseph Hudnut, Louis I. Kahn and the American Society of Architects and Planners," *Planning Perspectives* 20 (April 2005): 147–75.

58. Brownlee and De Long, *Louis I. Kahn;* and Goldhagen, *Louis Kahn's Situated Modernism,* 35–40.

59. Anne Tyng, who worked in Kahn's office after the war, confirmed this view, namely, that Kahn would not have distinguished between architecture and planning, especially not in the period under discussion. Tyng, interview with author, January 21, 2005.

60. David Brownlee, review of Goldhagen, *Kahn's Situated Modernism,* in *Journal of the Society of Architectural Historians* 61 (June 2002): 237–40.

61. Alan Plattus, "(Re)Reading Kahn" (paper presented at the "Engaging Louis I. Kahn" symposium, Yale University, January 24, 2004).

62. For an example of an organization chart used for spatial analysis, see Pai, *The Portfolio and the Diagram,* 188–89.

63. Tyng, interview with author, January 25, 2005.

64. Brownlee and De Long, *Louis I. Kahn,* 54–55; and Louis I. Kahn, "Toward a Plan for Midtown Philadelphia," *Perspecta* 2 (1953): 10–27.

65. Tyng, interview with author, January 25, 2005.

66. Ibid.

67. Serge Chermayeff and Christopher Alexander, *Community and Privacy: Toward a New Architecture of Humanism* (Garden City, N.Y.: Doubleday, 1963). Chermayeff had worked with Kahn during the war in the American Society of Planners and Architects.

68. Christopher Alexander, "A City Is Not a Tree," pts. 1 and 2, *Architectural Forum* 122, no. 1 (April 1965): 58–62, and 122, no. 2 (May 1965): 58–61.

69. Edmund N. Bacon, *The Design of Cities,* rev. ed. (New York: Penguin Books, 1976). See esp. the diagrams on 254, 255, 259.

70. James Burnham, *The Managerial Revolution* (1941; Bloomington: Indiana University Press, 1960).