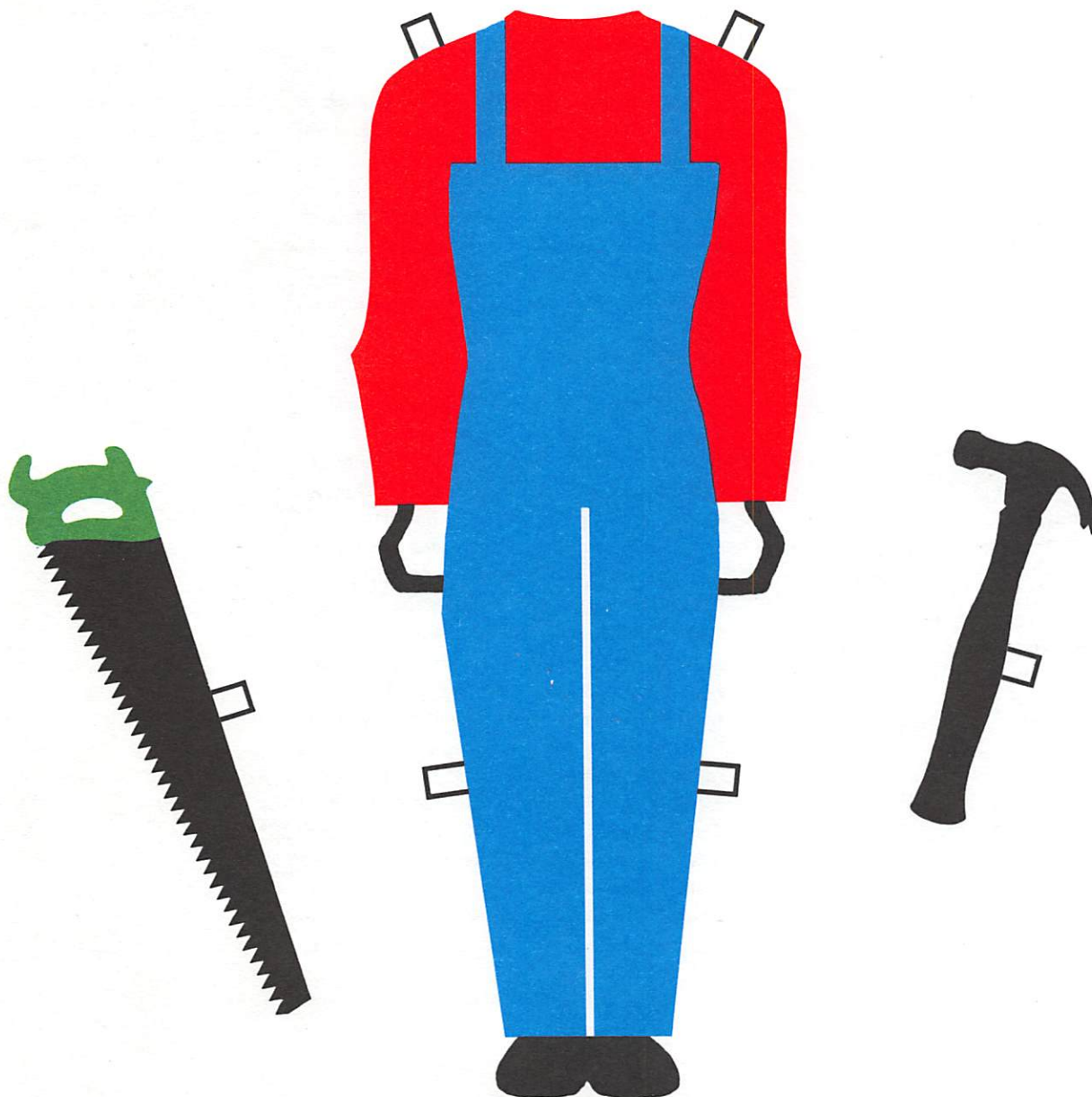




DENNIS LIVINGSTON : SOCIAL GRAPHICS

The Herb Lubalin Study Center of Design and Typography

*The Cooper Union
for the Advancement of Science and Art*



MONOGRAPH

Edited and designed by
Ellen Lupton

Cover designed by
Ellen Lupton
Symbols designed by
Dennis Livingston and Kathryn Shagas

EXHIBITION

23 October - 17 November 1990

Curated by Ellen Lupton

The Herb Lubalin Study Center
of Design and Typography
The Cooper Union
for the Advancement of Science and Art
New York

George Sadek, Director

This monograph was made possible
by a grant from the
Architecture, Planning and Design Program,
New York State Council on the Arts
and the generous assistance of
Michael Josefowicz, Red Ink Productions

DENNIS LIVINGSTON:

"The graphics presented in this monograph are products of collaboration. Each grew out of the visions, struggle, and knowledge of many individuals and organizations. Many are strategies for action or celebration; others are descriptions of social conditions. All were designed as tools to focus the work of activists and visionaries.

This publication is a collaboration with Ellen Lupton, whose ability to hold both form and content in balance has deepened my understanding of my work and moved it in leaps forward.

Many of the projects in this monograph are at the concept stage; they seek activists, researchers, funders, and designers to bring them to fruition. I hope this publication will put such people in touch with me."

SOCIAL GRAPHICS :

Social Graphics is the name of a partnership founded by Dennis Livingston and Stephen Rose in 1977. Several projects reproduced in this monograph originated with Social Graphics, including *Social Stratification in the United States* and the *American Economy Poster*. The partnership is no longer operating, but Dennis Livingston still uses the term "social graphics" in a generic sense, referring to the process and spirit governing his work. Livingston explains, "Out of a specific program or event comes a need to depict the collective vision of a group, to put it down on paper as a whole picture."

Some of the examples of social graphics featured in this monograph were not intended originally to be published, but were conceived instead as open, working documents. For didactic clarity, I have presented some of these "situational graphics" in a tighter form. **E. L.**

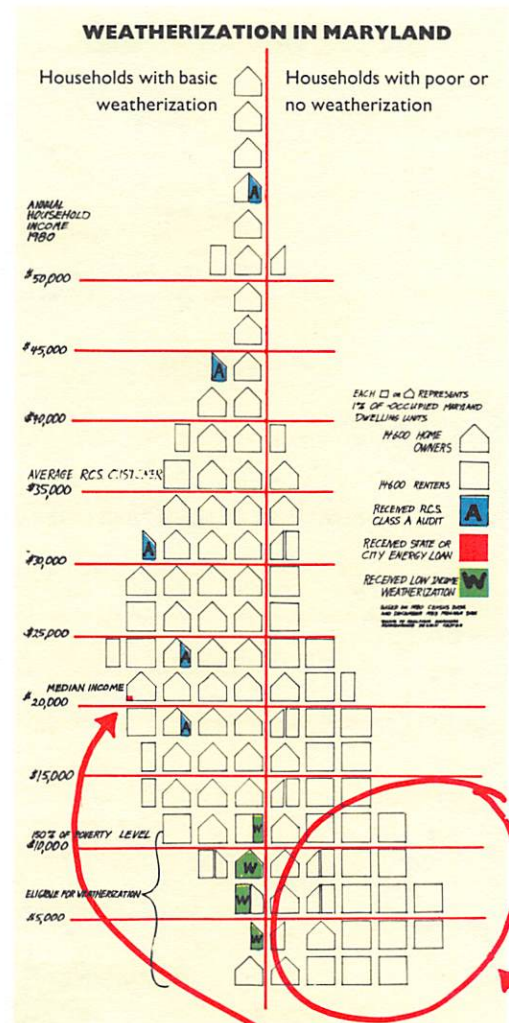
SPECIAL THANKS TO

Edip Agi
Steven Cantrell
Tori Eggherman
Tom Engelhardt
Diane Geisler
Pat Keeffe
Ron Halbright
David Leong
Kip Livingston
Noreen Livingston
Karl Llewellyn
Carmen Lombert-Allen
Victor Margolin
J. Abbott Miller
Margaret Morton
Charles Nix
Stephen Rose
Kathryn Shagas
Angela Wildman

Dennis Livingston is not a “graphic designer,” in the professional sense. He is not a member of the AIGA, he did not study design in college, and he doesn’t have clients. If one were to say that Dennis Livingston has a professional “trade,” it is carpentry: since 1971, he has been a member of Local 101, employing his building skills to help fund his other interests, and applying his knowledge of contracting and construction to projects aiming to improve housing conditions and local businesses in urban neighborhoods. He has helped found and operate grass roots organizations addressing issues such as housing, energy conservation, and job training. Based in Baltimore since 1970, Livingston has designed and implemented several projects focussing on economic development in low-income communities.

Where does graphic design fit in? Livingston studied fine art at Ohio State University, receiving an MFA in 1966. He later found that his training as an artist could be brought to bear on his practical projects. His ability to visualize abstract problems could be used to communicate ideas to people in an engaging manner, bringing life and urgency to statistical figures. Visualization is a mode of understanding, of thinking, as well as a mode of communicating: Livingston uses graphics to think through problems, to discover relationships within data. The act of plotting figures on a graph or diagramming a process not only “explains” what is already known but reveals new knowledge.

Some of Livingston’s projects are published and widely distributed, while others are produced for an immediate context—a community meeting, a public hearing, or a cultural event. For Livingston “graphic design” is not a question of producing polished portfolio pieces, but of responding to and initiating *situations*. The images presented in this monograph include reproductions of published pieces as well as recreations of charts which Livingston normally executes in spontaneous seminar settings. It also includes proposals and sketches for graphics not yet published.



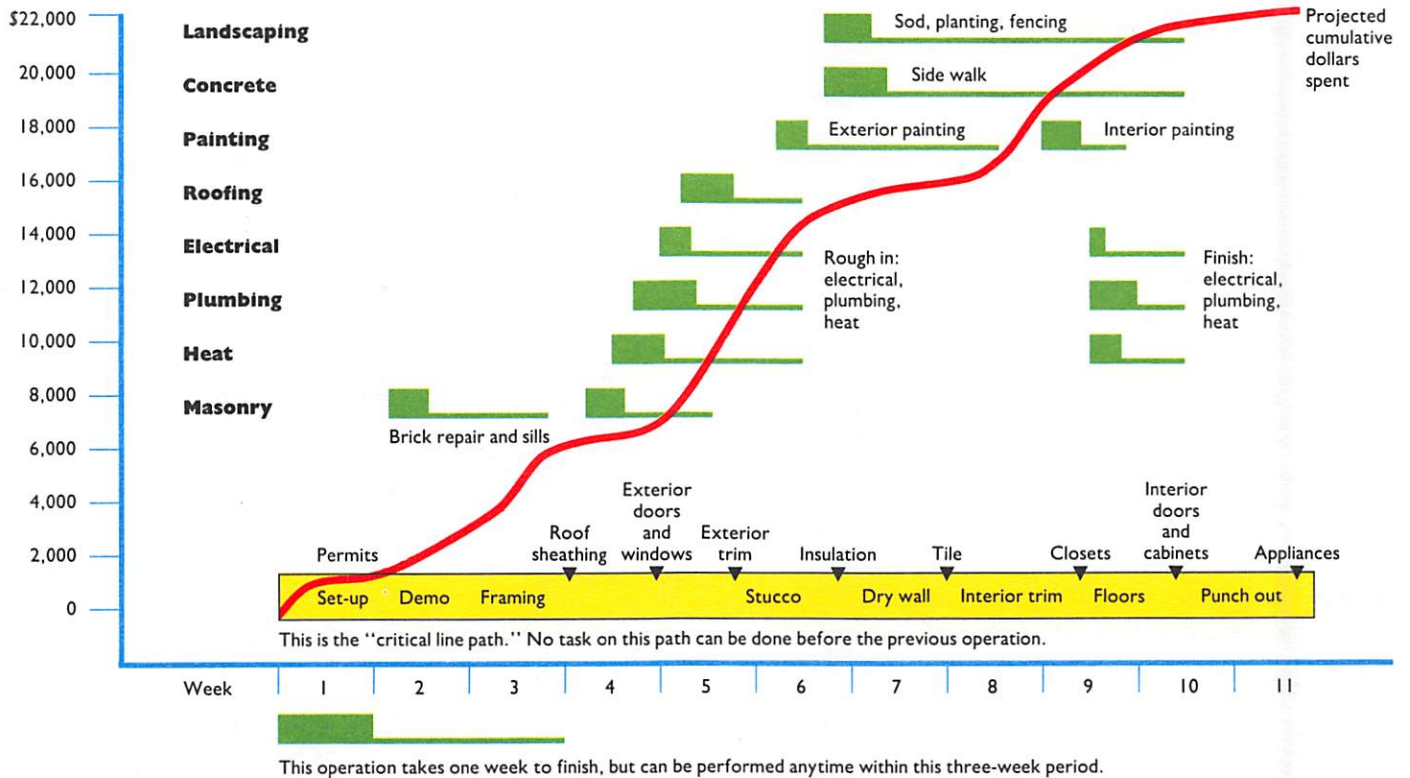
DENNIS LIVINGSTON:

“This five-foot tall chart was used at Maryland State Legislative hearings in the mid-80s to dramatize how little the existing utility audit program was doing for poorly weatherized, low-income households, and how few low-income households had been weatherized.

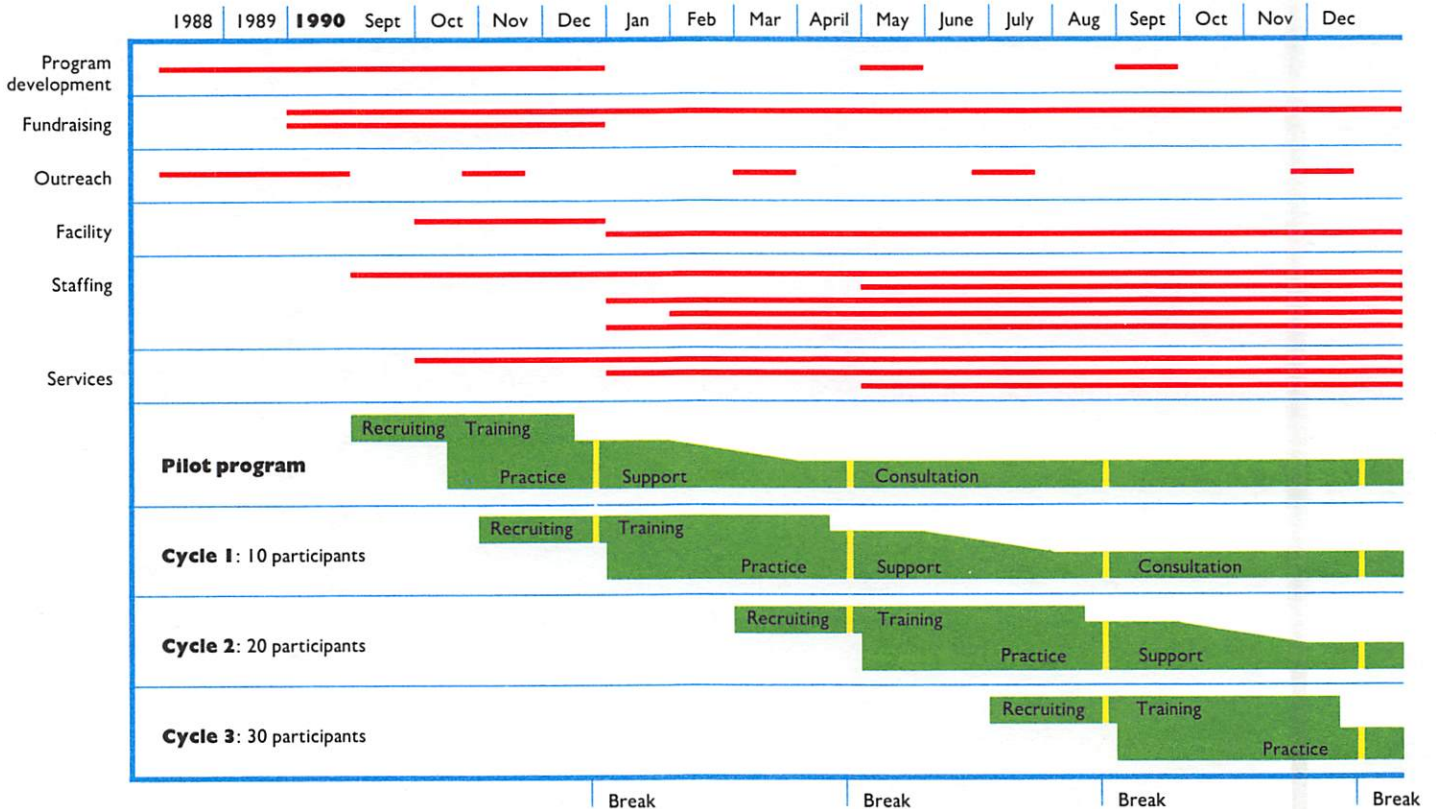
The energy loans were almost non-existent.”

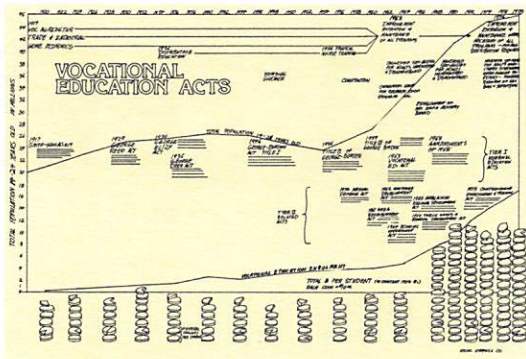
(Researched by Ron Halbright.)

CRITICAL LINE PATH FOR RENOVATION OF A MASONRY ROW HOUSE



SCHEMATIC PLANNING TIME LINE FOR WEB (WOMEN ENTREPRENEURS OF BALTIMORE)





This graphic was created for the Department of Education for a report to Congress on changing Vocational Education funding. It includes a linear graph and a pictorial bar chart made of stacks of coins. The final chart no longer exists.
(Researched by Stephen Rose.)

Several types of information graphic appear in Livingston's work. The terms **chart**, **table**, and **graph** generally refer to graphics structured by an x and y axis. *Chart* and *table* commonly refer to data displayed in columns and rows; the data takes the form of discrete (rather than continuous) elements, such as numbers, letters, or symbols. The term *graph* commonly refers to data represented by a continuous line or lines plotted across a grid. A graph might also consist of a series of scattered points: a line connecting those points gives them an order, a narrative sequence. A "bar chart" converts the continuous line of a graph into a series of separate strips.

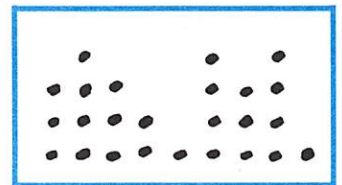
The chart is one of Dennis Livingston's favorite forms of information graphic, because its discrete elements allow him to display variables in addition to the two axes of the grid. One of his most influential projects, *Social Stratification in the United States*, is a chart whose axes are income and population. By coding pictorial symbols with costume, color, and framing devices, Livingston was able to pack the chart with five additional variables (race, occupation, family organization, and gender), resulting in a seven-dimensional graphic (see page 6).

The **time line** is another variation of the chart/graph type: it is simply a chart or graph with a time axis. Time lines can be used to study the past, record the present, or plan the future. Livingston has adapted a form of time line called a "critical line path" (**above left**), traditionally used in construction projects, to help organizations plan resources over a several-year period. In the contracting business, a critical line path is a time table for the flow of cash and the scheduling of various trades (carpenters, plumbers, electricians) during the construction or renovation of a building. Livingston used a variation of the critical line path to organize the program Women Entrepreneurs of Baltimore (WEB, **below left**), designed to help women on public assistance establish viable businesses.

Another genre of information graphic is the **diagram**, a spatial representation of an object or process. Diagrams can be either figurative or abstract: an "exploded" drawing of a machine part, for example, is relatively realistic, while an algorithm for sorting marbles is an abstract model of a mental process. A diagram uses two- or three-dimensional space to dissect, to unfold, to unravel, an object or concept. Livingston has used diagrams to describe systems such as the American economy (page 10), the flow of prisoners through the criminal justice system (page 11), and the drain of wealth from an urban neighborhood (pages 16-17).

DENNIS LIVINGSTON:

"Women Entrepreneurs of Baltimore (WEB) helps women on welfare to start their own businesses by offering financial advice and office support. The pilot phase is now underway. The time line at left shows how WEB's services taper off as the businesses mature, and how the organization's own need for staff and other resources fluctuates."



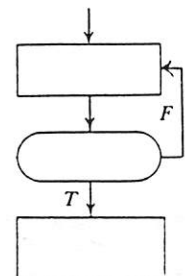
chart, table



graph



bar chart

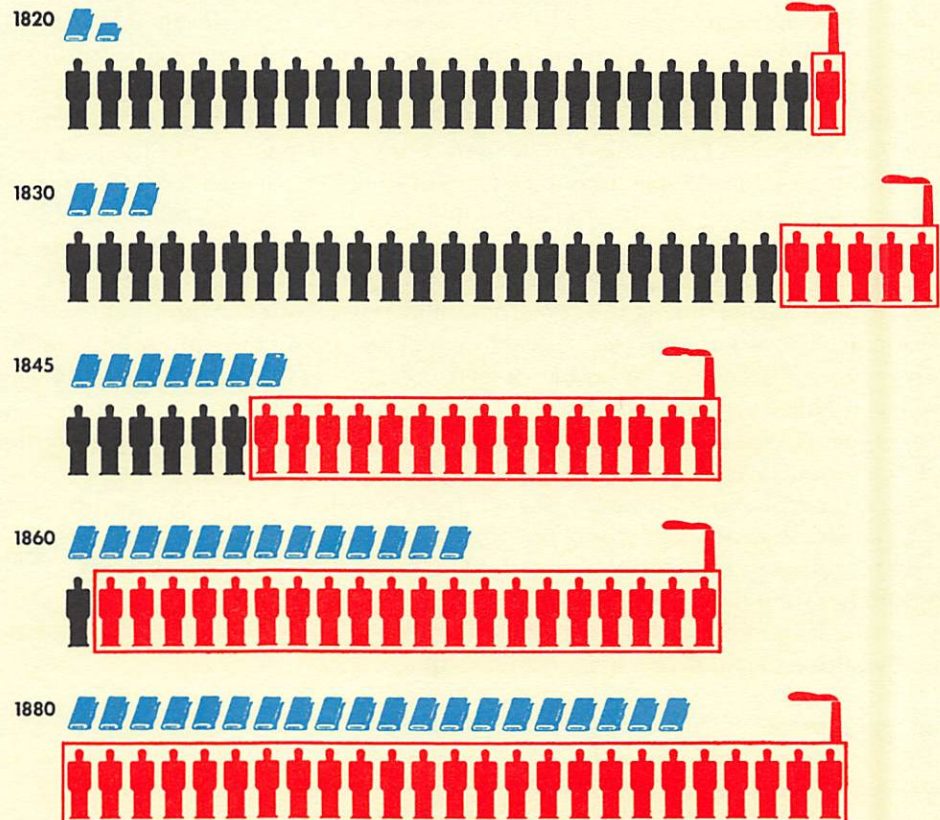


diagrams

WHERE		WHO				WHAT'S OFFERED				
		Men	Women	Children	Families	Breakfast	Lunch	Dinner	Sleep	Shower
	Christian Relief Center 1100 Western Boulevard 659-0800									
	Family Emergency Fund 1507 Howard Street 470-9821									
	Baltimore Homestead 3250 North Charles Street 243-1400									
	Housing Crisis Relief 1290 Eastern Avenue 982-7491									

Dennis Livingston conceived of the chart **above** as a resource for the homeless. The pictorial symbols aim to make the graphic accessible to a non-literate and semi-literate audience. (Redesigned for this publication.)

Home and Factory Weaving in England



This graphic appears in Otto Neurath's *Modern Man in the Making* (1939), an atlas of "pictorial statistics" which chart the emergence of modern (in this instance, industrial) culture.

Each blue symbol represents 50 million pounds total production
 Each black man symbol represents 10,000 home weavers
 Each red man symbol represents 10,000 factory weavers

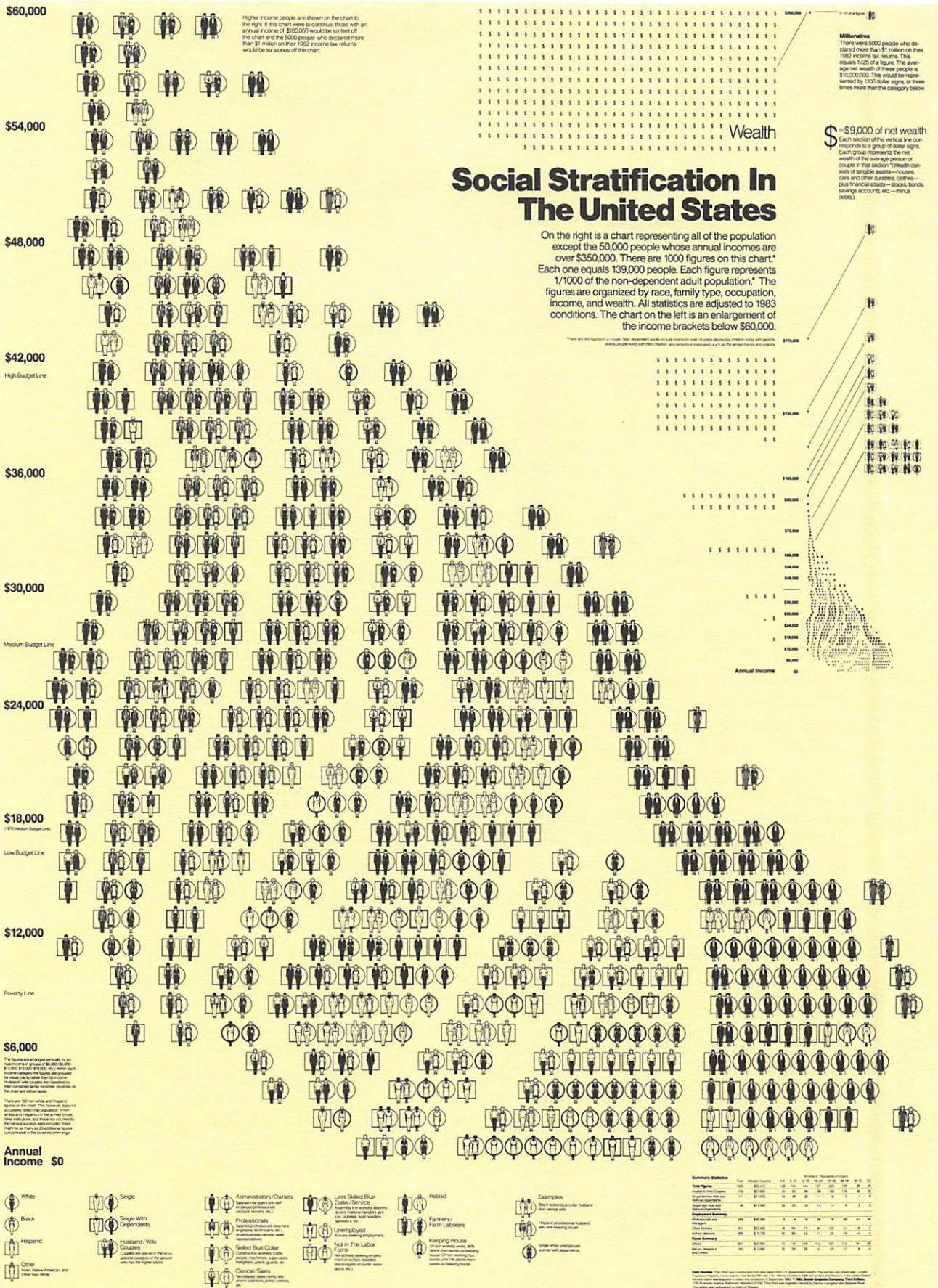
				WHEN TO GO														
Laundry	Counseling	Referrals	Medical	Times open				Call in	Walk in	Days open							Length of stay	
										S	M	T	W	T	F	S		
											x	x	x	x	x	x	x	
												x	x	x	x	x		
																		

Livingston's work recalls that of Otto Neurath, the Viennese social scientist who created **Isotype** (International System of TYPographic Picture Education) beginning in the 1920s. Isotype initiated a broad interest in designing pictorial symbols that would non-verbally communicate simple concepts to a multi-lingual audience. While such symbols have become ubiquitous directional signage in public buildings, Neurath's original plan for Isotype was more ambitious: he used the symbols in "pictorial statistics," charts and diagrams designed to deliver statistical information to the public. Neurath hoped to circumvent the dependence on verbal language by creating pictorial signs that would appeal directly to human perception. Neurath's charts use pictures—rather than numerals or abstract lines—to represent quantities. He hoped such pictures would communicate their message more directly to his public, and would be able to cross national barriers.

The pictorial symbols in Livingston's *Social Stratification* chart load the graphic with additional variables (page 9); in some other instances, however, the symbols function only to illustrate and humanize a chart or diagram, replacing or reinforcing verbal labels (see page 10). Edward Tufte, today's most eloquent commentator on information graphics, would perhaps find fault with Livingston's reliance on figurative imagery. Tufte has criticized the news media for forcing charts and graphs into illustrative schemes—he is appalled, for example, by a graph depicting the price of oil with a series of oil rigs in varying sizes. Tufte condemns such devices for factually misrepresenting the figures and insulting the reader's intelligence.

Yet Livingston feels that the use of pictorial symbols makes his graphics more accessible to non-academic viewers. Livingston has commented on his use of pictorial symbols, "I would no more turn a poem into a chart than replace a painting with words. I hope my charts use pictures only when they communicate better than words or give the viewer an overview before delving into the details of words or numbers." One of his projects, designed for a public service agency in Baltimore (**above**), lists local resources for the homeless; the pictorial symbols are designed to communicate to a non-literate as well as literate audience. Livingston's designs use pictorial symbols not to create surreal spectacles but to provide familiar sign posts in a potentially alienating landscape.

One of the Lubalin Center's first exhibitions was *Global Signage: Semiotics and the Language of International Pictures* (April-May 1986), which examined the legacy of Isotype. The exhibition and monograph *Dennis Livingston : Social Graphics* presents the work of a contemporary designer engaged in a similar tradition of information graphics. This project looks at the graphic work of someone who has not participated in the stylistic debates of the profession, and whose designs lack the visual sophistication that reflects such debates. Livingston's work is marked neither by a distinctive graphic "style" nor by a pristine, modernist-derived "functionalism"—his work can be called **functionalist** not because it has mastered a refined formal vocabulary but because each project strives to have an effect, to prove a point, to provoke a situation.



SOCIAL STRATIFICATION IN THE UNITED STATES

The chart *Social Stratification in the U.S.* was first published by Social Graphics in 1978, followed by a series of editions and spin-off projects. The chart was researched by economist Stephen Rose and designed by Dennis Livingston and Kathryn Shagas. It is a statistical portrait of American society which compares six variables: income, occupation, gender, family organization, and race. Note that the body of the chart consists of the \$0 - 60,000 range, contrasted with a side graphic depicting higher-income groups—the majority of U.S. families earn less than \$36,000.

The germ of the first published chart (**right**) was drawn by Livingston for a sociology course taught by Jan Houbolt. The use of figurative symbols to represent numbers of people remains part of the published charts, in which costumes indicate occupational categories. Square and circular framing shapes indicate gender and family structure, and color indicates race.

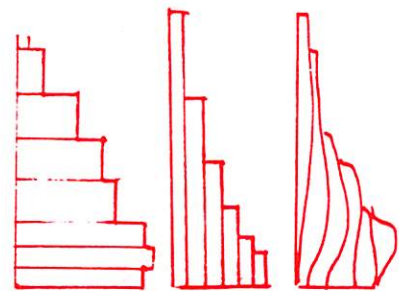
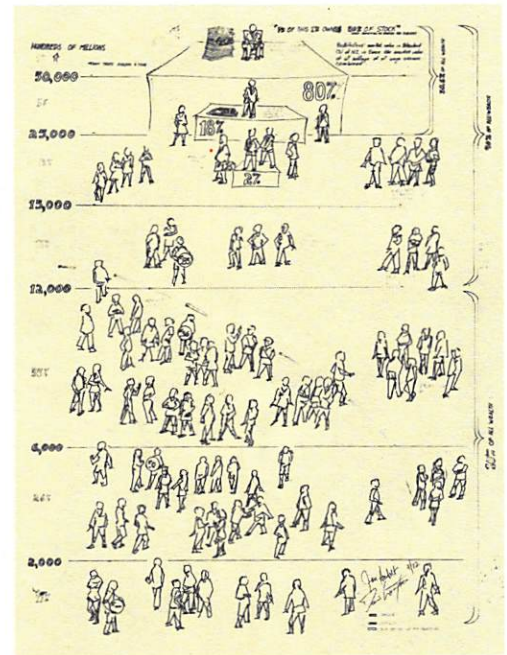
The sketches **below right** show the conceptual shifts which resulted in the final scheme for the chart: from rigidly horizontal and vertical bar charts to a looser structure in which occupational and family categories flow organically upwards through income strata. Most people approach the chart with the assumption that the greatest divisions in society are horizontal—i.e., levels of income. While it is true that the top and bottom percents of the population are socially isolated, the strongest divisions for most people are in fact vertical: a lower-income professional is closer culturally to an upper-income professional than to a blue-collar worker with the same income.

The first edition of the chart was published with \$10,000 raised from sympathetic friends and was publicized solely through newspaper reviews. The “strat chart” quickly became well-known among activists and educators, and found a place in numerous offices, classrooms, and homes. The chart was updated and redesigned in 1983 by Kathryn Shagas, and was published by Pantheon in 1986 as *The American Profile Poster*. The chart, enclosed in a book commenting on the data, is still in print and is widely used as a textbook.

STEPHEN ROSE :

“The chart was designed to show the differences between rich and poor while presenting the diversity of American working people. We intended to make a political statement, but we were careful to make the chart statistically accurate and to use ‘conservative’ assumptions, so that no one could accuse us of bias.

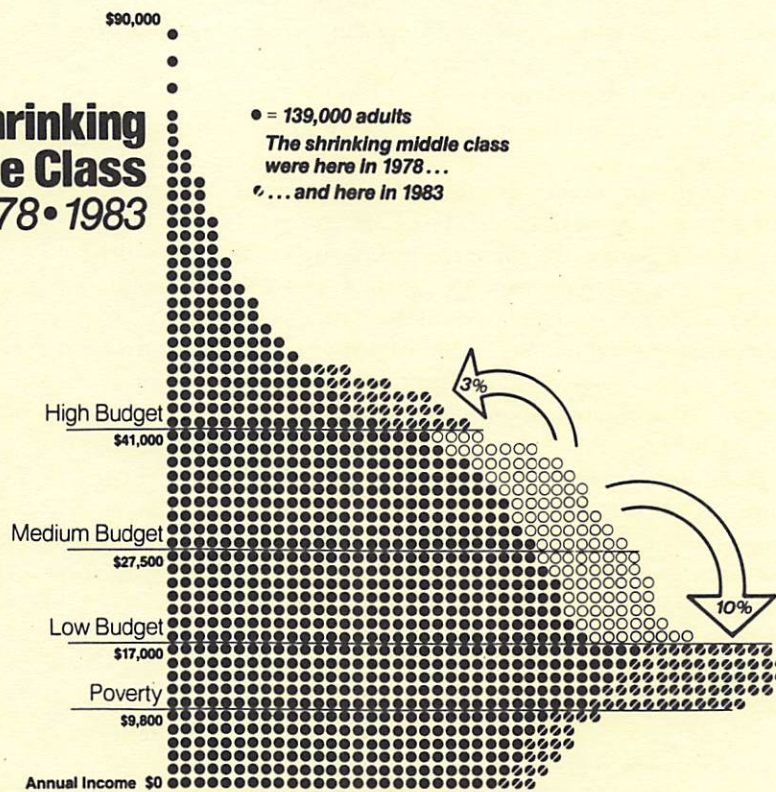
This worked more than we may have wanted—some of the most enthusiastic users of the chart were advertisers, including Time magazine, which produced a marketing brochure in 1978 based on segments of the chart.”



THE SHRINKING MIDDLE CLASS

Patterns revealed by the basic *Social Stratification* chart offered possibilities for new graphics. This chart below presents changes in income over time. The results of the chart were published in *The New York Times*, amplifying and expanding the national discussion of the "shrinking middle class."

The Shrinking Middle Class 1978 • 1983



Moved Up (3%)

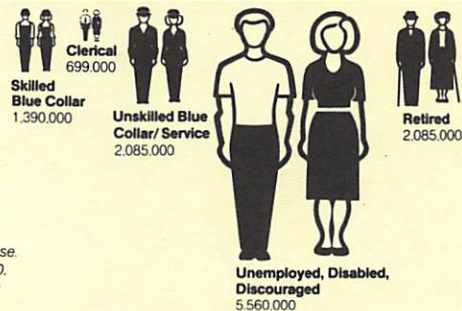


Who They Were In 1983

(The remaining were scattered.)

Moved Down (10%)

Total—14 million Adults or 24 million men, women and children or 13% of the population.



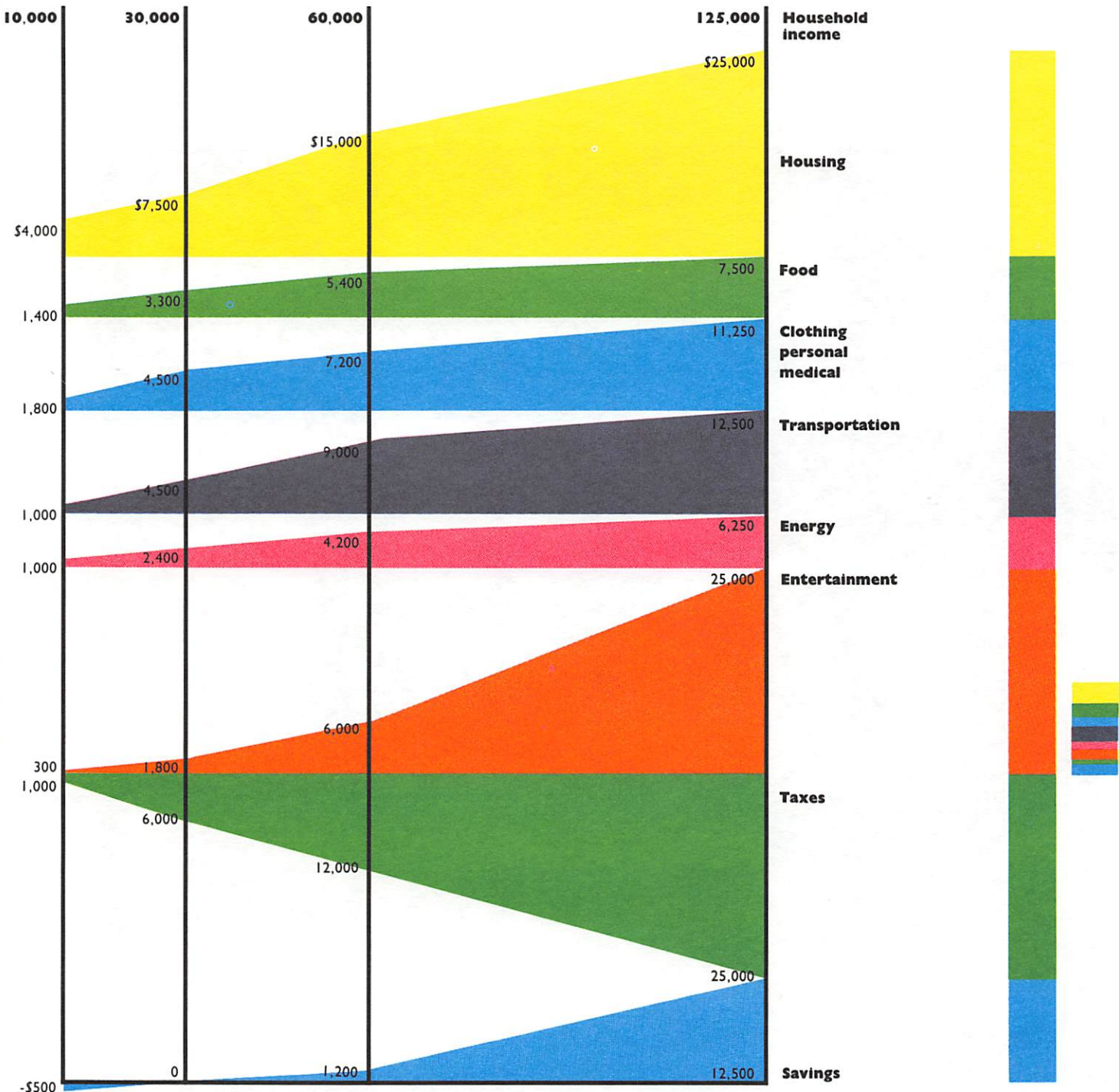
(The remaining were managers and professionals.)

Credit: Kathryn Shagas & Dennis Livingston, and Stephen Rose.
Social Graphics Co., 1120 Riverside Ave., Baltimore, Md. 21230.
Data taken from "Social Stratification in the U.S.,"
a 35" x 48" poster available for \$10.

THE COST OF LIVING

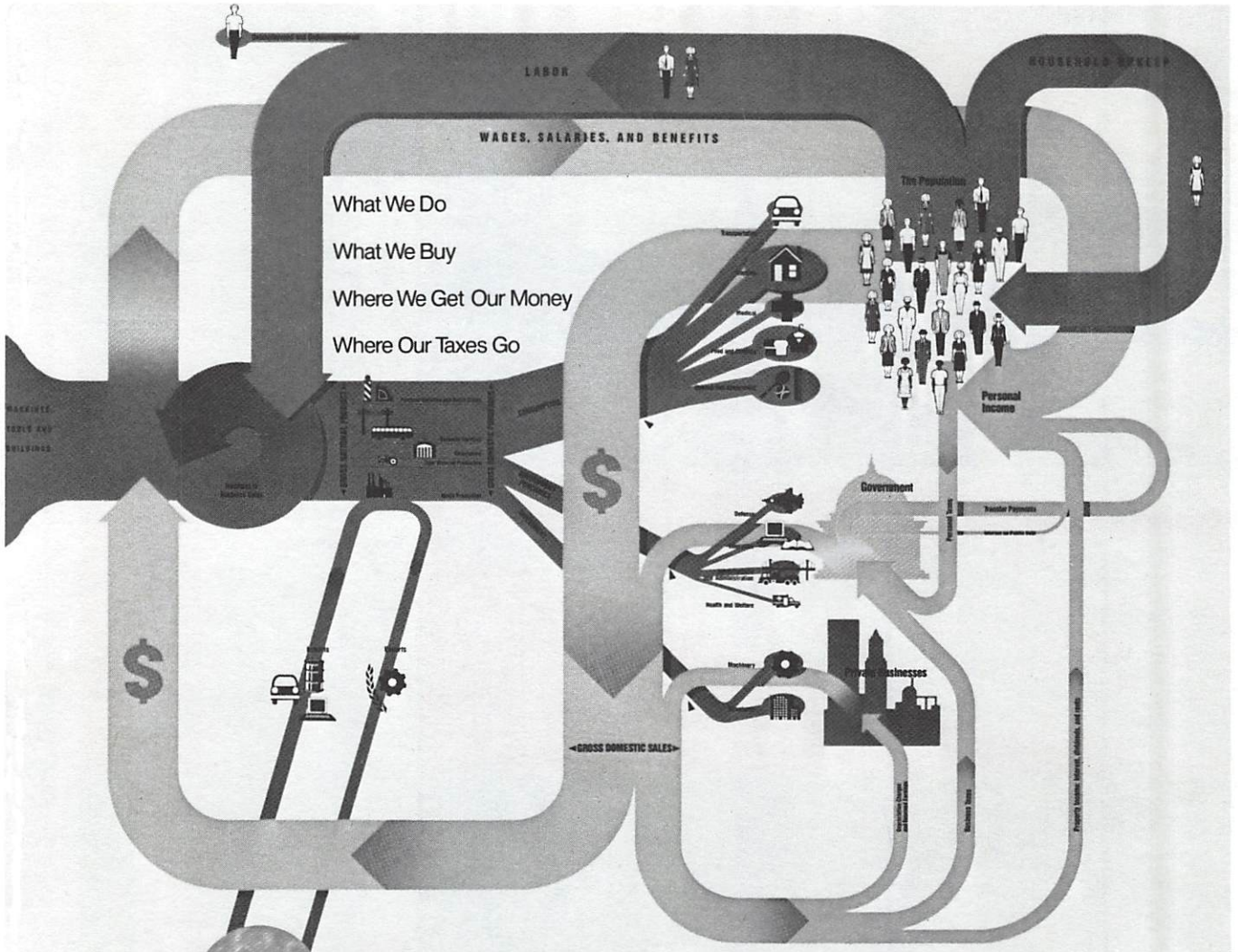
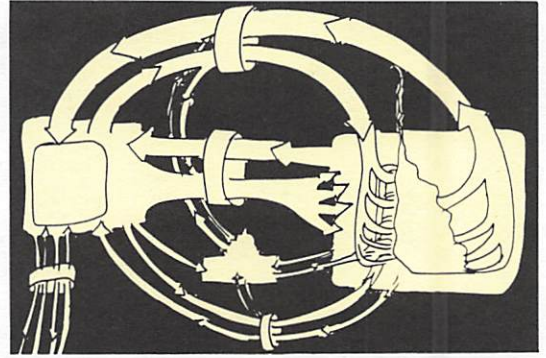
In 1984 Livingston, Rose, and Shagas researched and proposed a spin-off publication of the stratification chart called *The Atlas of the American People*, as yet unpublished. Their proposal consists of graphics on various social, economic, gender, and labor statistics. The chart **below** compares the ways lower-, middle-, and upper-income American families spend their wealth. (Redesigned for this publication.)

All of the budget items for the \$10,000-per-year household stacked into one column add up to less than half the *entertainment* budget for the \$125,000-per-year family.



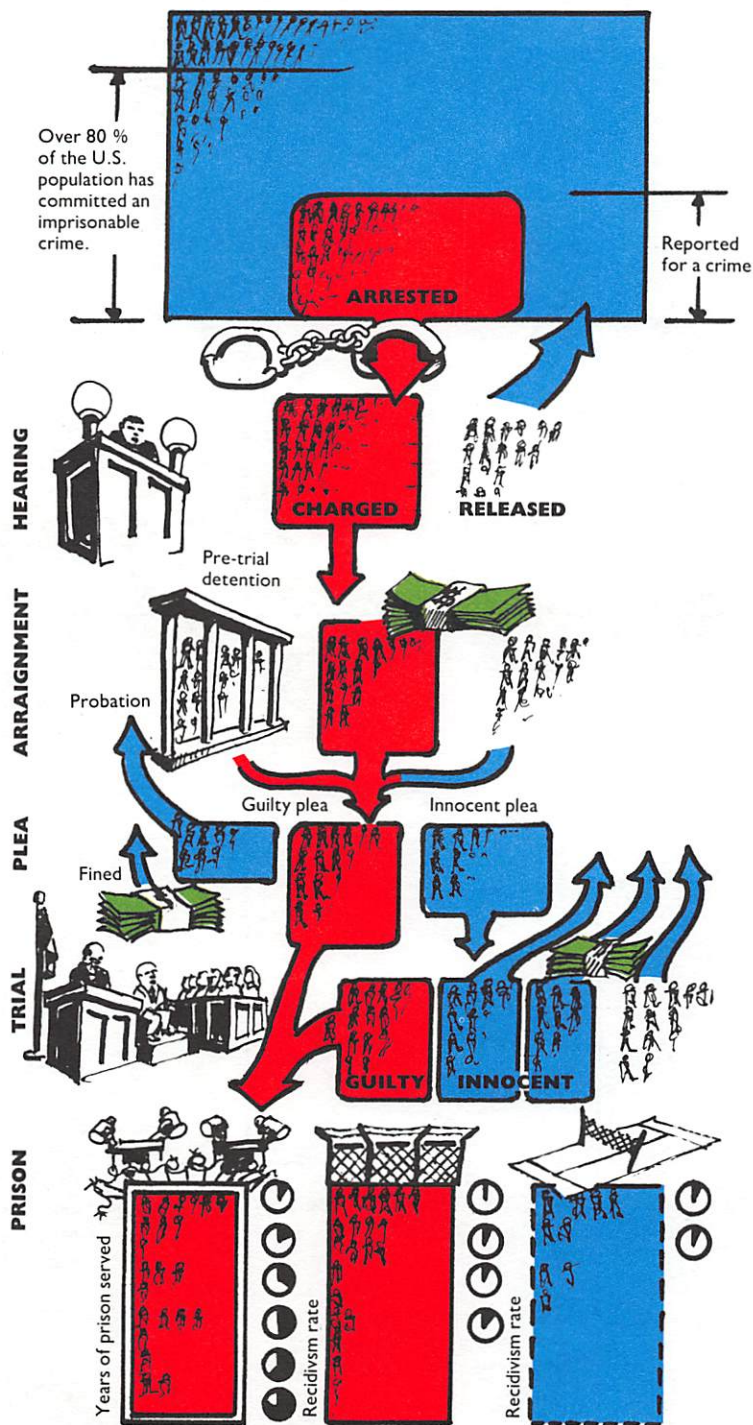
THE AMERICAN ECONOMY POSTER

In 1987, Pantheon published a second Social Graphics project: *The American Economy Poster*, a visual overview of the structure of the U.S. economy, a subject inadequately covered in basic college economics courses. The final diagram (**below**) and the Livingston's early sketch (**right**) depict the flow of labor, capital, and products. (Research by Stephen Rose.)



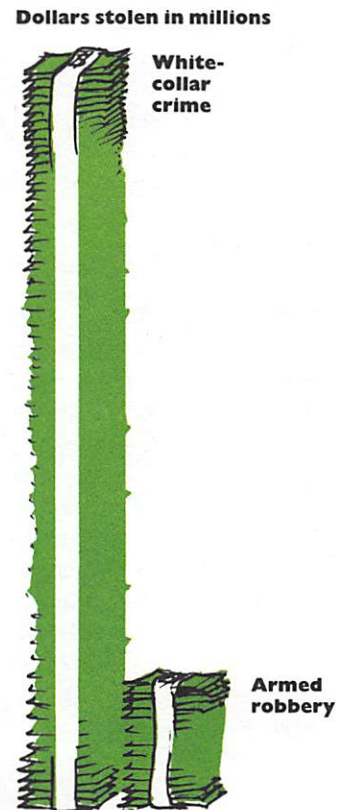
THE U.S. JUSTICE SYSTEM

Each figure represents one-tenth of a percent of the U.S. population whose annual income is less than \$10,000.



In 1981 Dennis Livingston and Stephen Rose were asked by the National Moratorium on Prison Construction to design a series of diagrammatic charts illustrating how the distribution of criminal "justice" is biased according to race and income. This graphic still seeks a researcher or funding for research, but the sketch at **left** indicates the project's visual approach and political message. This sketch represents the first of three panels, showing statistics on the criminal justice process for low-income citizens. The other panels deal with middle- and upper-income citizens.

A footnote (**below**) compares the growth rate of white-collar crime—for which our society has acquired remarkable tolerance—to that of street crime, associated with the urban poor.



*Edwind Sutherland, *New Times*, 9/19/1975.
Other elements of this sketch are not based on actual statistics.

PREDICTABLE CRISIS IN A SMALL BUSINESS

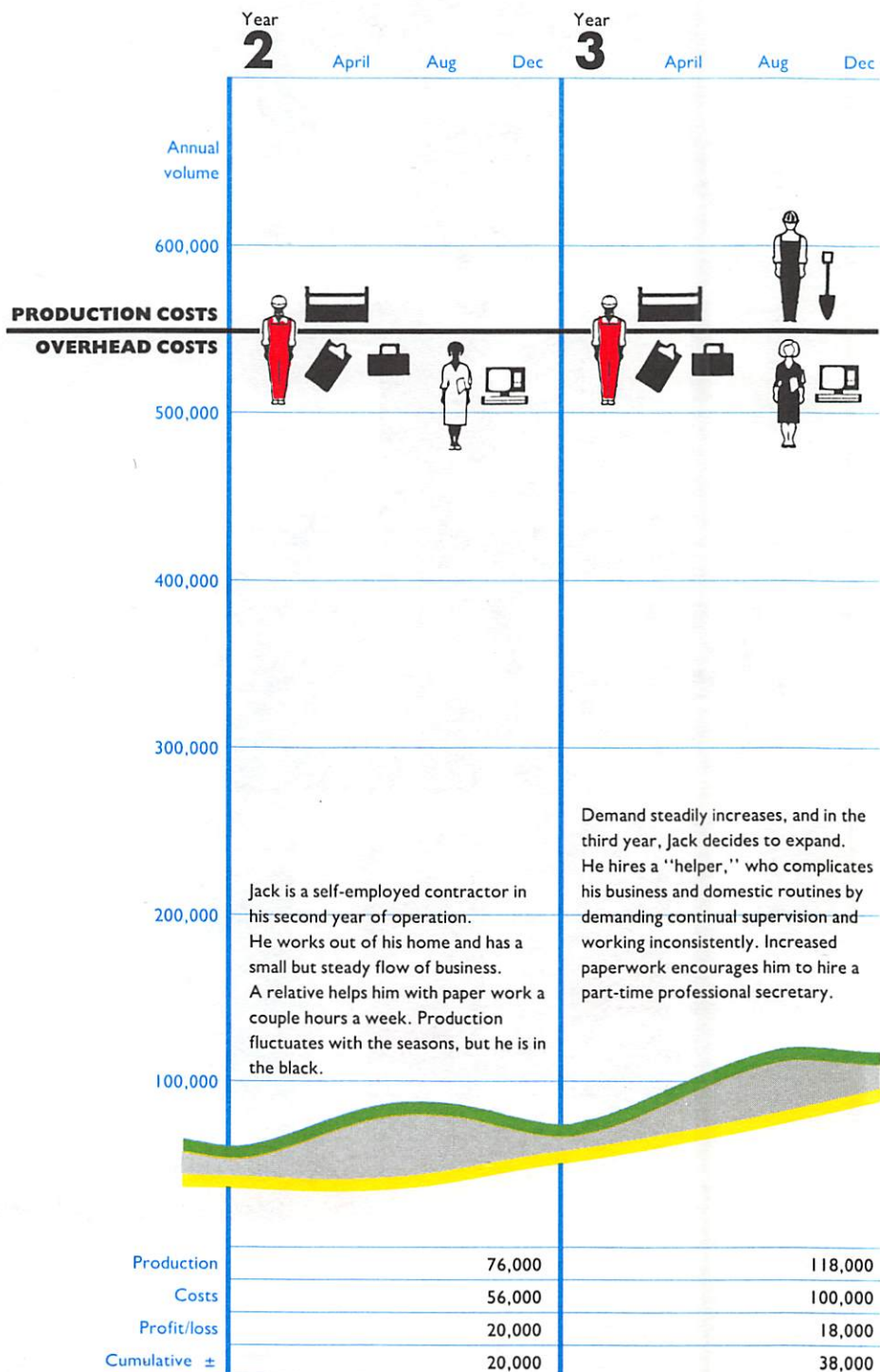
The graph at **right** describes a cash-flow crisis which commonly besets small businesses within five years of operation. Dennis Livingston has used graphics like this one in seminars with owners of small construction businesses—in such contexts, he creates the document on the spot, generating the data as his lecture proceeds.

This graph narrates a set of events which commonly lead to disaster, and proposes an alternative to frequently made mistakes: a consortium which allows several small businesses to share overhead costs. (Designed for this publication.)

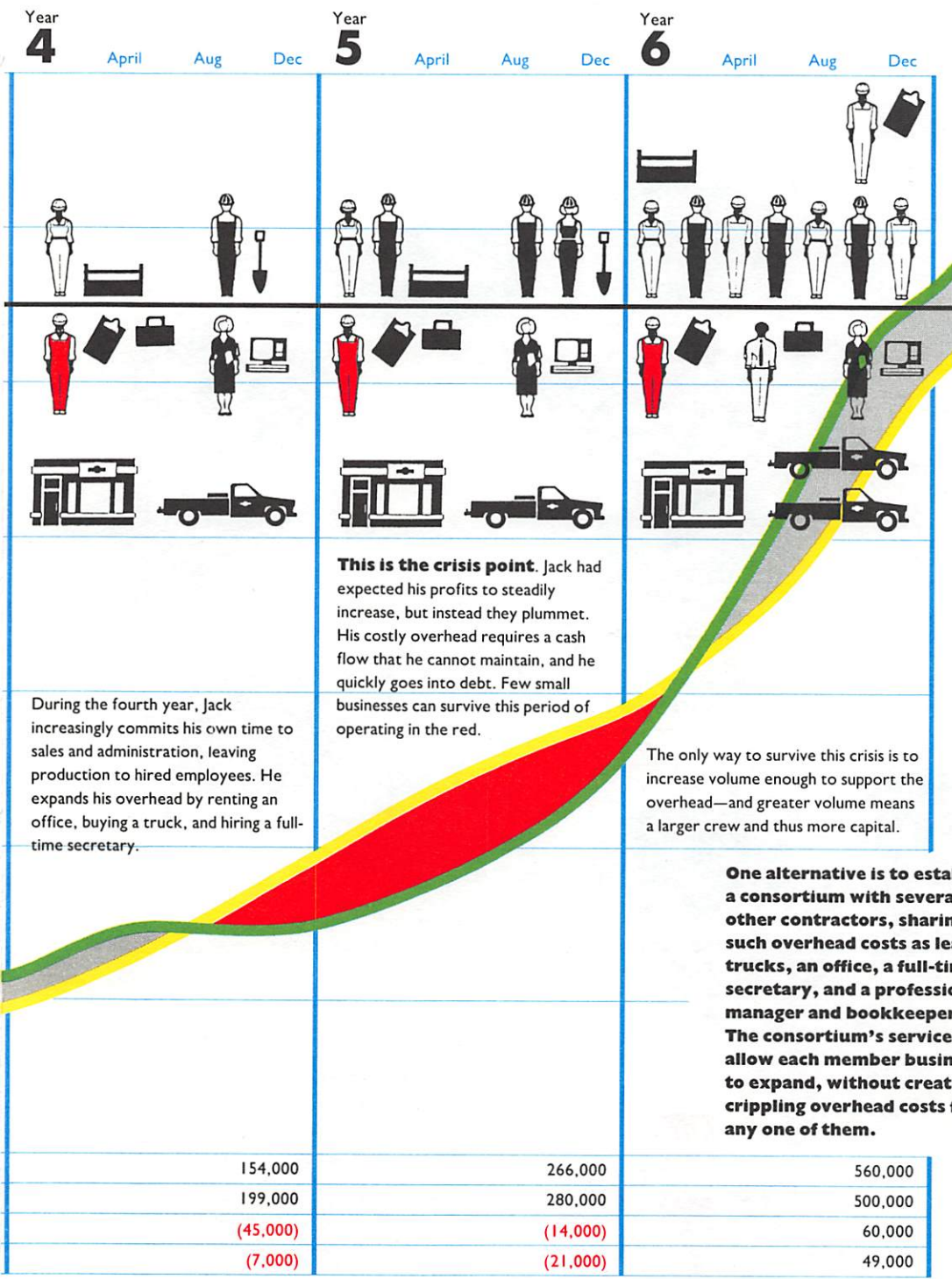
While Livingston's graph describes a scenario specific to the contracting business, comparable problems occur in small design studios. Many young designers working independently today share office overhead costs (fax, phone, copy machine, receptionist) with other designers.

DENNIS LIVINGSTON:

"The hardest seminar audience I ever taught was a group of twenty-eight contractors who had to attend my lecture in order to participate in a potentially lucrative program. These men did not want to be there. When I walked in, most of them had their arms folded, and all had the same question on their faces: 'What in the hell are you going to tell us to justify dragging us off our job sites for six hours?' As I went through the scenario depicted on this chart, their sour expressions turned into nods of recognition, and then pained smiles, as I recounted how we had all chosen to do the same wrong things at the same worst times."



Jack operates a small but expanding residential renovation company. During his fourth year, he decides to rent an office, buy a truck, and hire a secretary. He also takes the most productive carpenter out of production (himself), and puts the least capable person in charge of management (himself). As overhead exceeds volume, the company goes into the red. To survive he must greatly increase his volume. Only those companies that can bankroll the loss period, when overhead exceeds volume (year 5), can reach the stage when their crew is large enough to cover the expanded overhead (year 6). One way to raise volume is to form a consortium, sharing overhead costs with other contractors.



This is the crisis point. Jack had expected his profits to steadily increase, but instead they plummet. His costly overhead requires a cash flow that he cannot maintain, and he quickly goes into debt. Few small businesses can survive this period of operating in the red.

During the fourth year, Jack increasingly commits his own time to sales and administration, leaving production to hired employees. He expands his overhead by renting an office, buying a truck, and hiring a full-time secretary.

The only way to survive this crisis is to increase volume enough to support the overhead—and greater volume means a larger crew and thus more capital.

One alternative is to establish a consortium with several other contractors, sharing such overhead costs as leased trucks, an office, a full-time secretary, and a professional manager and bookkeeper. The consortium's services allow each member business to expand, without creating crippling overhead costs for any one of them.

FOUR INDEPENDENT CONTRACTORS



CONSORTIUM SERVICE

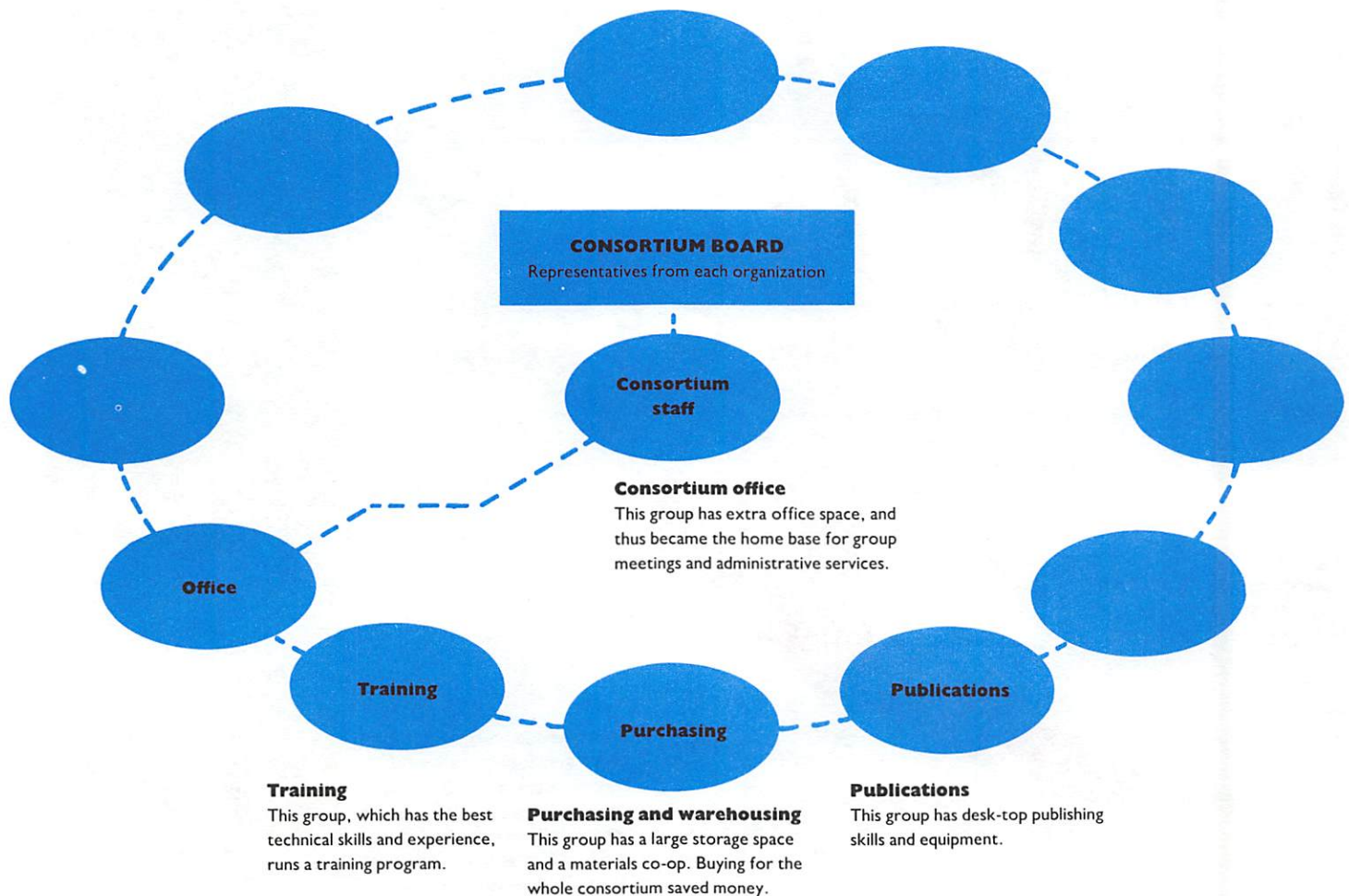


VISUALIZING AN ORGANIZATION

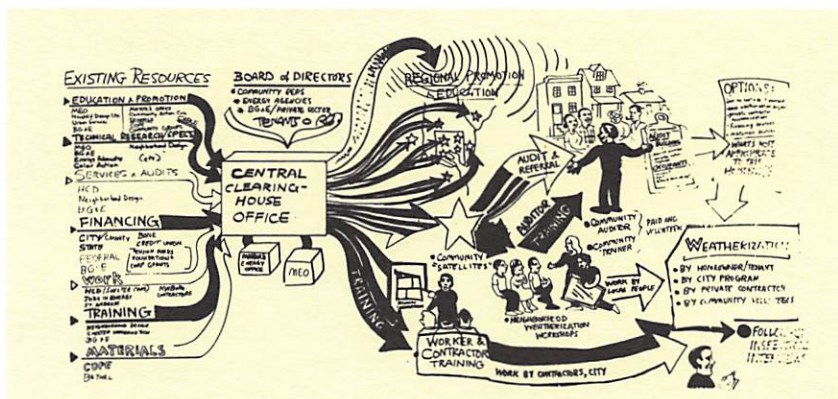
The typical corporate management chart is a pyramid describing the hierarchical flow of authority from a tiny, elite top to a broad, sturdy bottom. Livingston has often used diagrams as a planning tool for organizations and businesses, but his diagrams replace the *pyramid* of corporate culture with the non-hierarchical *circle*.

The diagram **below** is based on the St. Paul Neighborhood Energy Consortium; the consortium is now in its fourth year and includes all thirteen neighborhoods of St. Paul. Initially, the neighborhood organizations competed with each other for funding. The eleven independent groups came together to

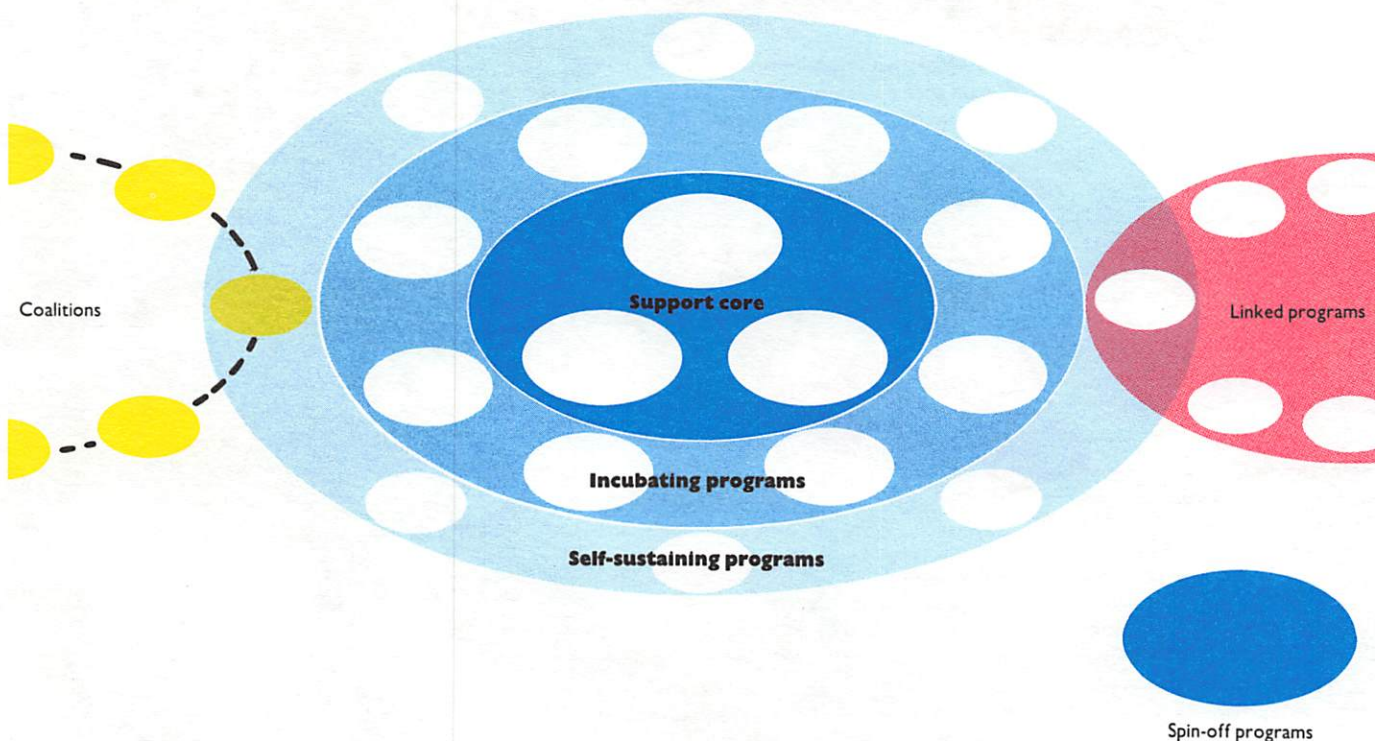
negotiate with the local utility company for a large pool of money to fund home energy audits, to be managed by the consortium. Livingston was hired as a consultant to help design this process. A central office was established to coordinate—but never design—public statements and negotiations. Other responsibilities were distributed among member groups, based on their established capacity and skills. The principle is the decentralization of control; the centralization of functions and resources; and the co-operation of social and political will. (Redesigned for this publication.)



The diagram at **right** was created in 1982 for a meeting of community organizations (illustrated by Tom Chalkley; researched by Ron Halbright). Out of this meeting emerged the Baltimore Jobs in Energy Project (BJEP). The diagram **below** describes BJEP's current structure. Livingston is the founder and current project director of BJEP, which has weatherized thousands of homes, launched dozens of projects, and influenced Maryland State energy policy. (Redesigned for this publication.)



BALTIMORE JOBS IN ENERGY PROJECT



Support core

The administrative functions of BJEP emanate from the support core: fundraising, grant management, clerical services, office space, publications, and program development.

Incubating programs

The "second circle" is the incubator for new programs. It subsidizes these programs with staff time, overhead services, funding, and lots of encouragement. This is where pilot projects take place.

Self-sustaining programs

When incubating projects become self-supporting, they move into the "third circle." They still receive support services, but they now pay a monthly fee to the core. These programs are somewhat self-contained, but receive supervision from the director.

REVERSING THE DRAIN OF WEALTH FROM LOW-INCOME COMMUNITIES

The diagram **below** is a proposal for a graphic showing how "poverty" results from the dissipation of a community's resources, and how some of those resources could be redirected back into the community. The mainstream media encourage us to think of "poverty" as a natural condition afflicting a small but unfortunate sector of society.

Livingston argues that a more positive, productive concept than "poverty" is the **draining of wealth**, the extraction of those resources a community *does* possess—financial, human, and material. By recognizing this outward flow, a community can organize itself to control and maintain its resources, rather than dwelling on its impoverishment and remaining dependent on the very institutions draining its wealth.

Environmental catastrophe

A community's natural resources can be damaged by carcinogenic air and water, toxic wastes in homes and workplaces, lead paint poisoning, and poor disposal of garbage.

Urban ecology projects

A community can win back its natural resources through tree planting projects, urban agriculture, stream rejuvenation, youth park-building programs, rapid transit development, neighborhood recycling, and environmental education.

COMMUNITY

Addiction

Addiction to drugs (alcohol, tobacco, cocaine) and gambling (state lotteries) drains a community's wealth. The government's addiction to "sin taxes" and lottery revenues make it into a pusher. A recent New Jersey study shows that 30 percent of low-income families spend 20 percent of their income on the lottery.

Education, reinvestment

Control of drug addiction through education and treatment programs is one way to block the drain of wealth. \$300,000 buys one ten-year jail term or thirty six-month training scholarships.

Unemployment

Unemployment and under-employment (40 percent among minority youth) results from a depressed local economy, industrial disinvestment, and inadequate child care. Low employability is caused by inadequate diet, housing, education, and pre-natal care, exasperated by legal and illegal addiction and discrimination.

Reinvestment

Community Reinvestment Act, inclusionary zoning, speculation tax, quick-take policy, and neighborhood homesteading are each approaches to preserving the value of local property without making it inaccessible to local residents.

Disinvestment, gentrification

Abandoned and condemned buildings are uninhabitable and unprofitable; gentrification is profitable, but it displaces the local residents of poor neighborhoods.

NATURAL RESOURCES

HUMAN RESOURCES

HOUSING STOCK

ENERGY

Conservation

\$1 spent on energy conservation is \$2.50 spent in the local economy.

Waste

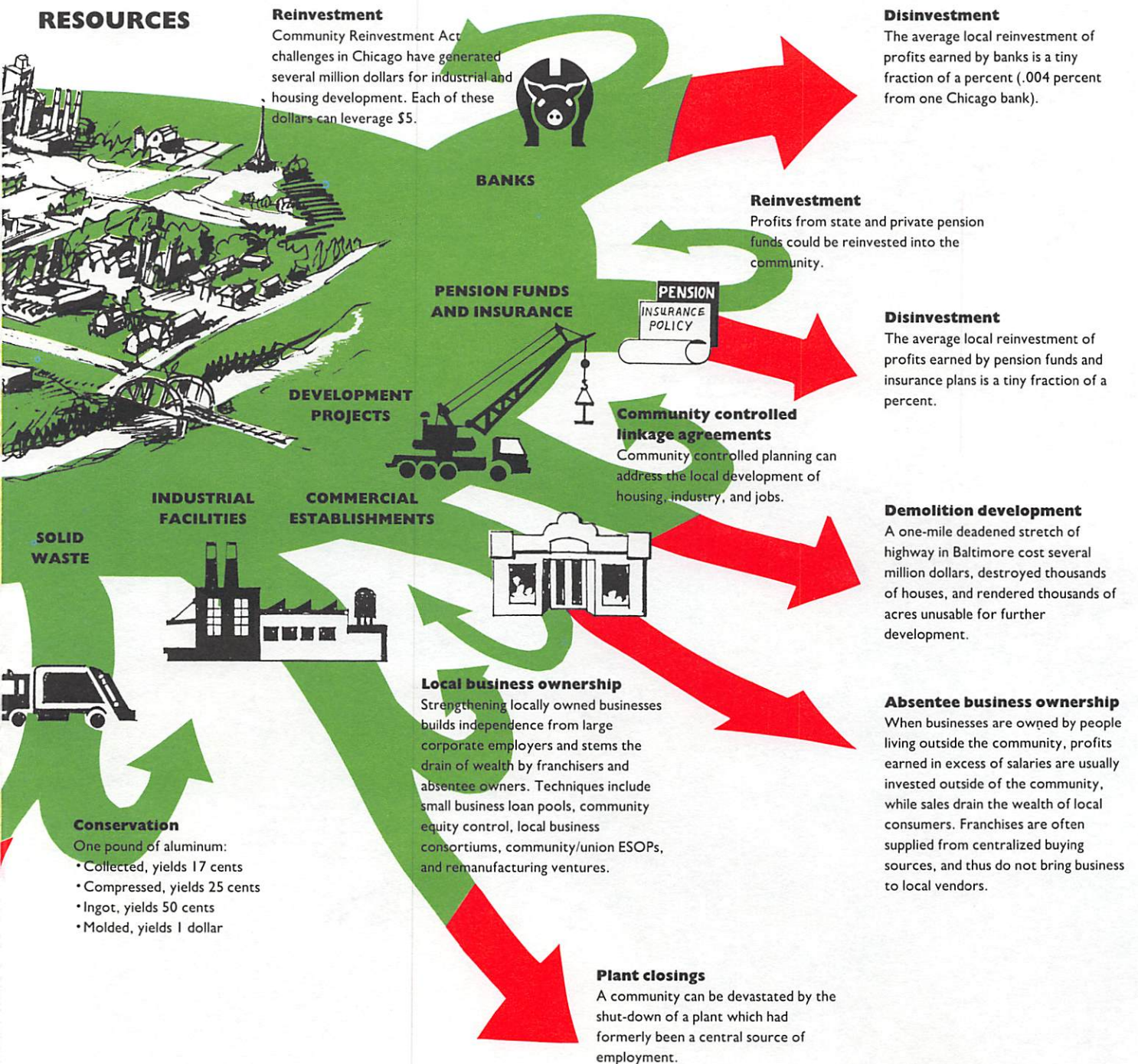
\$1 spent on fuel is 85 cents drained out of the community by utility companies.

Waste

One pound of aluminum costs 1 cent to incinerate or to bury in a land fill.

DENNIS LIVINGSTON:

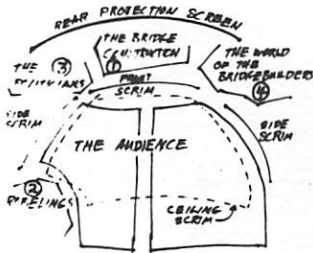
"This diagram is still at the conceptual stage. Each of the ten categories needs to be researched both for statistical data and for shining examples of successful urban projects. I believe this chart is a potentially powerful organizing tool. Even in its present rough form, it has been used as the centerpiece in many economic development sessions." (This diagram was inspired conceptually by the work of David Morris. Designed for this publication.)



SCENARIO FOR "THE BRIDGE"

At the suggestion of his father, Kip Livingston, Dennis Livingston created this graphic in 1983 as a visual scenario for a performance about the construction of the Brooklyn Bridge. Action takes place on four stages: the central stream (blue) is the building of the bridge itself, paralleled by the various forces which worked together—and often against each other—to construct the bridge: the bridge builders (violet), the engineers (gray), and the politicians and the financiers (green).

Concept based on David McCollough's book, *The Great Bridge*.



THE FOUR STAGES

THERE IS USUALLY SOME ACTIVITY ON ALL FOUR STAGES. AT TIMES THE SQUABBLING OF THE FINANCIERS & POLITICIANS PROMPTS OUT THE CONSTRUCTION OF THE BRIDGE. TANTALIZING SCENES OF THE LYNNH OF ROBLINGS SOMETHING ARE THE ONLY SCANDS IN A QUIET THEATER, OTHER TIMES THE DANCING & MUSIC OF THE IRISH POUR INTO THE ISLES TEMPTING THE AUDIENCE OUT OF THEIR SEATS. BETWEEN SCENES THE SPEECHES, POETRY AND LITERATURE OF THE TIME OVER SHADOW THE DRAMA. EXCEPT FOR HEAT SCENES THE RHYTHM OF THE STEAM ENGINES & HAMMERS ARE CONSTANT

FOR THE FIRE SCENE THE AUDIENCE IS TAKEN INTO THE CAISSON'S DARKNESS. CRACKS, GLOWING WITH SMOKE, FIRE, BEGIN TO FORM ON THE CEILING THEN SPREAD TO THE WALLS. WE HEAR THE YELLING & CRYING OF THE CAISSONERS AS THEY TRY TO GET OUT OF THE CAISSON.

THE AUDIENCE IS GIVEN A SCIENTIFIC EXPLANATION OF THE DELICATE BALANCE OF TREADMILL FORCES ON THE CAISSONS... THEY FEEL THE FEAR

THE BLOW OUT IS AN EXPLOSION OF LIGHT AND SHADOW THAT ROARS OVER & PAST THE AUDIENCE! A MOMENT OF TERROR

A NIGHT SCENE FROM THE BRIDGE BUILDER'S MORE SOUNDS OF ALEX SEED IN DARKNESS. SILENCE OF THE BRIDGE IN BLACKNESS

THE BRIDGE BUILDERS AT HOME & AT WORK

THE RIVER, THE BRIDGE

THE ENGINEERS

THE POLITICIANS & FINANCIERS

1. THE VISION

THE SETTING THE SOUNDS & SIGHTS OF THE RIVER. THE MUSIC OF MANY CULTURES MIX WITH THE SOUNDS OF STEAM BOATS & WORK SONGS

JOHN, WASHINGTON & EARLY RIDE THE FERRY & SPEAK OF THEIR VISION - A BRIDGE ACROSS THE EAST RIVER

JOHN DOES WASHINGTON TAKES OVER

PRESENTATION OF THE PLAN OF THE BRIDGE TO THE POLITICIANS

THE BRIDGE TOUR

THE AUDIENCE IS EDUCATED BY PROJECTED DIAGRAMS EXPLAINING HOW THE CAISSONS ARE SUNK. WORKERS DEMONSTRATE THE SPAN

THE AUDIENCE IS TAKEN ON THE TOUR BY A SERIES OF SLIDE PROJECTIONS ON THE SURROUNDING SCRIMS

THIS IS DONE IN A SERIES OF MONTAGE AROUND THE BRIDGE AND CONTINUES IN SMALL DIAGRAMS THROUGHOUT THE PERFORMANCE

2. THE CAISSONS

THE SINKING OF THE CAISSONS

THE BUILDING & LAUNCHING OF THE CAISSONS

THE BLOW OUT!

FIRE IN THE TOWERS

THESE TWO SCENES ARE INTERWOVEN

THE DANCE OF CONSTRUCTION THE SCAFFOLDING IS A NEW FOR MOVEMENT. THE ARMS OF THE MAJESTIC CRANES CONTRAST TO THE STRUGGLE OF THE STEEL HAMMERS. THE MUSIC GROWS OUT OF THE RHYTHM OF THE STEAM ENGINES

WASHINGTON IS CRIMINAL BY THE DEEDS

A DRAMATIZATION OF THE POLITICS OF N.Y. & BROOKLYN. SPOK & HARRY HARRIS. BRIBERY GRANTING VIOLENCE

3. THE TOWERS RISE

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

THE BLOW OUT!

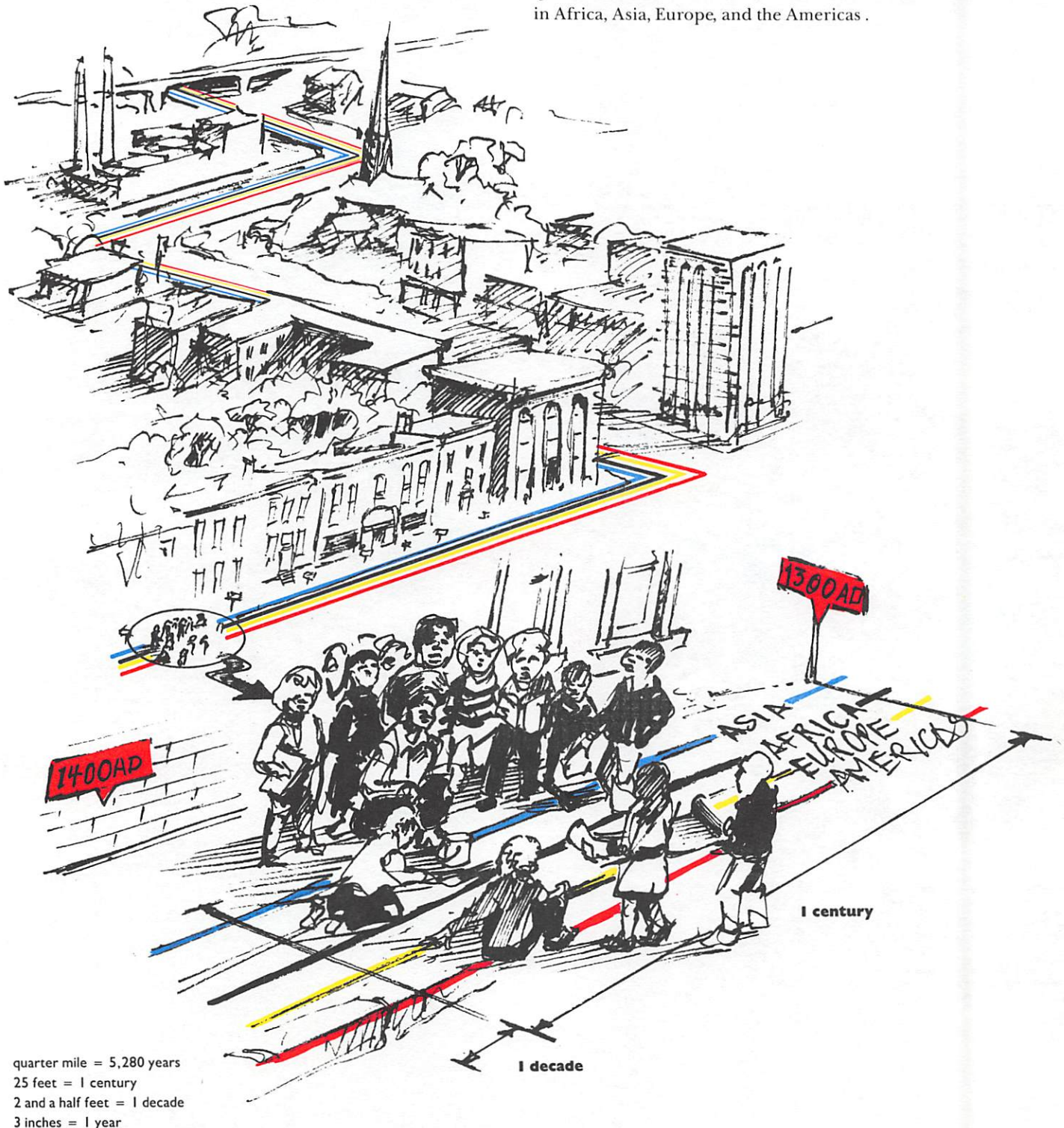
THE BLOW OUT!

THE BLOW OUT!

THE EXPERIENCE OF SCALE

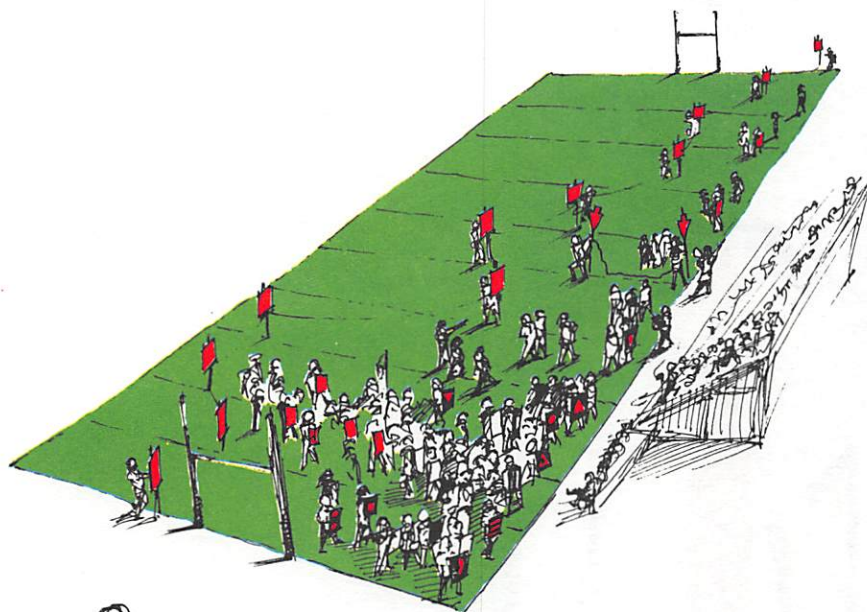
These sketches suggest how the principles of information graphics could be expanded to an environmental scale. The readers of these charts *become* the graphics: the act of "reading" becomes an enactment, a theatrical performance of information.

Historical time lines often condense or eliminate non-Western or pre-historic eras, giving readers a false sense of the centrality of "Western civilization." In the sketch **below**, Livingston proposes a time line that would be painted on the sidewalks by students in an urban school over a several-year period. Each semester begins with a two-mile walk, which contrasts the five-millennium history of "civilization" with the the forty-two-millennium duration of the human race. The last quarter-mile of the walk charts five millenia of human culture in Africa, Asia, Europe, and the Americas.



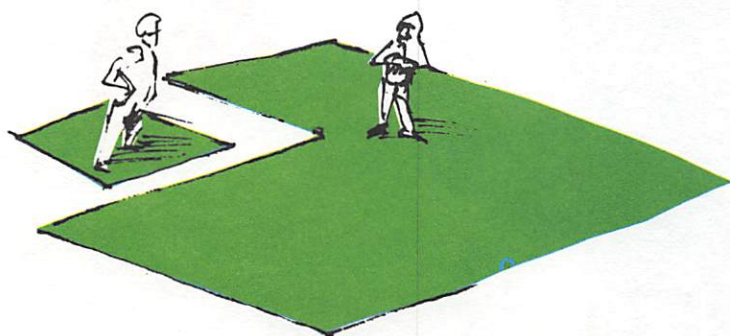
SELECTED BIBLIOGRAPHY

Most high schools and colleges have a football field (**below**). This huge gridded space, divided into ten ten-yard segments, would provide a great setting for a demographic chart in which people stand for quantities of particular social and economic categories. Students would experience the act of dividing their own peers into groups reflecting the broader divisions of society. Change over time could be illustrated with choreographed movements of the figures on the field.



Each figure would represent a percent of the total population. A card painted with a large symbol would make the figure "readable" from a distance.

The football field could also be used to compare the average living space occupied by people from different countries or income groups. Life-size boxes would be chalked directly on the ground.



Banisky, Sandy. "It's 13 stories to the top of this American-pie income chart." *The Baltimore Sun* (Tuesday, June 3, 1979): B3.

Cockburn, Alexander and James Ridgeway. "The Ladder to the American Dream." *The Village Voice* (January 1, 1979): 26.

Lekachman, Robert. "Squeezing the Middle Class." *The New York Times* (May 4, 1986): Section 7, page 39.

Lupton, Ellen. "Reading Isotype." In *Design Discourse: History, Theory, Criticism*. Ed. Victor Margolin. Chicago: University of Chicago Press, 1989. 145-156.

Margolin, Victor. "Social Graphics: Statistics as Politics." *AIGA Journal of Graphic Design* Vol. 6, No. 2 (1988): 6.

Modley, Rudolf. *Handbook of Pictorial Symbols*. New York: Dover, 1976.

Neurath, Otto. *International Picture Language*. Ed. Robin Kinross. Reading, England: University of Reading, 1980. Facsimile edition of 1936 text.

—. *Modern Man in the Making*. New York: Alfred A. Knopf, 1939.

Porter, Sylvia. "Are You a Member of the Middle Class?" *The Washington Star* (Tuesday, June 12, 1979): D8.

Rose, Stephen J., with Dennis Livingston and Kathryn Shagas. *The American Profile Poster*. New York: Pantheon Books, 1986.

—, with Dennis Livingston. *The American Economy Poster and Fact Book*. New York: Pantheon Books, 1987.

Tufte, Edward. *The Visual Display of Quantitative Information*. Cheshire, CT: Graphics Press, 1983.

—. *Envisioning Information*. Cheshire, CT: Graphics Press, 1990.

DENNIS LIVINGSTON : SOCIAL GRAPHICS

The Herb Lubalin Study Center of Design and Typography

*The Cooper Union
for the Advancement of Science and Art*

