

ROUTLEDGE REVIVALS

Facility Programming

Methods and Applications

Wolfgang F. E. Preiser



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First published in 1978, the objective of this book is to provide an authoritative and selective overview of current, user-orientated programming methods within the field of environmental design. The 19 chapters compiled in this volume describe procedures and the information content of innovative approaches used by leading programming experts in the private and institutional sectors. Emphasis is placed on a qualitative and illustrative focus of selected approaches to environmental programming with the eventual occupants in mind.

The chapter groupings are intended to reflect three major areas of professional engagement that serve the field of facility programming. The first group describe the approaches of firms or groups that were organised exclusively to provide environmental analysis and programming services. Part II is composed of chapters by authors who belong to established architectural firms with programming departments and Part III presents evidence that pertains to the supporting role of research and guidance literature from authors primarily affiliated with government agencies or supported by large organisations.

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**Methods and
Applications**

Edited by

Wolfgang F. E. Preiser

University of New Mexico

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“ . . . the power base for deciding for what does and what does not get built must be broadened to include primarily the ultimate users of a building, but also the significant others in its immediate social network. . . . now (the designer) is faced with a multitude of groups, often conflicting, who do not share common educational or class values and who have little experience in major decision-making.”

Stephen Kurtz

“Nothing Works Best,” *The Village VOICE*, August 2, 1976.
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Preface

The idea for this book on facility programming evolved in 1974 when the editor assembled a group of designers, researchers, and administrators concerned with the quality of designed environments in large organizations and institutions at Allerton House near Champaign, Illinois. The proceedings of this event, entitled "Programming for Habitability," were subsequently published jointly by the U.S. Army Construction Engineering Research Laboratory and the Department of Architecture at the University of Illinois at Champaign-Urbana.

It is impossible to acknowledge the many people who helped bring this venture to a conclusion. First of all, my friend and colleague, Thomas A. Davis, formerly with the New York State Construction Fund, was instrumental in critical advice and assessment of the prospects of the field of facility programming. Gerald Davis, Chairman of the Environmental Analysis Group, Inc., in Ottawa, Canada, provided constructive guidance and invaluable background information in this project. Earlier than anyone else, he recognized the need and opportunity for the new field of facility programming more than fifteen years ago and has been in practice ever since. Naturally, he is a contributor to this book.

Among those who encouraged the development of this collection of approaches to facility programming were Roger L. Brauer of the U.S. Army Construction Engineering Laboratory in Champaign, Illinois, and Robert L. Shibley of the Office of the Chief of Engineers, Special Projects Division, in Washington, D.C., both of whom sincerely endeavor to find ways to make the building delivery process of very large organizations more responsive to the needs of building occupants.

Many colleagues from established architectural firms with programming departments promised to contribute to this book, but few were able to deliver, due to priorities and pressures of survival in the shrinking market of environmental design services.

More eager, but equally harassed, specialized facility programming firms were among the other group of contributors. The total number of such

firms in the United States and Canada may amount to no more than a dozen at this time, but it is growing. Special thanks are owed to John P. Petronis and Lawrence S. Kline of Architectural Research Consultants, Inc., in Albuquerque for their original contribution and format suggestions for this book. Further, valuable secretarial assistance was provided by Kathy Cowart of the School of Architecture at the University of New Mexico. Lastly, I thank Maria Preiser for her endurance and support in carrying out this project.

Wolfgang F. E. Preiser

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1

Introduction: Responding to the Changing Context of Environmental Design

Wolfgang F. E. Preiser
School of Architecture and Planning
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DEFINITION

Facility programming enables communication among the eventual occupants, the providers, and the managers of facilities. This communication is particularly necessary for large organizations and government agencies with highly complex and substantial construction programs, frequently consisting of repetitive building types, such as offices, schools, or housing.

Programming can be defined as the process that elicits and systematically translates the mission and objectives of an organization, group, or individual person into activity–personnel–equipment relationships, thereby resulting in the functional program. These functional facility requirements are usually stated in performance language, and they are distinct from the architectural program, which consists of a “shopping list” of hardware assembled to match the functional program.

The word *program*, or *programming*, has been subjected to misunderstandings and misinterpretations, both by designers and other professionals. It is frequently attributed to and associated with the world of computing. While some facility programmers may avail themselves of computers in space programming, the majority of practitioners, and certainly the authors of this book, refer to rather sophisticated methods of data gathering, synthesis, interpretation, and translation when the programming process is discussed.

For most of the examples described in this book, programming precedes the traditional architectural design phases in the building delivery process. Some authors, however, include under the term *programming* the activity of process facilitation and post-occupancy evaluation—that is, they see the project through in terms of the stated program objectives and they make certain that eventual outcomes are fed back into the criteria and guidance data banks and literature.

A NEW PROFESSIONAL SPECIALTY

As an emerging field of professional specialization, facility programming is still suspect to architecture and the design disciplines, although it clearly provides services that are complementary to the established design fields. The traditional fee structure for architects does not provide for extensive programming services. Thus, architects trying to do a thorough job of analyzing user requirements and design parameters are likely to lose out financially. On the other hand, more and more large organizations are recognizing the need for programming services (which may not always result in new construction or physical environmental changes, but sometimes in reorganization or managerial changes) and are willing to pay for long-term improvements in health, safety, functional performance, and satisfaction of employees. As a consequence, specialized programming firms have been formed in the last few years to work with in-house "space managers" of organizations in trying to specify facility requirements for the present and the future.

EVOLUTION OF THE PROGRAMMING FIELD

Historically, the topic of programming as a specialized activity in the building delivery process emerged during the 1960s. However, good designers always did a certain amount of programming, although it was not necessarily documented in explicit program briefs. This new area of concern was introduced into the literature by such authors as Horowitz,¹ Agostini,² Wheeler,³ and Peña⁴ who identified new processes and changing roles within environmental design firms and organizations engaged in large construction programs. As elaborated elsewhere,⁵ the rationale for the emergence of facility programming lies in the need to establish effective communication among those who design and those who use the man-built environment, which in industrialized civilizations surrounds us virtually around the clock. Today

in ever-larger organizations and government bodies run by decision making through consensus and committees, decisions tend to be geared toward the lowest common denominator, and thus, the quality of the resulting environments does not meet occupant needs adequately. Many governmental municipal and corporate buildings may serve as examples—such as the ill-famed Pruitt Igoe housing project in St. Louis or the CBS office building in New York.

Rapid changes in technology, work processes, and rising expectations of the "consumers" of the built environment aggravate the problems created by an uprooted and fragmented society. "Technology insulates and isolates," says Daniel J. Boorstin.⁶ One of the purposes of facility programming is to integrate, not segregate, human activities in space and time. It's aim is to tap the building occupants for information on building requirements. This source was hitherto largely neglected. Further, the very process of involving those most affected by the built environment in the data generation and translation process in facility programming promises greater identification, responsibility, and pride on the part of users after building occupancy.

Attempts to overcome the serious communication gaps between building occupants and providers of buildings included the development of a taxonomy for the introduction of behavioral science concepts into facility programming by Harrigan.⁷ In his book *An Introduction to Architectural Programming*, Edward T. White stated in 1972: "Although there are still many improvements to be made, programming is recognized today as an *essential* part of the planning process for most design situations."⁸ He gave as reasons the need for statements of building functioning, the need for flexibility in usage, the requirement to design for specified performance, the quest for subsystems integration, and today's challenge of working within interdisciplinary contexts.

Recently, at a time when some of the largest facility programming efforts in human history are winding down, a flurry of publishing activity appears to have taken place. The building programs referred to above

include those of the New York State Construction Fund for university facilities, the Urban Development Corporation in New York for housing, and the University of California systemwide facility programs, all of which had their climax in the late 1960s. Publications to appear in 1977, in addition to this volume, include books on programming entitled *Methods of Architectural Programming* by Henry Sanoff,⁹ a volume by William Peña¹⁰ on the programming approach of Caudill, Rowlett & Scott in Houston, and a collection of papers on programming edited by Herbert McLaughlin, Chairman of the AIA Facility Programming Task Force.¹¹ The fact that the American Institute of Architects formally recognizes the existence of this field is significant and encouraging in that it signifies a movement toward the provision of more comprehensive services than has customarily been the case.

FOCUS AND ORGANIZATION OF THIS BOOK

The objective of this book is to provide an authoritative and selective overview of current, user-oriented programming methods within the field of environmental design. The authors were asked to describe procedures and information content of innovative approaches used by leading programming experts in the private and institutional sectors. This book is intended for use by environmental design practitioners, government design and construction agencies, as well as design educators as a text on facility programming techniques. Content emphasis in this volume is on a qualitative and illustrative focus of selected approaches to environmental programming with the eventual building occupants in mind—that is, it focuses on increased livability or habitability of settings from the users' point of view. Settings are defined as places for purposeful activities and range in scale from work stations to rooms, buildings, and urban and geographic areas. Environments, which refer to the ambient environmental attributes acting upon the sensory systems of building occupants, include the

luminous, acoustic, olfactory, tactile, thermal, and spatial-visual environments.

Authors were asked to describe the programming process, including establishment and differentiation of goals and objectives of user groups and/or organizations, resolution of conflicts, analysis of context variables, data gathering on human requirements in the field and/or from the literature, establishment of appropriate habitability (user-oriented) criteria, communication of habitability criteria to those involved in the programming design process through documents and other means, reviews, approval procedures and criteria, and evaluation and feedback.

Further, authors were requested to provide a description of the human requirement content of their programming approaches through the presentation of a case study involving major input of user-related information. Categories of issues to be included related to three levels of human requirements in facilities: health and safety requirements (e.g., preventing fire, disease, vandalism, accidents, and so forth), functional use requirements (e.g., providing conditions conducive to the performance of a job or to the proper functioning of living environments, including public places and so forth), and psychological comfort and satisfaction requirements (e.g., providing conditions conducive to aspects like sensory stimulation, territorial integrity, speech and visual privacy, proximity to valued resources, status, expression of individuality, and so forth).

Lastly, authors were encouraged to respond to three categories of questions concerning the case studies they presented: Did a more satisfactory solution (from the users' point of view) result from a programming effort that particularly emphasized human requirements? And, was such an assessment of success or failure made? Did the input of human requirement information (and perhaps social science consultants) add to the professional satisfaction and expertise of those involved in the programming effort? Or, did this kind of information complicate things without adding to the quality of the final product? What was the estimated "added" cost in

time and dollars associated with programming? Was the extra cost, if any, justified in light of the resulting building quality? A number of authors were unable to answer these questions, partly because it was too early to tell whether their projects had succeeded in terms of the items listed above.

This book is *edited*, in contrast to those authored by Henry Sanoff and William Peña, because this editor is concerned about the fact that at this time no one individual may have a full understanding of all the considerations and approaches that are necessary and already practiced in order to bring about a more habitable built environment. The book thus mirrors a spectrum of complementary programming approaches, and its authors represent a network of resources.

The chapter groupings of this book are intended to reflect three major areas of professional engagement that serve the field of facility programming today: The first group describes programming approaches of firms or groups that were organized exclusively to provide environmental analysis and programming services. To date, there are no more than eight such firms in existence.

Part II is composed of chapters by authors who belong to established architectural firms with programming departments. Hence, their perspective of facility programming may be biased by the fact that a design commission looms on the horizon.

The Chapters in Part III presents evidence that pertains to the supporting role of research and guidance literature in the field of facility programming. The authors are primarily affiliated with government agencies or supported by large organizations. Their function is to provide data that may be used in facility programming. They are distinct from the former two groups of contributions to this book.

Hopefully, this collection of current approaches to facility programming reflects the state-of-the-art in the field and, further, will point to needed directions in the quest for the improvement of quality in the designed environment.

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Part I

**Facility
Programming**

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2

Restructuring the Hidden Program: Toward an Architecture of Social Change

Murray Silverstein

Max Jacobson

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ARCHITECTURAL PROGRAMMING

When an architect sits down to work on a project, he has before him “the program.” This chapter is an inquiry into the nature of architectural programming, and the potential of these programs to catalyze change in the structure of the environment.

What is an architectural program? On the surface it is simply a list of spaces denoting specific rooms and outdoor spaces, with a gross size for each, sometimes a few key relationships between them, and an overall budget for the project. Some programs are very sophisticated and describe activity patterns, requirements, or performance specifications. But fundamentally, an architectural program, even a very simple one, is already a design: It is a very crude yet powerful social-physical form.

The very name of the facility to be built and the list of spaces, as well as their functions and their cost, already imply that certain social structures will be supported and that the final building will be owned and operated in a specific way. The program also implies a certain flow of money, information, people, and goods, and it implies a lifestyle for those who build, staff, and use the facility.

In effect, then, even the most rudimentary architectural program is like a rough skeleton. There are a million things between developing a program and finally bringing the building to life, but a strong and basic form is cast in the structure of the program.

Certainly this is why, as designers, we sometimes blame the program, or defend a design (“This is what the program called for . . .”). And it is also why there has been a great deal of effort in the last ten years to improve the quality of programming and make it a legitimate part of the architectural profession. The argument has been that if programs are so fundamental to the nature of buildings, then they should be developed carefully, from the outset, by teams that include architects, even specially trained “programmers.” And what’s more, since architecture nowadays is notoriously alienating to its users, it is just at this point, in the formulation of the program, that “user

needs" should be recognized and made part of the program.

To this end a good deal of energy has been devoted, and during the last ten years some interesting approaches to the problem have been developed. To our mind, the best work includes such material as Hermann Field's detailed program for the Boston Floating Hospital;¹ Lindheim, Glaser, and Coffin's work on hospital environments for children;² Hirshen & Partners' anthropological approach to their program for a Navajo high school;³ and the user-design processes of Jan Wampler in Boston.⁴ Compared to more thoughtless and arbitrary ways of developing architectural programs, these works are impressive. But upon reviewing the field as a whole, and the current tendencies amongst those who have specialized as "programmers," one feels rather empty, even let down, by the work.

The Failure of Programming

Remember that, for many of us, the movement in the early 1960s toward programming and user studies held a great promise. The people who became involved with this work shared the feeling that there was something fundamentally wrong with the way in which architecture was being created. Various studies and theoretical explanations were put forward to corroborate this feeling, and in the schools, the profession itself was subjected to a radical critique.⁵ All of this was part of a loose sense of "movement" within the profession, which is perhaps best described as a confederation of feelings: Modern architecture was dead, but not for lack of good architects; something was wrong in the very core of our knowledge, in the assumptions we made, and in the processes by which we designed.

The emerging body of work, sometimes labeled "programming" or "user studies" or simply "research," was to be the work that would get us back on the tracks: It would analyze the basic forms and

processes of architecture and build into them a new human pulse and richness.

However, as this rhetoric of disaffection was translated into a "field" and into projects, it lost its energy. The work itself became tangled in just those kinds of problems we had sought to solve: Assumptions about basic building types were taken for granted; original intuitions and feelings were translated into rather frail and academic "user studies," which often served only to reinforce the myths we had sought to reveal; people rushed to apply new techniques to office conditions, without asking whether the job structure itself might be a source of the problem.

Perhaps we never took our own rhetoric seriously enough; or perhaps the kinds of people that could make the critique were also the types that could be easily mystified by the seeming rigor and rationality of "science." For whatever reasons, those deep and radical feelings that generated the break with modern architecture and energized the move toward "programming" never became the central focus of the "programming" field.

In the meantime, popular disaffection toward the environment and toward modern architecture has grown. The alienation and passivity of the public, which formed the original point of departure for our work, seems now to be deeper and more basic than we expected. People are not simply disaffected with architecture as such; they are disaffected with the way of life that is sustained by modern architecture. Ultimately, buildings are criticized as the reification of a painful way of life.

A cartoon might depict the situation as one in which the new programmers have been offering to rationalize circulation and adjacency requirements, add carpets and plants and supergraphics, when the buildings themselves, and the sense of life they sustain, are driving people crazy. Marshall Berman, in a discussion of Robert Moses, says:

... it seems virtually impossible for Americans today to feel or even imagine the joy of building, the adventure and

romance and heroism of construction Think of your gut response when you encounter something being built—a building, a road, a bridge or tunnel, a pylon or pipeline, a television tower, anything—your first instinct will almost certainly be to shrink back in fear and loathing. This impulse cuts across class, ethnic, generational and ideological lines It's true, but not really relevant, that most of what's going up today is both shoddy and brutal: our recoil is too fast and too visceral to make discriminations; even on the rare occasions that something beautiful gets built, we cannot see to see. We tend to think that everything around us must have been indescribably lovelier "before"—before it got "developed."⁶

And from within the profession too, these feelings persist. Geoffrey Broadbent says in a recent journal:

It is obvious to anyone who can read the signs that the whole approach, the functional building in the functional city, is assailed on all sides. The people as a whole simply do not like what is offered. That, in itself, is bad enough, but such grass roots criticism is also supported, with statistical evidence, by the physicists, psychologists, and sociologists who have come into environmental research. The so-called "functional" buildings fail conspicuously . . . people find them bleak, harsh, and sterile, filing cabinets for living in⁷

Up against such basic disaffection, the studies of programmers and the techniques proposed seem rather feeble indeed.

As professionals trying to grasp this situation, we find ourselves of two minds. In part we believe that it all makes sense: If we set about to design a shopping center or office building or housing project, a good job of programming is important. And if this work includes the opportunity to study the "users," their habits, and their needs, so much the better.

But at the same time, no matter how sophisticated the program, we often feel that the projects we work on don't make sense—that is, they are alienating, wrongly conceived, and/or socially reactionary. We have discussed this feeling with many architects, and the case seems to be that the designer who wholeheartedly feels that the project he or she is working on really ought to be built is virtually the exception;

most, when they are not being defensive, have grave doubts about the social efficacy of nearly everything they build.

The Hidden Program

In our view, many of our stock-in-trade building types are themselves part of a syndrome of environmental disintegration. And accordingly, the hope that we shall be able to "program" them into lively, human places, without fundamental restructuring, is a contradiction in terms.

Suppose, for example, that an architectural firm is going to design a large and complicated urban hospital. And suppose that the project budgets for an exhaustive programming phase: All the users are tallied, the literature is searched, programmers fly about the country evaluating other hospitals, adjacency requirements are perfected, studies of the effects of light and color and furniture arrangement are all brought to bear. Still, there is the feeling that something is wrong. Is the large urban hospital itself the right form? Might not such a hospital itself, work to reinforce the contradictions of medical care in the United States? Are not the seeds of doubt, the fundamental alienation, already there—immanent in the crude social-physical form called "large urban hospital"?⁸ Indeed, there is a startling body of evidence emerging to indicate that the way a hospital is conceived *as an institution* perpetuates chronic illness and even generates an entire realm of new disease.⁹

How is it possible to wholeheartedly program or design a wonderful environment for a city hospital in this context? We must either question the entire building type and try to restructure it or come to terms with the fact that in such a situation, programming can only make a form that is fundamentally in doubt a little more palatable.

The same argument applies to a great many of the building types we nowadays take for granted: schools, office buildings, shopping centers, city halls, housing

projects, and so on. For each one we can say that there now exists a core, or “hidden program,” that defines it; that the hidden program is the system of relationships, usually taken for granted, that give the building its basic social-physical form and connect it to the rest of society; and that these relationships, once clarified, can raise questions of such magnitude that they put the very nature of the building in doubt.¹⁰

As professionals, we tend to avoid the analysis of hidden programs, in part because we feel we have no power to explore and act upon them. It is not easy for an architect to go to the roots of a building type, unravel the myths contained there, and still be employable. It is far easier for a professional to accept hidden programs and go on to demonstrate his expertise with methods and styles that embellish and improve the form. Furthermore, fundamental restructuring is a job that requires, in addition to design skills, a kind of sustained social insight with historical-political dimensions and a strong ear to the ground—that is, the ability to understand people and what they feel but can hardly say. In short, the skills required are not the kind that one picks up in school or while apprenticing at SOM.

But in fact isn't this the kind of work society should expect from professionals that seek to define themselves as “environmentalists” concerned with “users”? In our journals we all agree that buildings play a powerful role in the social ecology of a culture; that their programs are drawn from the dominant values, myths, and laws. But when we are faced with the disaffection of lay people at precisely this level, we tend to ignore our theories and quietly fall back upon the myth of buildings as purely physical objects and thereby obscure our complicity with these deeper issues.

We believe that unless this problem is confronted, the field of programming, which once had the energy to imagine a new and more human approach to architecture, will become the field that does the most to obscure the fundamental social facts upon which we build. Under such conditions, the architect-program-

mer must inevitably take his place among the “middle-layer” professionals in our society—by working for the few owner-managers to buffer them from the people at large.

A HUMANISTIC APPROACH TO PROGRAMMING

We shall now sketch out a way of programming that *begins* with analysis of a project's hidden program and seeks to solve its problems and thus allows restructuring the program.

The Core of a Program: A Handful of Patterns

Our working assumptions are that an architectural program is already a crude form; that the most distinguishing facts about a building in social and physical terms are the half dozen basic relationships, or patterns, that constitute its program; and that these few patterns, by themselves, are the key to whether or not the form makes human sense. If these central patterns are well formed and true to the problem, the building will be fine and in the human grain. But if they are taken for granted and a program is developed that obscures whatever problems they contain, then the alienation takes root immediately, and the new building will work against the life of its community.

Let us begin, therefore, by trying to understand the structure of these few patterns.

A pattern is a system of forces—social, political, economic, and so forth—that result in a recurring spatial relationship. Whenever we speak of a building type, let us say a “supermarket,” the name we use is shorthand for a cluster of patterns that give the building its fundamental identity. This cluster is a dense system in which social, physical, and economic factors all reinforce each other. In our work on pattern languages, we have found that these systems have a characteristic structure.¹¹

Figure 2-1 shows how few patterns it takes to form a tight, self-perpetuating system: a few *context-*

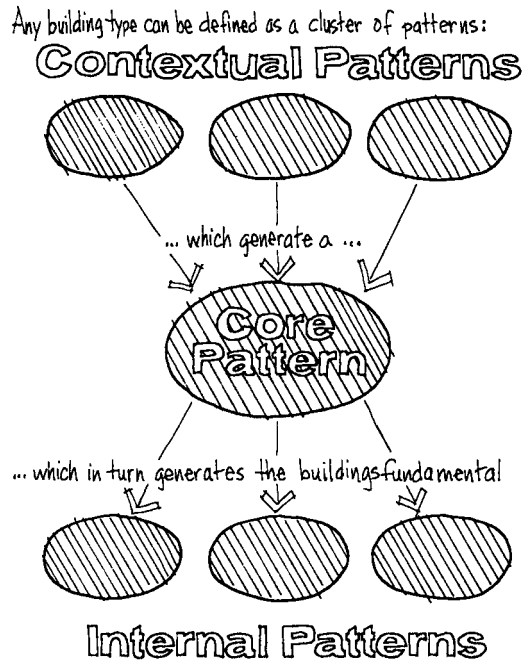


Figure 2-1
Contextual and internal patterns of a building.

tual patterns that connect the building to its antecedent conditions in the society at large, a *core pattern* that gives the building its basic definition, and a few *internal patterns* that describe the fundamental organization of the building. At most, eight or nine patterns define the core of the building type.

The way of programming that we advocate begins by clarifying this structure and its ramifications for human experience. It is not really a special method at all, but more a discipline for thinking clearly about the nature of a building type and the behavior it reinforces. The following two-step method can be used in this approach to programming.

Step 1—Analysis of the core or hidden program:

1. Describe the core system, as diagrammed in Figure 2-1, for the building type in question. Identify the basic contextual and internal patterns.

Then describe their dynamics as a system: How do they reinforce each other?

2. Describe, as an anthropologist might, the experience that is sustained by this system. Then evaluate it in human terms, for contradiction, unrecognized needs, tendencies to break down, and so forth.
3. Work on the boundary of the problem—that is, the contextual patterns that generate the core. Find out where they are weak and vulnerable to change.

Step 2—Restructuring the program:

1. Let the evaluation generate directly a new system of patterns. Describe the new system, the problems it is intended to solve, the way of life it is intended to sustain.
2. Develop a strategy of implementation, which can be used piecemeal, to unlock the old form and move it toward the new.
3. Use the new core pattern as a means for organizing change at the boundary of the system—the way a tree acts gradually to change the soil around it.

The following example of this approach to programming describes the method as used in the case of a supermarket. The material is drawn from a project in progress on the form of markets and their place in the community.

Using the Building Pattern Approach in Facility Programming

Step 1—Analyzing the hidden program: *The supermarket*

The three major contextual patterns for a supermarket are: (1) the factory farm—that is, a giant food-producing, agri-industry and a giant prepared food industry—with national distribution capability; (2) a set of government policies and regulations that control growing and marketing procedures and are predisposed toward the giant industrial style; (3)

private, corporate ownership on a national scale.

The core pattern for a supermarket is (4) a single, large facility covering some 70,000 square feet, offering all needed household goods, and serving a community of several thousand. The major internal patterns of a supermarket are: (5) location near a major traffic artery, with 50-75 percent of its area devoted to parking; (6) a self-service layout and a huge storage and stock handling area separate from the shopping area but connected to the road; (7) self-service aisles leading to a central checkout and paying area, with the most-needed items located in the hardest to reach positions so that customers must pass less-needed items first; (8) an artificially controlled environment in every dimension—climate, light, sound.

The diagram for this cluster of patterns may now be conceived as shown in Figure 2-2. We believe that these eight patterns form the core of the *system* that establishes the supermarket as a building type. Of course, defining these patterns is itself a difficult

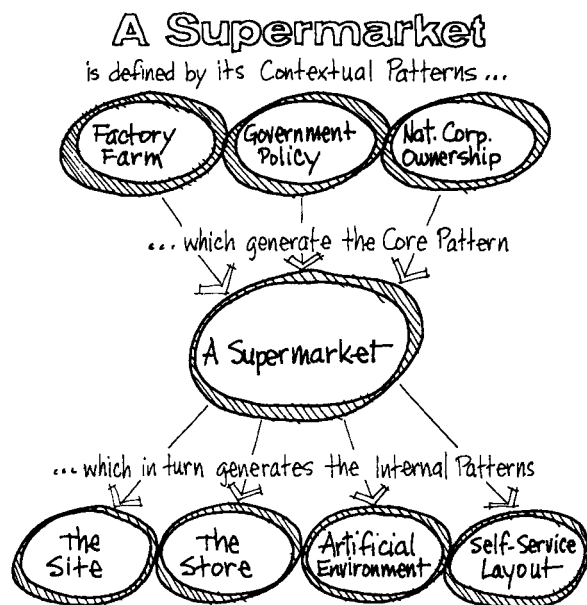


Figure 2-2
Cluster of patterns for a supermarket.

empirical problem, but let us assume for the moment that they are roughly correct and now try to understand how they work as a system.

1. The factory farm: The factory farm is characterized by the application of capital-intensive techniques of industrialization to the mass production, distribution, and selling of food. Superficially, in terms of sheer quantity of food produced, this pattern appears to be successful. Upon analysis, however, it is socially and ecologically unstable, and it tends by its very nature toward the creation of bland, synthetic, standardized foods.¹² The factory farm is predicated upon cheap supplies of fossil fuels for power and petrochemical fertilizers. Naturally, as these supplies decrease, and the price of oil increases, the system will prove less and less viable. While pre-industrial methods of food production generally resulted in a net energy gain for society, with each calorie of work producing slightly more food calories, the methods of agri-industry require twenty calories of energy to be expended in the production of a single calorie of food value.¹³ In addition, the factory farm operates far from its markets in the urban region, and food must be transported thousands of miles to the grocery shelf. This situation creates alienation in the very process of food production. Not only do users lose contact with the growing process, but so do the remaining farmers themselves. The fundamental process of planting, caring for, harvesting and eating food is simply not being experienced by the people of our society. People begin to forget what a real tomato is like. They become indiscriminating and helplessly dependent upon an increasingly unstable system of food supply.

2. Government policy: The federal government directly subsidizes agri-industry at the expense of smaller farmers and gardeners. Furthermore, the government regulates the quality of produce, and while this practice insures a modicum of safety for consumers, it often works against them. The regulations encourage premature harvesting and create a context in which the government finds it "reasonable" to support research on varieties of produce that can *survive* the

methods of production and distribution required by agri-industry. Governmental regulations increasingly insure that prepared food manufacturers list their ingredients, but government standards also encourage the development of a synthetic, prepared food industry because it is easier and more profitable for packaged foods to maintain the standards. In general, it appears that while current policies work to maintain minimal levels of quality, they also work against the production of really excellent food, which is only possible when grown closer to markets and in smaller quantities.

3. National corporate ownership: The third major contextual pattern that defines the "supermarket" is the fact of private, corporate ownership on a national and international scale. In the case of the largest of these businesses, the enterprise becomes "vertically integrated," with the corporation owning the factory farms that produce the food, the trucks that transport it, and so forth. These huge corporations have, in addition, their own brands for such items as canned fruits and vegetables, paper products, and bakery products. This practice insures that the company is in control of the supply of the items that are most profitable. In effect, then, the market is offering products that are profitable first and needed second. From the users' standpoint, this monolithic institution begins to take on a benevolent "big brother" appearance. The people who run the market, the employees of the corporation, are "personnel." Each has a specialized job and is paid monthly, independent of the amount of business the outlet did that month. Thus, the community of users—both the shoppers and the people who work there—have no real stake in the operation. The community as a whole does not become enriched by the success of the operation. The potential wealth created by the sheer existence of a community needing a market flows out of the community to stockholders. The supermarket works as a drain on the economic health of the community in which it is located.

Let us now turn to those patterns that define the market itself and its internal organization.

4. The supermarket: The supermarket is a single, large, centrally managed facility with everything under one roof on about 70–80,000 square feet of land, and it serves a community of several thousand families. This arrangement is efficient from the standpoint of corporate management, but it has certain drawbacks for the consumer. Of course, it is desirable to have everything together in one store, but instead of being a place that is socially enlivening, the supermarket is a place where shopping becomes something that should be done as infrequently as possible in order to avoid the crowds, the traffic, and so forth. Shoppers tend to fill their carts in the hope of getting by for a week or two before their next trip to the market. A tremendous number of purchase decisions are therefore made in a relatively short time, which thus makes shopping intelligently extremely difficult. It becomes necessary to fall back on habitual buying practices, and it is hard to take advantage of seasonal variations in price, quality, and so forth. And the social atmosphere is affected: Since the market serves the neighboring community, it is not uncommon for people to see familiar faces and to want to stop and chat, but the ambience of the place works against such social contact. The message is: "Drive in; buy your groceries; go home." Finally, it goes without saying that supermarkets, entirely oriented to people in automobiles, are not convenient places to shop for the less mobile in our society—the young, the old, the poor, and the handicapped.

5. The site: The supermarket is typically located on a major traffic artery, with the building itself surrounded by an acre or more of parking spaces. The roads and parking are essential during shopping hours, but they become community liabilities during off hours. They are then huge empty spaces that cannot be used for any other function. This situation is in sharp contrast to old-fashioned markets that either were a part of a community's major public space or would close for a period of time to allow the marketplace to become another kind of community space.

6. The store: The store contains the shopping area, the checkout and lobby area, and the storage and

handling area in the back. The shopping area is a self-service arrangement, with the only point of human contact being at the check-out stand after all groceries have been selected. The storage area, which may be as large as one-third of the area of the entire store, is staffed, but is off limits to shoppers.

7. Self-service layout: The layout of the customer area directs people in self-service style through aisles. The most-needed items are at the back, and the checkout area is at the front. This arrangement insures that people will have to pass the least-needed food (but much more profitable on a unit basis) twice—on their way to the milk and eggs and back to the check-out area. Self-service enables the customers to take as long as they wish to shop and compare brands, but there is no one available to ask about the product, at least anyone who knows anything about it. The central checkout is efficient for the management, but it leads shoppers to lose track of the money they are spending. Unless they keep pocket calculators on hand and continually tote up the mounting grocery bill, they are in for a jolt when the total is finally registered. But there is no backing out: A line of customers is waiting behind, so the total and the groceries are accepted.

8. Artificial environment: Since many factory farm foods are unusually susceptible to spoilage due to their "highbred" character, the climate of the supermarket must be controlled to insure that the food will be able to sit on the shelf for as long as possible. But the climate is controlled to a far greater extent than is probably necessary. Not only is temperature and humidity kept unchanging over the day and over the year, but so is the light level, and there is the incessant presence of the canned Muzak. In the back of the store away from the shoppers, at least one employee does nothing but "trim" produce for the shelves and thus produces tons of leafy waste that is disposed of via a garbage disposal. Since the market is a center for distribution and consumption, with no connection to the production areas, all this potential humus ends up in the municipal sewer and becomes a load on the community's water purification system.

The consumers would be shocked if they saw the amount of waste produced by an "efficient" supermarket. But the separate storage zone insures that they will not come in contact with this reality of the system. The environmental control is a straightforward attempt to condition the shopper to a feeling of security and dependability. The food always looks, smells, and sounds the same. And the music smooths over and "perfumes" the frightening social fact that the market is designed to discourage people from lingering and talking. There is a symbolic concurrence, then, between the unchanging environment of the market and the unchanging character and dependability of the produce.

In sum, these eight patterns all work together to form an integrated system called "the supermarket," but they do not represent a happy portrait of a culture's solution to the problem of marketing. Each pattern justifies, or helps, or demands the others, but as a set, they tend to support an unstable social and ecological reality.

The system supports an irresponsible agricultural system and a useless (some feel dangerous) prepared food industry. It produces food of uniformly mediocre quality. It does so in an invisible manner that prevents any of us from thinking realistically about where our food comes from. It dehumanizes the experience of raising and selling food. And the shopping experience for the consumer is simply the other side of the coin. It is a chore that is made as palatable as possible by being made as unreal as possible. It enriches neither the social nor the economic life of its community of users. On the whole, the hidden program behind supermarkets is one that tends to insulate us from life instead of providing a worthwhile experience.

Now, if we accept these basic patterns and their meaning in terms of human experience, then no amount of programmatic work is going to help. We can employ new building systems, rationalize the parking and pickup arrangements, harmonize materials with the style of the community, add a child care center, and so forth, but we are still building a supermarket. And whatever contradictions are contained in

the original hidden program for the building will still be there—dormant—in the new and improved form. We could even argue that there is something insidious about improving a form that is so basically destructive. The “improvements” will tend to mask the basic problems, and dull our ability to recognize the contradictions embedded in the building.

*Step 2—Restructuring the program:
The community market*

Let us try to solve the problems built into supermarkets by defining an alternative set of patterns and consequently a different building type. We may call this new kind of facility a “community market” and list its major contextual patterns as follows: (1) The community of users owns and manages its own market; (2) the market draws the bulk of its produce from independent farms located in its region; (3) regulatory policy is advocated that supports (1) and (2).

The patterns that define the community market and its internal organization are: (4) a piece of land that is central to the community and its public transportation and that contains a partially built structure, portions of which may be rented or leased to retailers and the rest of which forms a pedestrian square; (5) the existence of many small independent retailers of food stuffs who have stalls within this infrastructure either to sell their own produce directly or to provide some other service (such as cafes or bars); (6) a support system that is coordinated with a public transportation system and a grocery delivery service that drops off the customers’ purchases at their homes if they live within the local community.

Our diagram of this alternative program appears in Figure 2-3. The dynamics of this system can now be sketched out. The contextual patterns are discussed first.

1. Community ownership: The community once again has some organic relation to its own market needs. The community decides where the market is to

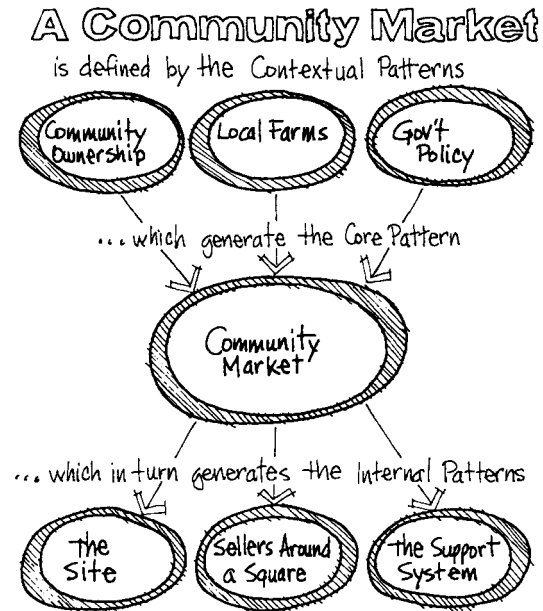


Figure 2-3
Cluster of patterns for a community market.

be located, the general format for what is to be provided, and what will be developed later. Most importantly the community will benefit economically from the revenues obtained through the rental fees. The community may decide to provide additional community services as part of the market—for example, a meeting hall, a semipermanent system of trellises and pedestrian walkways, a childcare center, a grocery delivery system, and so forth.¹⁴

2. Local farms: The many small- and medium-sized farms that are presently being pushed out of the economic scene would have a new outlet in the community market. Farmers may truck their own produce directly to the market and sell it without the need for middlemen. They may once again find a market for those items of produce that grow particularly well in the region or on their particular piece of farmland. They will again be able to produce for the eating habits of the community in which they are selling.¹⁵ Of course, not all sellers will be selling their own produce. Independent entrepreneurs may offer

produce and staples that they have purchased from farms and food suppliers; merchants may rent space for snack shops, cafes, bars, and bandstands since the market is a community gathering place. On the whole, customers will confront a vastly enlarged area of choice—different items, various levels of quality and price, and a variety of services.

3. Government policy: There are several policies now under consideration that governments can adopt to support community markets. One approach is the *Farmer-Consumer Direct Marketing Act of 1975*.¹⁶ This bill would work to reduce middleman costs by encouraging direct marketing of agricultural commodities from farmers to consumers. The bill provides technical assistance to individuals and groups who wish to establish and operate a direct food marketing facility. Another approach is characterized by the *Reclamation Lands Authority Act*.¹⁷ This bill sets up a land transfer mechanism that would enable a new RLA to buy up land in federal reclamation areas and sell or lease the land to small farmers and coops. *The Family Farm Act*¹⁸ would prohibit non-farm corporations with \$3 million or more in assets from engaging in agriculture. (A similar law has been in effect in North Dakota since the 1930s and has been effective in keeping corporate agriculture out of the state.) Another approach lies in the creation of a National Consumer Cooperative Bank, patterned after the Farm Credit System.¹⁹ The bank would provide a loan source for community coops—such as the community market—on a sound business basis.

Next, let us consider the core pattern for a community market and the patterns defining its internal organization.

4. The community market: The land on which a community market is located may either be purchased outright or leased on some long-term basis. An important requirement is that it have a good location with regard to the community's existing public transportation and with respect to the roads that the sellers will use to arrive at the market. The specifics of the infrastructure could vary considerably from community to community. As a minimum, it could

consist simply of a large map of the lot showing the permitted locations for the various categories of goods and produce and the strategy for assigning space. As sellers arrive and locate themselves, it is essential that vehicular access be maintained between the aisles to allow them to leave when they are through for the day and for new arrivals to locate themselves. The aisles must be formed to create continuous pedestrian pathways that enable comparison shopping. And amid this assembly of sellers, arranged along pedestrian aisles, a central square is preserved.

5. Independent sellers around a square: The square is surrounded by the sellers and shoppers so that it will be a lively place where shoppers may meet one another, stop for a while, and sit and chat. The advertising of the independent sellers creates a blaze of words and prices that will add to the life of the place. Many voices are heard—shouting out the best buys, explaining the origin and value of the particular produce. In later years, when the community market has amassed enough capital to make some improvements, the square may be developed to contain the community meeting hall where policy for the market's operation is worked out, a protected pedestrian promenade that will invite strolling and people watching, and so forth.

6. Support system: An essential feature of the market is home delivery service within the neighborhood. It will be possible for someone to purchase as much as he wishes by filling up his own rolling cart as he shops and then having the groceries delivered to his home at some appointed hour. This service is a centralized service of the market and is managed by a concession leased by the community. This feature is essential in order to allow people to come to the market on foot, bike, bus, cab, or jitney and to allow children, old people, and the handicapped to shop at the market as effectively as anyone else. Some parking may be provided but nowhere near as much parking space as is now common at the supermarket. The land is being used in a different way. It is given over to the real stuff of marketing—the trucks and small shops containing the produce itself and room for the com-

munity to move around on foot, to shop and visit, or simply to sit.

We may now summarize this program by portraying all six patterns in one diagram, as shown in Figure 2-4. Images of such a market are depicted in Figure 2-5.

Implementation of the Program: Piecemeal Social Change

How can we implement our program for a community market? To begin with, we believe that the only way to develop new programs like the community market is by gradual piecemeal effort. Big beginnings run the risk of big failures—failures that can destroy a project for perhaps extraneous reasons. A programmer working on commission from a community develop-

ment corporation or a local businessman would do better to develop a more piecemeal approach.²⁰

If an alternative program has been carefully conceived and is indeed built on needs that are real and felt, then it is likely that we shall be able to find the new system, or fragments of it, already existing in latent form within the community. It is better to begin working with these small situations that already embody some of the patterns that are crucial to the full development of the new form.

Many groups have tried different partial versions of what we are proposing here. The Consumer Coop movement has grown over the years, and established a number of Coop supermarkets. But except for the form of ownership and certain amenities, these markets are quite similar to the corporation supermarkets. A number of *alternative* consumer coops have been started in the United States, most of which offer a specialized kind of produce, such as organic produce, whole grains, or health foods. There has also been a resurgence of interest among both farmers and consumers in the sale of fresh fruits, vegetables, and other foods at roadside stands, downtown markets, and other places where the sales are direct from farmers to consumers.

Each of these phenomena are seeds of one sort or another for a genuine community market. The task of the programmer might well be to draw them together into a new social-physical organization. For example, an existing consumer coop might endorse the concept and try it on a pilot basis. The coop already possesses the full purchasing power and physical plant to offer convenience items as well as space in the parking lots to begin the kind of infrastructure required for independent merchants to establish stalls. To begin with, the community market could be established on a limited basis. Advance notice would be given to the community, and shoppers would be asked not to drive to give the system a real test. Independent growers and merchants would set up to offer fresh produce in stalls arranged along lanes of the parking lot. The central square could be established by the manner in which these stalls were

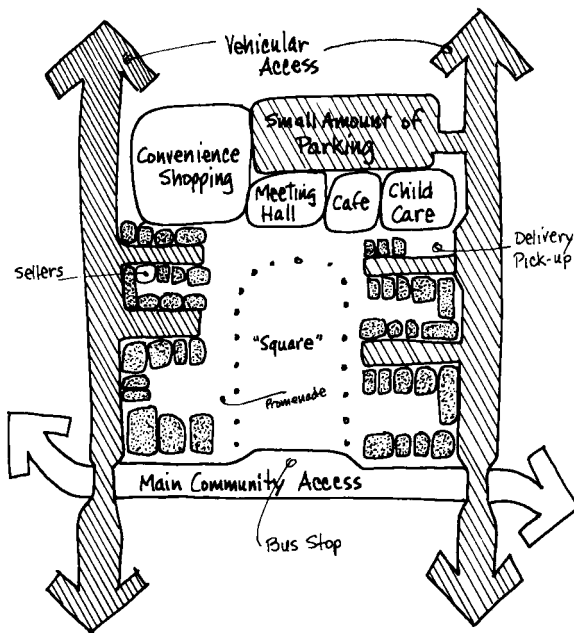


Figure 2-4
The program for a community market.



Figure 2-5
Community market images.

arranged. The main store itself would remain open to sell convenience items only. The home delivery could also be tested on a trial basis. Concessions could be added to lend a carnival air to the event.

Such an experiment might begin to create a new image of the shopping experience. In the long run, the community market could grow gradually from the existing physical and administrative setup of the coop. The main building could begin to deemphasize its offering of fresh produce. This would free up space in the main market building for meeting rooms, child care facilities, and so forth. Eventually, some of the interior space could be leased to sellers. The cafes and bars could be located in the main building. Indeed, once the aisles and central checkout stands have been cleared out and the independent stalls and shops

and services have been created around the edge of the space, the beautiful clear spans of the supermarket become the perfect setting for the indoor counterpart to the central square.

In effect, a community of users could buy any existing supermarket and gradually transform its building and parking lot into a genuine community market. Figures 2-6 through 2-9 illustrate this type of piecemeal transformation of a supermarket into a community market. It takes time and effort simply to lay the groundwork for this kind of project. It requires strategies for political organizing and experiments with social change, as well as careful programming and design. But however difficult it is, it seems to us that only through such coordinated efforts will a new kind of architecture appear in our society.

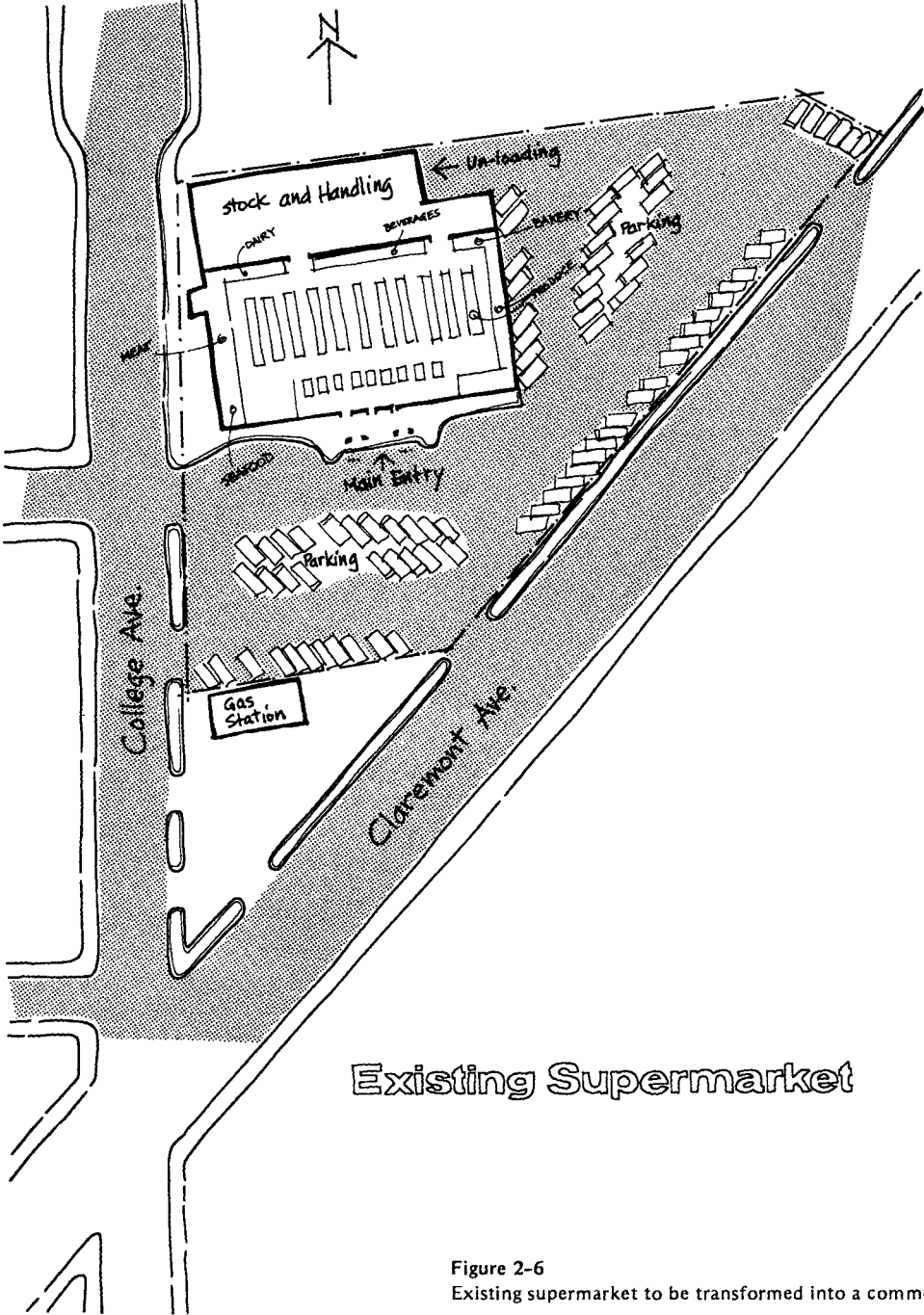


Figure 2-6
Existing supermarket to be transformed into a community market.

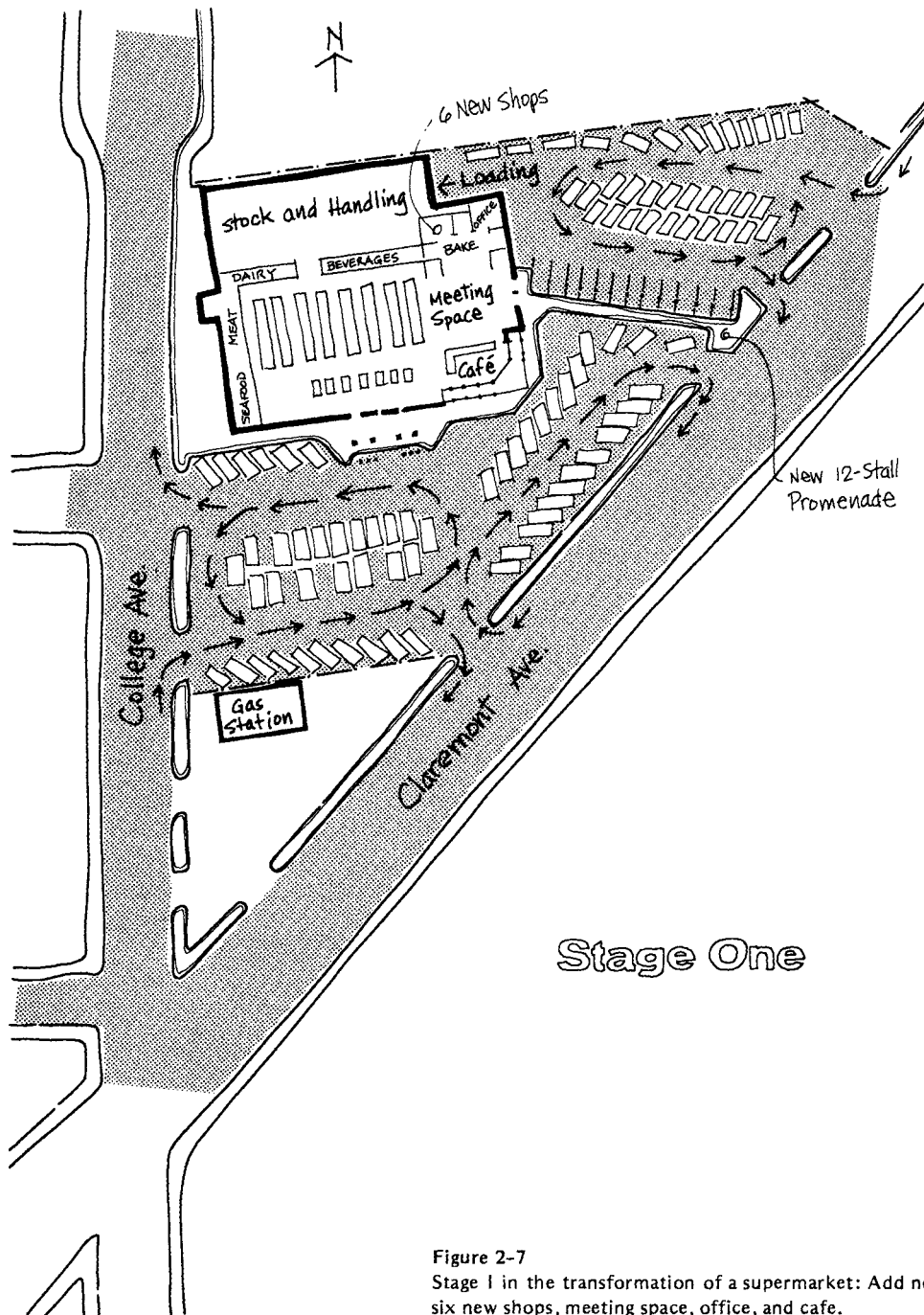


Figure 2-7
Stage I in the transformation of a supermarket: Add new twelve-stall promenade, six new shops, meeting space, office, and cafe.

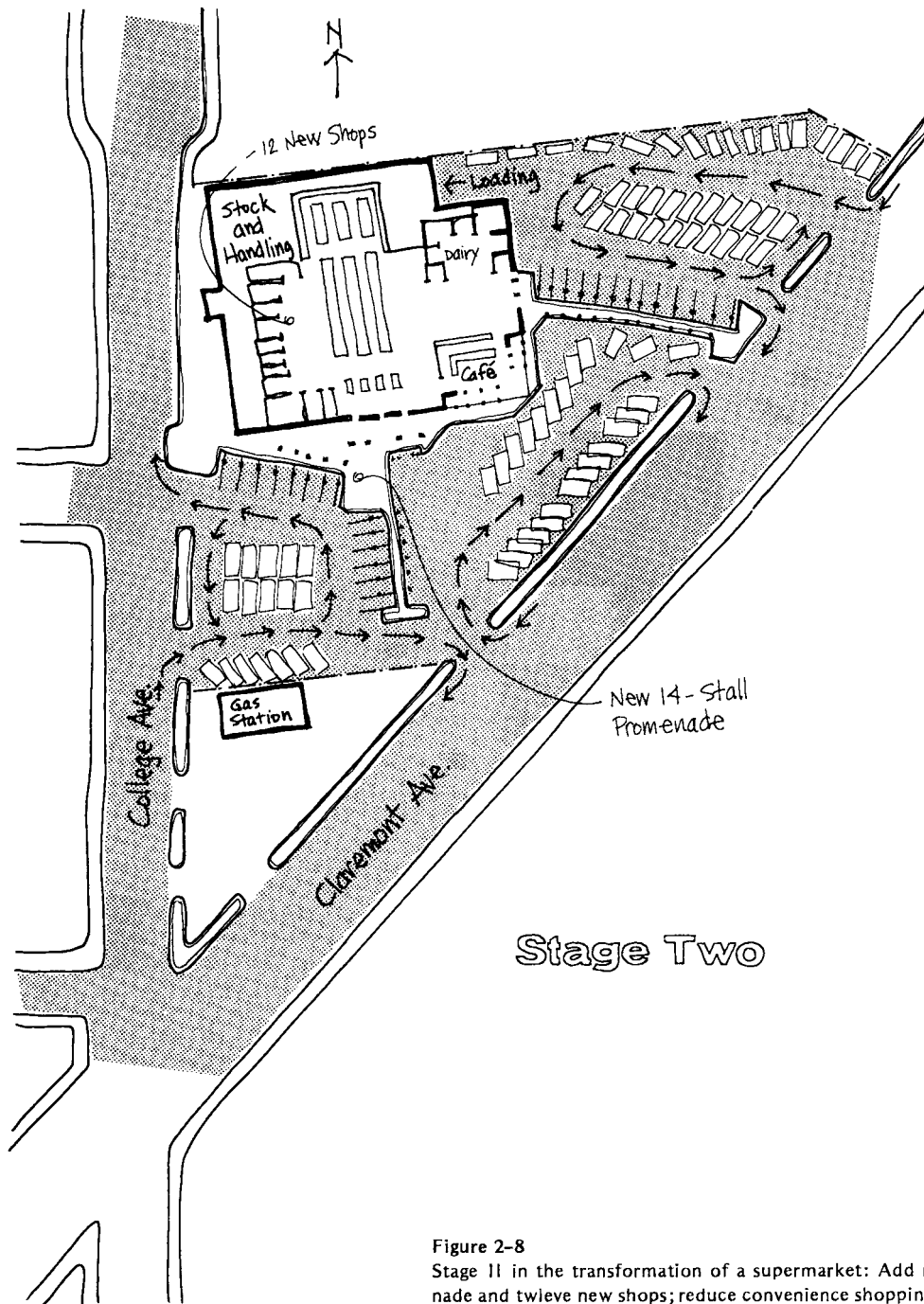


Figure 2-8

Stage II in the transformation of a supermarket: Add new fourteen-stall promenade and twelve new shops; reduce convenience shopping space.

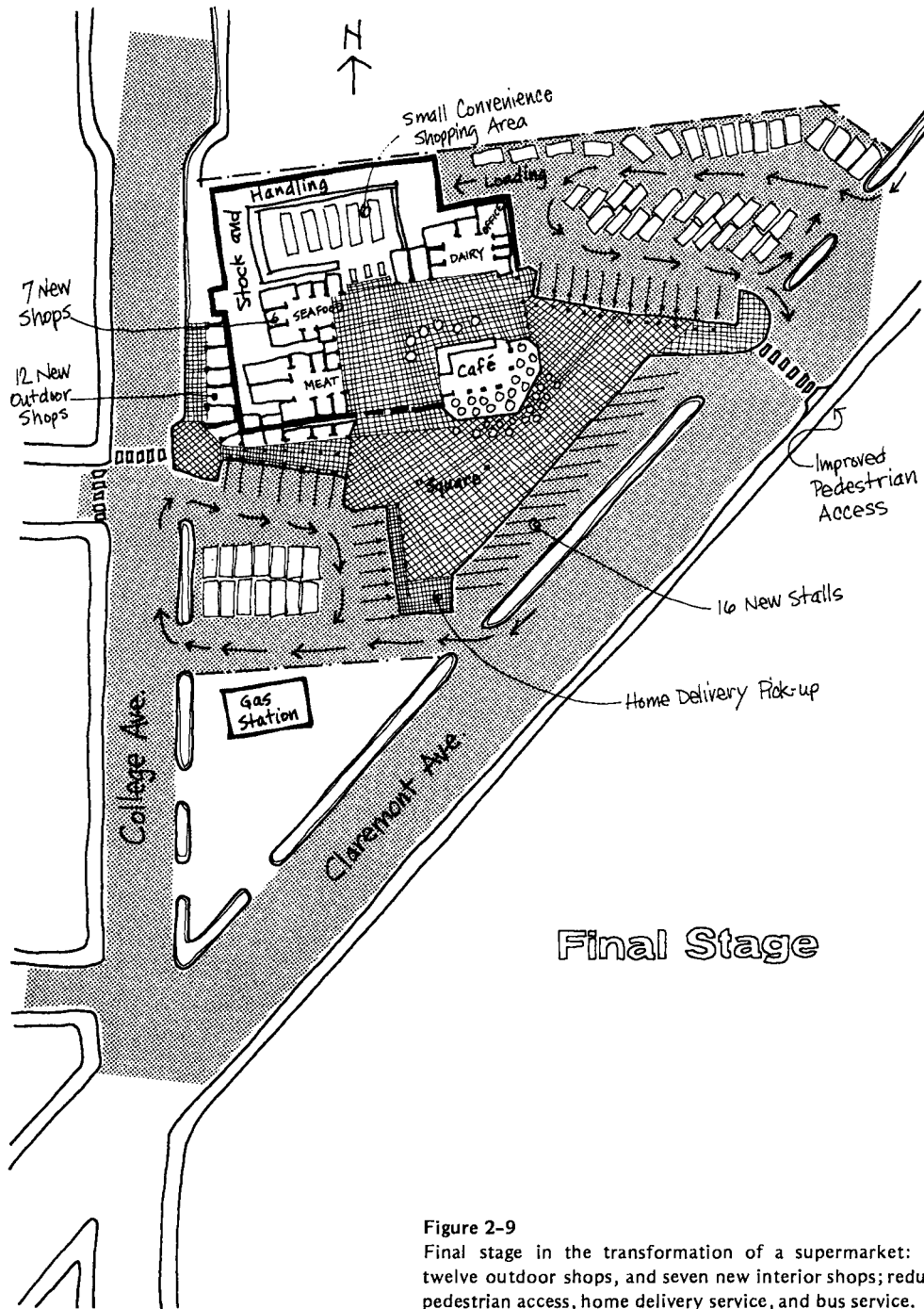


Figure 2-9

Final stage in the transformation of a supermarket: Add sixteen new stalls, twelve outdoor shops, and seven new interior shops; reduce parking area; improve pedestrian access, home delivery service, and bus service.

TOWARD AN ARCHITECTURE OF SOCIAL CHANGE

We believe that there is enough evidence now available to indicate the need for a thorough analysis and restructuring of nearly all our familiar building types. For example:

1. There is evidence that school buildings are expensive, inefficient, and even destructive environments in which to educate children and that the buildings themselves work with the institutional structure of public school systems to render children passive and incurious. Upon analysis such old forms give way to an architecture of learning networks, small home-base schools, adventure playgrounds, schools-on-wheels, children's homes.²¹

2. There is evidence that the facilities we build for old people—nursing homes, vast housing tracts, retirement communities—reinforce social patterns that make people feel useless and that foster senility. Upon analysis of this hidden program, such building types give way to an architecture that supports old people as they need help—in their communities and in small house clusters that support their special needs—and yet still connects them in symbiotic ways to the whole of the life cycle.²²

3. There is evidence that the way cemeteries are typically planned, located, and designed works against the psychological need for mourning: The prevailing social patterns, reinforced by the physical structures, play upon people's anxieties, increase their discomfort, and afford them no closure with their experience of mourning. Upon analysis such forms give way to a pattern of smaller cemeteries, associated with the walks and quiet parks that are part of day-to-day life, and the ritual buildings are designed to be a visible and real presence in the community.²³

4. When we build giant sports complexes we reinforce the concept that most people are passive spectators, and sports is a commercial venture for professionals. Analysis of the hidden program raises the possibility of giving at least equal priority to local sports facilities for amateurs, which draw people out,

invite them to participate, help build community feeling, and which create a milieu that works together with programs of preventive health care.²⁴

These examples are crude. They are only images that are half-formed and picked virtually at random, but they are suggestive. It seems to us that the programming work required to analyze and restructure these and a dozen or so other cases could lead us directly, without reference to any artistic formalisms, toward a new architecture.

In the case of the community market, the sketch analysis that we have made already suggests an architecture that, by the sheer act of its creation, gradually repairs and instigates community life instead of tearing it down. It is an architecture that does not freeze people in the roles of passive consumer and personnel, but gives them the possibility of new forms of autonomy and political and cultural identity. It is an architecture that grows from regional and local economic analyses and therefore does not "colonize" communities with the forms of national corporate economics. On the one hand, the program suggests a relaxed, vernacular kind of architecture that literally grows and ebbs under the impact of the community's own decisions and the transformations of the shops and stalls by the managers; but, at the same time, the marketplace would have to be strong and bold enough to act as a meeting ground and symbol for a community of several thousand.

Programs as Diagrams of Social Change

The architectural conceptions generated by the analysis of hidden programs are potentially strong and rich diagrams of how people might live. These diagrams can communicate rather complex issues by boiling them down to their consequences and showing possible environments that people can feel and understand. This means that architectural programs, if they are carefully drawn from deep-felt and real human problems, can of their own power help to bring into being the very life they are designed to