

NETWORK SPACE IN AMBULATORY CARE FACILITIES

by

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SEP 27 1979

LIBRARIES

For my Parents

who got me here

And Maureen

who got me through

ACKNOWLEDGMENT

All of life's endeavors are based upon experience that came before. This thesis is no exception. Trying to list all those to whom thanks are due is like walking down a corridor with doors on both sides. Each door leads to another corridor, whose doors lead to yet others. The last doors on the last corridors open to the people who provided a portion of the knowledge upon which I was able to draw during the endeavor.

I cannot thank them all individually.

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Thomas Payette, who has shown that health facility design can transcend systemsthink and be Architecture.

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At MIT

At the School of Public Health

At the School of Medicine

In Colorado

Elsewhere

Every moment of my life has been an education. I cannot express deeply enough my appreciation for your help and encouragement.

## INTRODUCTION

My interest in architectural design began only after I was a practicing physician familiar with the needs, strengths and shortcomings of health care facilities. As I became aware of the built environment and its response to user needs, I began to wonder why the vast majority of institutions for healing offered so little to the spirit while attempting to relieve maladies of the corpus and even of the mind. I was further impressed that the designers of these institutions rarely were intimate enough with their working processes to achieve much more than myopic, systems-oriented design solutions. With few (but notable) exceptions, such as the Joslin Clinic in Boston and the Mc Master University Health Sciences Center in Toronto, hospitals and outpatient facilities have been bound to traditions developed when the practice of medicine bore no similarity to its present form. It has been my hope that I would be able to bring enough depth of understanding to the design of health facilities to be able more carefully to define programmatic goals and objectives, and perhaps achieve more rational design solutions.

One of the most profound changes now occurring in medicine is the shift in emphasis from hospital to outpatient care. The potent economic factors responsible will be examined later, but the movement is palpable and bound to accelerate.

Because of this trend, and because there has been extensive study of inpatient facilities, I have directed my attention toward the ambulatory care facility, and particularly its response to user needs.

I was able to relate this interest to a design studio in Fall of 1977 under Professor ImreHalasz. The problem was the design of a mixed-use facility on an active urban site: the Blackstone Block in Boston's North End, directly across the street from the Quincy Markets. It was during this studio that I was introduced to the concept of network space and realized its advantages in dealing with the design of the professional office building. The architectural design section of this thesis represents an extension of my work during that studio.

Ambulatory care facility: a built structure in which examination and treatment are performed exclusively on patients able to arrive and depart unassisted. Includes professional office buildings, (private and group practice) as well as hospital-associated outpatient buildings. Except where differences are important, the terms ambulatory care facility, professional office building, and outpatient facility will be used interchangeably.

ABSTRACT

Network Space in Ambulatory Care Facilities

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William L. Kasdon

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The setting for the practice of outpatient  
medicine is one which needs elucidation.  
In particular, the public and semi-public  
space in professional buildings of all  
sorts must relate with care and dignity  
to the patients and visitors who use the  
building. This thesis attempts to define  
the important qualities of this space.

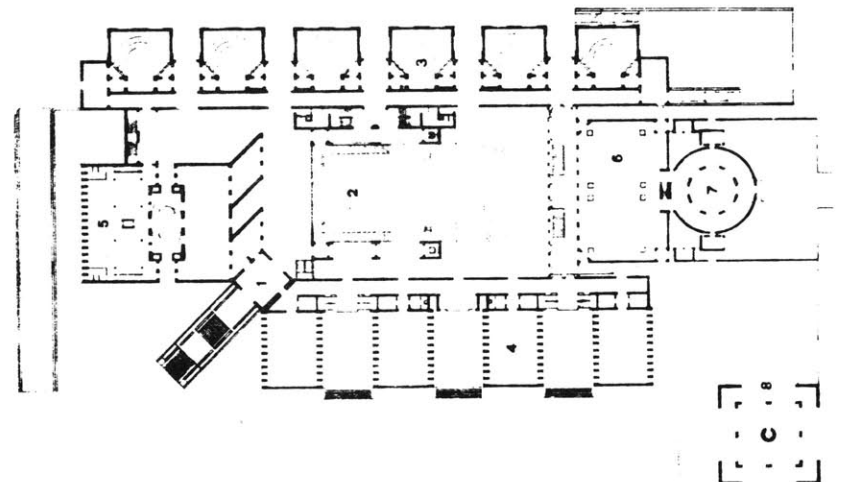
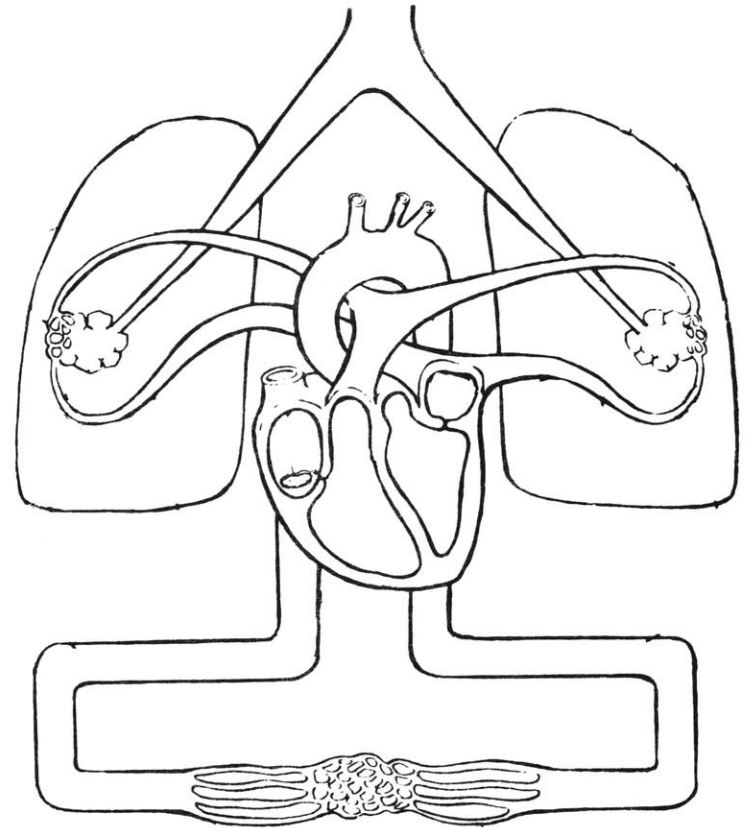
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### DEFINITION

As arteries, veins, and lymphatic channels form networks within the human body, so do lobbies, hallways, stairs, and elevators form networks within buildings. Circulation through bodily channels provides oxygen and nutrients, removes waste, and maintains temperature. Similarly, a building is an organism which depends on efficient distribution of supplies and personnel, and removal of used and soiled materials. It is the twenty-or-so per cent of space, usually labeled as "circulation" and kept to an absolute minimum, to which I refer as network space. Its nature and use are of major importance in design, especially--as we shall see--in the professional office building.





# networks

Every building type, from the simplest to the most complex, has a unique set of network requirements. In general, the intricacy of the network system depends upon the complexity of the building's use. In a health care facility, they may be divided broadly into Public, Professional, Service, and Information.

## PUBLIC NETWORK

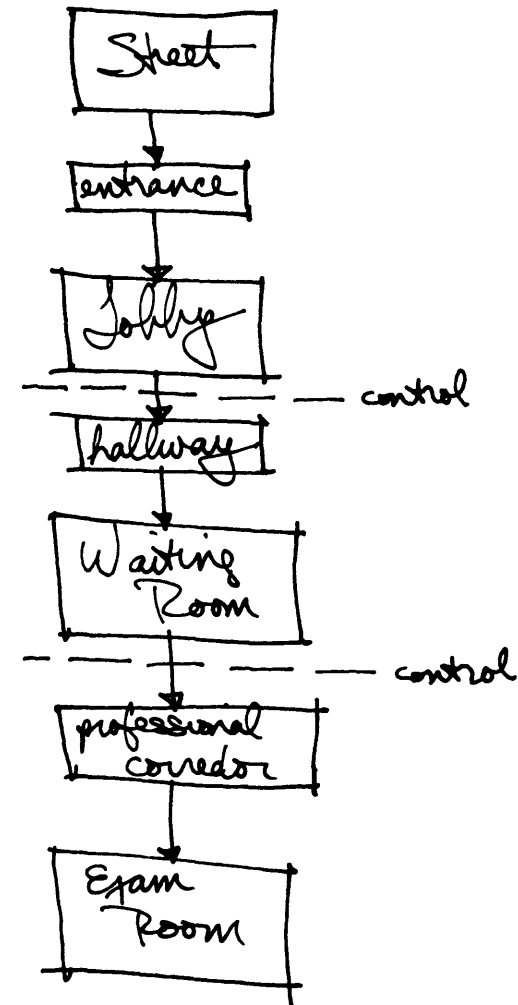
The public space in a professional building is of overwhelming importance. An exam/treat room is, by and large, an exam/treat room. Except for specialty areas such as psychiatry and orthopedics, it may be as small as seven feet square, and if carefully designed and furnished will be quite acceptable to the patient. It is the public network which carries him from the street to this room's interior, or at least its immediate vicinity. If properly designed, the network will not only be efficient and non-threatening, but will contribute to the user's salubrity as well.

In a professional office building, there is a much more discretely public network than in a hospital. In the latter, the main network space is shared by patients of all degrees of infirmity, professionals (doctors, nurses, and technologists), and the visiting public. Separation is accomplished to some extent by scheduling intensive professional and intensive public use (visiting hours) at different times. In the professional office building, the public network, though traversed by professionals once or twice daily to get to their offices, is for the use of the patient. The user needs of this network will be discussed later, but its basic function has traditionally been to convey patients from the street to the

appropriate private office, where they enter the semi-private space of the individual practitioner's waiting room. A reception and information desk in the lobby is the norm in the group practice facility. A building register usually takes its place in the independent practice lobby. Vertical and horizontal circulation then with varying degrees of clarity lead the patient to his destination.

A subtle control mechanism is present here, particularly in the group practice model. There is a transition from the most public lobby space to the semi-public space of the hallways and elevators. Passage is assisted when required, but surveillance is maintained.

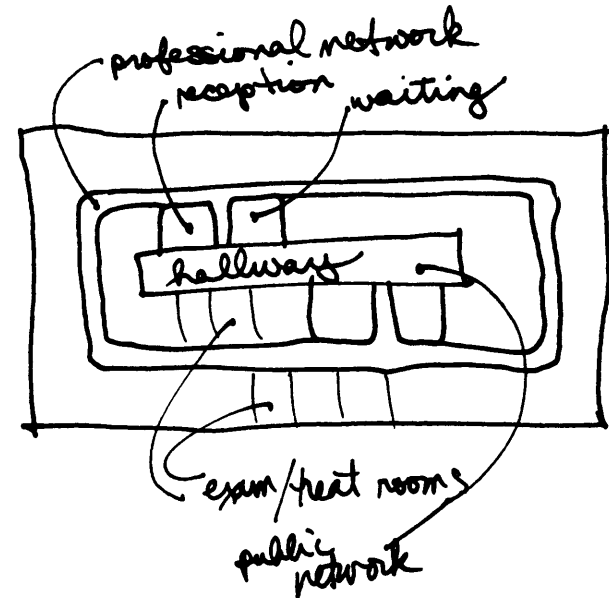
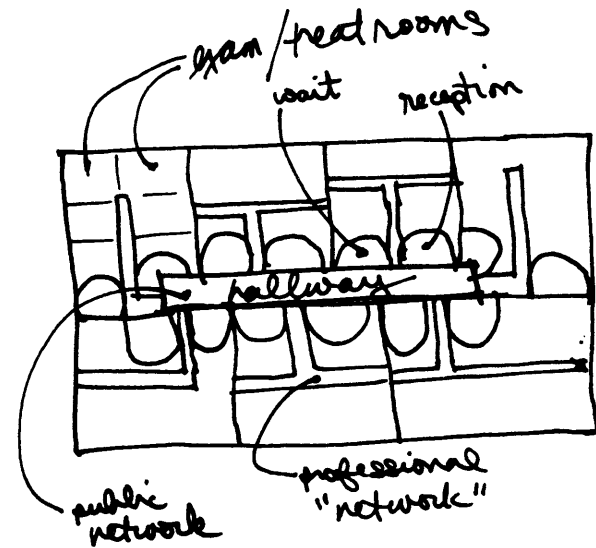
On arrival to the individual office, a second transition is encountered: from semi-public hallway to semi-private waiting room. Observation and assistance at this point are effected by the office receptionist, who also controls the third transition, that between semi-private waiting room and private professional corridor.



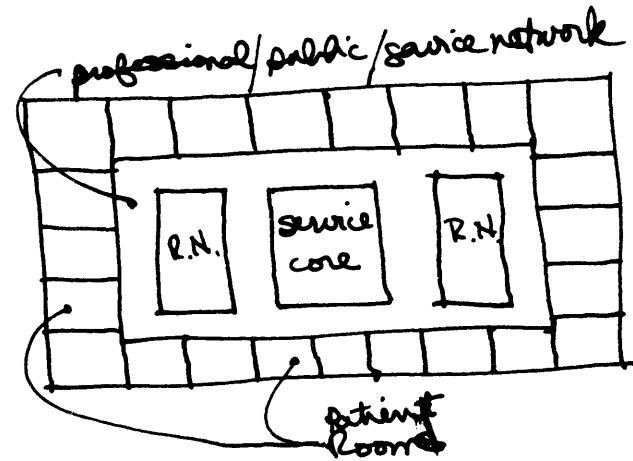
## PROFESSIONAL NETWORK

In the professional office building occupied by individual practitioners, the professional network becomes vanishingly small. Patients are brought from their waiting room through a short hall into an exam/treat or conference room. Occasionally, they may be moved from one room to another, or to x-ray often while partially disrobed. Thus, the professional network in general is a very private one. This hallway is used by clerical personnel, physicians, and nurses as well as patients. It is the simplest possible professional network in this type of building.

In the group practice facility, professional corridors are often linked, joining many or all of the offices on one floor. The reported advantages of such an arrangement include ease of professional interaction for spontaneous hallway consultations as well as the convenience of bringing a patient--again, often partly clothed--through the corridor and into the office of another specialist for a quick referral. It is further said to foster professional esprit and morale by allowing all professionals--nurses, technicians, and physicians--free access to one another. It usually interfaces with (or contains) charting stations and a staff lounge. The professional corridor in a group practice facility is a fairly complex network.



The professional network in the hospital is enormously complex and intimately connected with the service network. In the hospital-based outpatient facility, the professional corridor may be continuous with the inpatient professional network and will often share services as well. Because professional services in hospitals are usually brought to the patient, however, they will not be considered here.



## SERVICE NETWORK

The more complex the building, the more intricate are its service needs. In the hospital, the need for service is dominant, and it is the service network which determines the building design. The chief reason, of course, is that patients are immobile and must be fed, medicated, bandaged, and often bathed in their rooms. Service demands on outpatient facilities are far less stringent. They include provisions of medication and supplies, including laboratory and x-ray reagents and clean linen, and removal of soiled linen and waste. General building maintenance must be included as well.

In general, the professional networks are used for service functions. In the private practice model, supplies arrive and waste is removed via the public network. This may be perceived by the patient as an intrusion, so supplies are often delivered and waste removed before or after office hours. In the group practice model where a well-developed professional network exists, it may conveniently be used for service as well. Optimally, the service access to this combined network is by a separate route and does not intersect with the public network. In this configuration, the service access may be used for walk-in and minor emergency care, as well as transportation of the occasional seriously ill patient by

ambulance to a hospital. Because patients using the public network are in generally good health, it is desirable to avoid alarming them by exposure to the rare, injured or seriously ill users of the building. The latter patients would also be served more expeditiously if given a unique entry.

INFORMATION NETWORK

As the service network determines design of the inpatient unit, it is the information network which has been critically important in the outpatient facility. In the hospital, most information remains in a chart at the nursing station, to be returned to storage when he is discharged. In the office, rapid turnover of patients depends on immediate access to records of antecedent illnesses as well as current and previous test results. Some large scale ambulatory care centers, such as the Mayo Clinic, are even designed around information retrieval and processing networks. In that institution, records are laboriously entered by hand in the patient's chart, which is then transported mechanically by a pneumatic tube system.

In short, information networks within most health care facilities remain tied to the scribe system of the middle ages. Although reports are often transcribed from dictation and test results automatically print upon lab slips, they are still collected and entered with a variable degree of order into a chart which is more or less bound, but often has loose sheets of paper falling out. In an age when sophisticated technologies for processing information are in widespread use, the current medical non-system is an anachronism. Use of

electronic information storage and retrieval is inevitable. It will revolutionize the information network, particularly in the group practice professional office building. In fact, if patient records--including diagnoses, laboratory and x-ray results, current medications, etc.--can be stored and transmitted electronically, the information network is very nearly reduced to a set of wiring harnesses which can share that building space given to other electromechanical services. Freedom from the constraints of physical transportation of written information will enormously broaden the design choices for the professional office building.

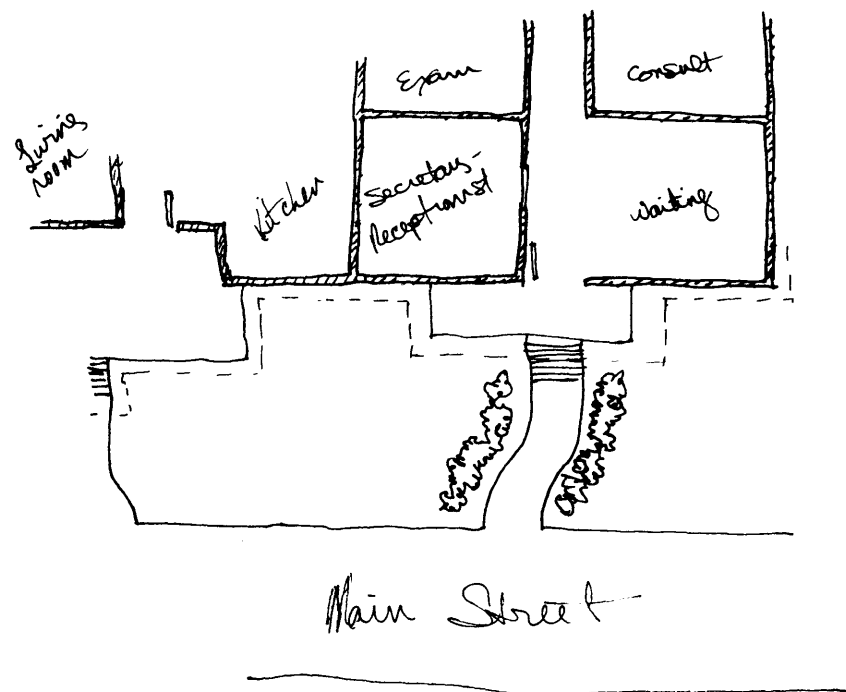
# **the ambulatory care facility**

## ABBREVIATED HISTORY

12

The practice of medicine has traditionally been a cottage industry in the literal sense of the word. The physician's office was a section of his house where he held "office hours", examined patients who came to see him--often without appointments. Although an occasional urine analysis or blood count were done with simple equipment within the office, extensive laboratory and radiologic examinations were rare. The few available medications were often dispensed directly by the physician. Because he had so few technological resources, he was free to bring his ministrations to the patient. The "house call" was in fact the way the majority of ill patients received their medical care at the turn of the century. Patients who saw the doctor during office hours were receiving ambulatory care, though they would certainly not have recognized the terms:

Ambulatory care means medical services for the ambulatory: those who are capable of ambulation, or walking. It does not mean emergency care, or hospital care or nursing home care. It is what once was meant by "going to see the doctor", and nearly all medical care at the turn of the current century was "ambulatory care". Fact: we entered the twentieth century with more physicians per capita than we



have today; and they are virtually all "providers of ambulatory care:, for that is what doctors did.

Because of the traditional fierce independence of physicians, there was little communication among them. Each had his own practice, office, and patients. Those patients who were seriously ill and too poor to pay for physician services (and had no family to care for them) would be housed in institutions affiliated with poorhouses, called hospitals. Doctors would donate their time to care for the sick poor in these institutions, while they would attend their own patients in their office, or the patient's home.

During the third and fourth decades of the current century many forces led to increased demand for hospitalization. Increasing sophistication of physicians, with greater reliance upon such technical aids to diagnosis and treatment as radiology and laboratory, transformed the hospital cum sickhouse into the hospital cum referral center. Surgeons were becoming bolder and more confident in the post-Listerian era of asepsis, and the natural place for their craft to be performed was, of course, the hospital. With increasing sophistication came greater expense, and during the Great Depression people were least able to afford it. Thus was born health insurance. As the

United States prepared for World War II, booming employment combined with fixed wages and prices led to demand or fringe benefits. These usually involved some kind of health insurance--really a form of catastrophic coverage, because neither physician fees nor drug expenses were reimbursed. As Blue Cross and other insurance plans became widespread, the number of expensive procedures performed in hospitals continued to increase. Similarly, the proportion of physicians engaged in specialty and subspecialty care grew rapidly.

These considerations led Congress to spend enormous sums for hospital construction, largely to attract physicians to under-served areas, where the emerging technology was otherwise unavailable. With more hospital beds came greater pressures for their utilization, and patients came to equate the hospital bed with quality medical care. Thus, because their insurance covered only hospital care, because the technology was based there, and partly because it was convenient for the physician, patients were often admitted because they needed X-rays or laboratory tests, but were not so ill that they required acute inpatient care. It is worth noting that the mechanism of third party payments, first by private insurers and then by federal and state governments, created great pressure for use of inpatient hospital beds.

This was in large part because office-based technological procedures were not reimbursed, while the same procedures performed in the hospital were fully covered. For many reasons, once the beds were built, they created their own demand for occupancy.

Unfortunately, the high rate of hospital utilization has been a major factor in the recent escalation of healthcare costs. With annual expenditures approaching \$200 billion, "healthcare" is the third largest industry in the country (after agriculture and construction). Hospital care accounts for the greatest and most rapidly growing part of this figure. Fifteen years ago, hospital expenditures were 30% higher than those for physician care. Now they are more than twice as high (over 40% compared to 20% of total expenditures for health care). The widespread continued use of inpatient care may in part be explained by the fact that less than 10% of the cost of hospitalization is borne directly by patients, compared to 40% for physician fees and over 80% for drugs.

Because of the enormous expense of inpatient care, major efforts are underway to decrease hospital utilization. Over the coming decade, ambulatory services are likely to fill the need for care, regaining their earlier pre-eminence but in a thoroughly different form.

## CURRENT ORGANIZATIONAL FRAMEWORKS

Ambulatory care facilities range from the single residence-based practitioner to the "skyscraper hospital-based outpatient facility. The network size and complexity, of course, vary accordingly. The simplest need not be considered here; one or several associated practitioners may easily ascertain their own needs. Except in rural areas, furthermore, it is likely that outpatient medicine will increasingly be practiced in large facilities with on-site specialty and technological services. It is this large scale building which demands the most careful network design; and that design must respond to the organizational structure of the practice.

The three types of ambulatory care facility are the independent practitioner office building, the hospital-based outpatient "clinic", and the group practice. While mixtures of these organizational types exist (for example, independent practitioners or a group practice in a hospital-based facility), the characteristics of each are sufficiently distinctive to warrant individual attention in network design.

What are the unique qualities of each organizational form?

The term "OUTPATIENT CLINIC" carries the connotation of long waiting queues in a crowded, antiquated, inadequately staffed section of a charity hospital. It has traditionally been associated with the teaching of medical students and house staff. It is in many ways tragic that such a valuable resource has gained such notoriety. In addition to the problems caused by crowding, poor scheduling, and physical plant deterioration because of inadequate budget, patients have often been frustrated by lack of continuity of care because of frequent changes of rotation of interns and residents. The disregard in which clinic responsibilities were held by these house officers was often obvious, and was fostered by the emphasis placed on inpatient care by hospital-based instructors. The latter two factors have been eliminated in some training programs, and dramatically diminished in many others. Some stigmata remain, however. Their removal may be facilitated by appropriate environments, designed around a carefully planned set of networks.

The outstanding characteristics of the hospital-based outpatient facility is its relationship to the hospital. House and attending staffs are usually shared, as are those of building maintenance and services. The physicians usually have obligations in

the inpatient unit as well and may at any time be called away from the clinic for minutes or hours. Thus it is highly desirable for the professional network of the outpatient and inpatient buildings to communicate as intimately as possible. Although the service network to a variable extent coincides with the professional network, the former should be considered independently as well. The projected system for provision of building services must be carefully evaluated, and the design of the service network should respond accordingly.

The public network of the clinic should be considered independently from that of the inpatient facility. The organizational form by which out-patient care is provided has little relation to the nature of the public network space, whose environment should be determined by user needs. These will be discussed at length later, but it may here be stated simply that a convenient dignified, and direct entry from the public way far outweighs any putative need for proximity to the hospital. In fact, fear and unpleasant memories of intensively invasive inpatient care may even be projected on an outpatient facility whose public network is not carefully designed and separated from that of the hospital.

In the INDEPENDENT PRACTITIONER building each physician runs an independent small business: his office practice. The offices are grouped together in a "professional building" for several reasons. Firstly, enough physicians are present to support more technologically-intensive specialties, such as radiology and laboratory. Secondly, patients may schedule more than one appointment on a given day, and same-day consults within the building may be readily requested. Thirdly, buildings are usually located conveniently to the one or more hospitals which the practitioners use. Fourthly, physicians moving into the building are offered a ready source of patient referrals. Fifthly, the occupants share a building whose character can reflect their own professionalism. Sixthly, supplies and maintenance service may be shared.

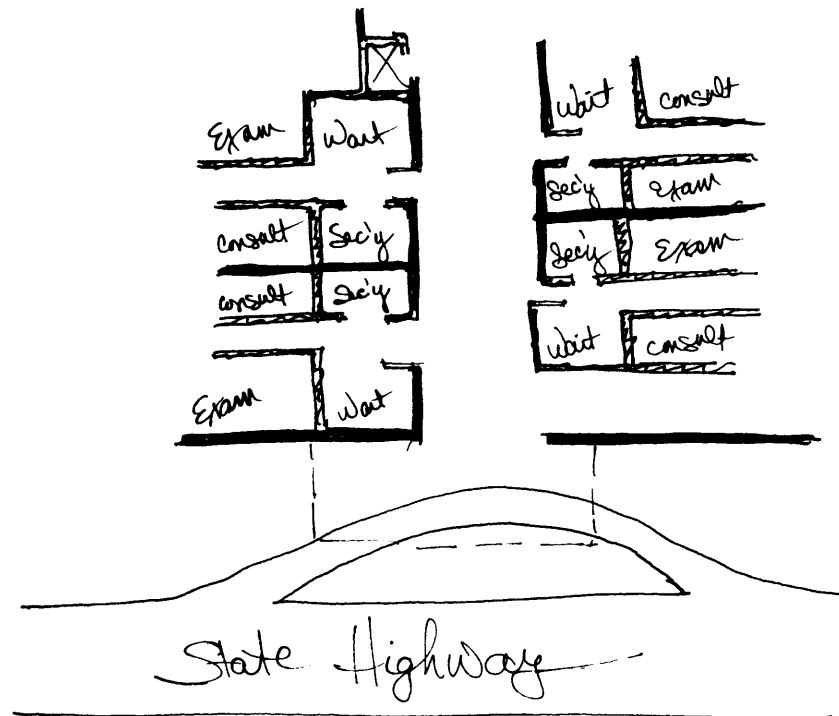
In spite of all these attributes, however, professional buildings continue to reflect the determined independence which is characteristic of many physicians. The individual offices are little different from that in the practitioner's house, save that they are usually placed along a double-loaded corridor and stacked three or four floors high. The public network is little different from that of any other office building. This is partly because each doctor feels it important to

retain control of his own business. Secretarial, bookkeeping, and professional services are segregated. Private and separate waiting rooms, too, are considered necessary. One reason for this may be a fear, occasionally voiced in private, that patients waiting to see Doctor A may be lost to Doctor B whose devoted patients extoll his virtues to those seated next to them.

Insofar as physicians are reluctant to share office waiting space and business services, then, their office buildings will reflect that separation in their public network space. Lobbies and hallways will be minimized. Individual office space will be maximized. As was discussed above, a true professional network as such will not occur. And unfortunately, inflexibility of requirements for individual offices severely limits the degree to which the design, particularly of the public network, can respond to user needs.

It is entirely possible, however, that the future will bring far greater flexibility within the independent, private practice framework. Pressures for economy are likely to result in the use of electronic information processing technologies which will be least expensive if shared. Further savings may occur by the use of

shared office space and personnel. As the barriers to pooled resources are broken down, the public (and perhaps even professional) networks might be perceived more as space common to all offices than merely as a means by which to arrive at one's own office. If this level of cooperation could develop, a truly responsive public network would be possible.



The prepaid GROUP PRACTICE system began in the late 1920's, as employers strove to establish fixed budget medical care responsibilities. For an annual fee, the group contracts to provide all of an enrollee's medical expenses (with the sole exception of drugs). This type of medical practice, usually referred to as an HMO (Health Maintenance Organization) is strikingly different from the private practice system of care. Because it is based upon capitation payments by patients, the practitioners are directly affected economically by the number and type of services which must be provided. This represents a major incentive to reduce hospitalization, that most expensive single factor in the cost of health care. In fact, the Kaiser-Permanente Medical Plan, this country's largest HMO, achieves its remarkable level of economy almost exclusively by limiting hospital bed days per 100,000 of its enrollees to as little as half the national average.

The efforts of HMO-based health care providers must, therefore, be directed toward prevention. Additional efforts must be made to limit the indiscriminate use of expensive technology. In order to accomplish both of these goals, easy access and frequent patient visits are encouraged. The HMO theory suggests that early diagnosis of an illness, facilitated

by convenient access and absence of financial barriers to care, will permit early treatment and therefore avoidance of hospitalization. Similarly, it is felt that frequent follow-up appointments are more accurate and less expensive in the diagnosis of disease than sophisticated and expensive laboratory or X-ray procedures.

Clearly, then, the HMO or prepaid group practice, of all organizational forms of medical practice is the most reliant upon a satisfactory public network. Frequent visits are encouraged, and pooled space and services are used whenever economical. Fee-for-service group practices as well share space and services, and depend heavily on careful network planning. Because they lack the incentives for economy inherent in HMO's, however, they may become less competitive in this era of increasing government controls unless they adopt a pre-paid system of services (The Lahey Clinic, in its move to Burlington, has in fact done precisely that--while of course, remaining available for other patients as well.) Regardless of whether pre-paid or fee-for-service, however, it is the group practice which is the most flexible in its response to user needs. Maximization of employee efficiency while retaining patient satisfactory is the sine qua non of success.

## USER ATTRIBUTES

Before any inferences of user needs may be derived, it is necessary first to describe the patients who are in fact those for whom the public network is designed. When health facilities are planned, the conditioned response is to think of hospitalized patients as the least common denominator about whom the building must be designed. The architect responds to their helplessness, infirmity, anxiety, and need for service. This concern, however, is spurious. Typical ambulatory patients are entirely different. Because their needs are so unlike those of inpatients, it is important to know who they are and why they present for ambulatory care.

Firstly, they are ambulatory. Extremely ill patients usually perceive that they will need hospital care, and present either private transportation or ambulance to hospital emergency departments. Only two per cent of patients seen in an ambulatory setting are referred to the hospital for further care and the vast majority of these are sent for routine care by private transportation rather than critical care by ambulance.

Secondly, a sizable proportion are not ill at all. According to the National Center for Health Statistics, 18.5% of

. Number and percent of office visits,  
by most common complaints or symptoms  
United States, January-December 1976

Rank	Most common symptom or complaint expressed by patient	Percent of visits
1	Pain, swelling, injury—lower extremity.....	3.6
2	Pain, swelling, injury—back region.....	2.9
3	Sore throat.....	2.8
4	Pain, swelling, injury—upper extremity.....	2.7
5	Abdominal pain.....	2.5
6	Cough.....	2.2
7	Cold.....	1.8
8	Allergic skin reactions.....	1.8
9	Headache.....	1.7
10	Pain in chest.....	1.6
11	Fatigue.....	1.6
12	Pain, swelling, injury—face and neck.....	1.6
13	Vision dysfunction, except blindness.....	1.5
14	Fever.....	1.5
15	Wounds of skin.....	1.4
16	Abnormally high blood pressure.....	1.3
17	Earache.....	1.3
18	Weight gain.....	1.2
19	Vertigo.....	1.1
20	Nasal congestion.....	1.1
21	Acne or pimples.....	1.1
22	Swelling or mass of skin.....	1.0
23	Shortness of breath.....	1.0
24	Depression.....	0.7
25	Vaginal discharge.....	0.7

patients visits are simply for routine examinations. Fully 63% are follow-up visits of patients visits for previously treated problems. Less than one patient in five is considered to have a "serious" or "very serious" problem--and that problem, as we see, rarely is serious enough to warrant inpatient care. Among the 25 most common presenting complaints, only 2.6% of patients seek care for potentially life-threatening problems (chest pain and shortness of breath) and the majority of these, on examination, are diagnosed as non-emergent. In fact, with the possible exception of diabetes and asthma (and severity of disease is not considered), the commonest 25 diagnoses are of relatively mundane illnesses.

Thirdly, 84% are under 65 years of age. The ambulatory population is generally not aged, and if aged are by definition not infirm. Extended care facilities are responsible for care of the elderly who are chronically ill and without family able to manage them. There they are seen by physicians who make regular rounds. Thus the 16% of ambulatory patients 65 years old or older, are distinguished from the younger chiefly by the number of years they have lived.

Although it is true that patients using the building are ambulatory, they are not

Number and percent of office visits,  
by most common principal diagnoses  
January-December 1976

Rank	Most common principal diagnosis	Percent of visits
1	Medical or special examination.....	7.6
2	Medical and surgical examination.....	5.0
3	Essential benign hypertension.....	4.0
4	Prenatal care.....	3.6
5	Acute upper respiratory infection.....	3.2
6	Chronic ischemic heart disease.....	2.3
7	Neuroses.....	2.1
8	Otitis media.....	1.8
9	Other eczema and dermatitis.....	1.7
10	Diabetes mellitus.....	1.6
11	Hay fever.....	1.6
12	Refractive errors.....	1.5
13	Acute pharyngitis.....	1.5
14	Diseases of sebaceous gland.....	1.5
15	Obesity.....	1.4
16	Bronchitis, unqualified.....	1.2
17	Osteoarthritis and allied conditions.....	1.2
18	Sprains and strains of other and unspecified parts of back.....	1.1
19	Asthma.....	1.1
20	Acute tonsillitis.....	1.1
21	Synovitis, bursitis, tenosynovitis.....	1.0
22	Other viral diseases.....	1.0
23	Diarrheal diseases.....	0.9
24	Arthritis, unqualified.....	0.8
25	Observation, without need for further medical care.....	0.7

always alone. In fact, patients are accompanied by "visitors" in a ratio of two to one in general, and as much as one to one in pediatrics. Except for provision of adequate seating in waiting rooms, these healthy users of the facility are rarely considered. The characteristics of these visitors, who may be there to provide transportation, moral support, or just company for the patients, must be considered as well. Firstly, they are healthy. Secondly, they usually need only bring the patient to his destination and then return him home--infrequently (except in pediatrics) do they need to stay with him throughout the time of his visit. Thirdly, because they are healthy and unneeded, they are bored. The visitors accompanying patients to the ambulatory care facility should be considered as well.

Yet another aspect of outpatient care which must be considered is the referral of patients for medication or procedures. The fact is, a patient today rarely leaves without an EKG, X-ray, lab test, prescription, or some combination thereof. The way from the physician's office to the lab or pharmacy is, of course, through the public network.

In responding to attributes of its users, the public network really need not be so terribly dissimilar to those in

Number and percent of office visits, by diagnostic and therapeutic services provided: United States, January-December 1976

Diagnostic and therapeutic services provided (selected procedures)	Percent of visits
<u>Diagnostic services</u>	
Limited history or examination ...	51.9
General history or examination...	16.9
Clinical lab test .....	22.7
X-ray .....	7.7
Blood pressure check .....	33.2
EKG.....	3.3
Hearing test.....	1.3
Vision test.....	5.2
Endoscopy .....	1.2
<u>Therapeutic services</u>	
Drug prescribed.....	42.8
Injection .....	12.5
Immunization or desensitization ..	5.3
Office surgery .....	7.1
Physiotherapy .....	3.0
Medical counseling.....	13.6
Psychotherapy and therapeutic listening .....	4.1

other building types. Users of hotels and shopping malls need a similarly well-defined public network, and we have seen that the clientele of ambulatory health facilities are not very different. Their appointments are scheduled, and those needing immediate care are usually seen elsewhere. Most have been pursuing normal activities until the time of their visit. Overlying and coloring their physical ailments, however, is some amount of anxiety about going to see a doctor and perhaps about discovering they are possessed by some dread disease. It is a function of the building as a whole, and the public network in particular, to allay the anxiety, relieve the boredom, and encourage its users to behave and feel much like healthy people as possible.

**environmental qualities:  
a comparative study**

After realizing the similarity of ambulatory patients to the general population, I began to wonder why most outpatient care facilities were so drab, particularly compared to many quite exciting commercial and retail establishments. Undoubtedly one factor is budgetary. But because physical plant depreciation accounts for well under 10% of an ambulatory facility's expenses, and because a carefully designed set of networks could easily save as much in maintenance costs and professional salaries as it might cost, that seems to be a surmountable obstacle. Furthermore, an attractive and appropriate public space would be likely to facilitate the recruitment of new patients (and this has, in fact, been the experience of the Rhode Island Group Health Cooperative). I came to the conclusion that budget limitations alone are inadequate to explain the lack of vitality in most medical buildings. And as I discussed in the previous section, vitality, or perhaps some more specific subject of qualities which compose it, is an attribute which can have a salubrious effect on the clientele.

In order to understand more fully what those qualities might be, I undertook a survey of nine Boston-area buildings of which five were medical and four were commercial. The evaluations were initially made from the viewpoints of lighting,

access/circulation, waiting spaces, acoustics, and visual interest/diversion. After they were collected, however, and studied at length, a group of characteristics became glaringly obvious in their presence in the commercial facilities and frequent absenteeism those for health care. Some of these qualities, perhaps more easily exemplified in words and photographs, are presented here. They will all be discussed at length in the next section which addressed user needs.

They were: Massachusetts General Hospital (mixed outpatient and inpatient network), the Joslin Clinic, the Harvard Community Health Plan Cambridge Center, the Moughassude Medical Center, the Rhode Island Health Association, the Crimson Galleria, the Mall at Chestnut Hill, the Mercantile Wharf Building, and the Hyatt Regency-Cambridge.

GRADATION OF SPACES

Hyatt Regency Cambridge has no doors but those to private suites and function rooms. Yet the building organization clearly states where public territory begins to yield to greater levels of privacy. Semi-private zones are not blocked, but are territory of privacies.

Chestnut Hill Mall is nearly all one space, but a slight and subtle gradation exists. While storefronts are largely open, some recede behind freestanding display cases. Waiting areas are often at slightly different levels. Also, paving adjacent to stores is different from that in the main circulation.

Mercantile Wharf defines public and semi-public fairly well, with the arcades belonging to the stores, and the central court being public, except adjacent to the restaurant. Private spaces (residences above), however, are discontinuous to the point of having to leave the building to get to the elevator.

RIGHA attempts to blend public stair and semi-private waiting area by using expanses of glass and allowing the wall to recede at the doorway. They

still do not quite mingle, however, no doubt in part because of fire regulations. If so, perhaps there is too much glass.

Joslin Clinic gestures toward Main Street by providing wire glass panels adjacent to opaque doors. In many areas, however, such as the cafeteria in the CTU, one would have hoped for stronger connection; while the small kitchen in the same unit lets too much hang out.

Mořhassuck Medical Center provides the classic discontinuity between public double-loaded corridor and private physician office. Take a deep breath and open the door, and prepare to be embarrassed if you walk into the wrong office!

DISCONTINUOUS SPACES



GRADATION OF SPACES

The entry to Louis' at Chestnut Hill Mall.  
Parts of the store come out to greet the  
shopper as he arrives.



Entry to the Harvard Community Health Plan--Cambridge Center is rather abrupt, through a cut-off corner of the building.

The Crimson Galleria entry. The building is reached before it is entered.

Closure of, and entry into the Mercantile Wharf Building recedes behind the continuous line of heavy granite columns.

The lobby of the Hyatt Regency Cambridge. The hallway is clearly less public than the rest of the space, and no doors are used.



GIVES GUIDANCE

Crimson Galleria is organized about a central skylit enclosed court with a straight monumental stair from bottom to top. All shops front on the court, and well illuminated graphics inform how each area is to be reached.

Mercantile Wharf is clear except for the central elevator, which obscures the longitudinal view.

Hyatt Regency is somewhat confusing at the entry and first level but is given clarity and reference by the verticality of the atrium. Upper floors are clear.

Joslin Clinic is clearly organized but this is perhaps because it is sharply divided horizontally. However, each floor does organize linearly, running from the street to an internal court. Graphics are clear--understated or bold as required.

Moshassuck Medical Center is the prototypical office building: offices enfronting a loaded corridor; etc. Lobby registers in proximity to elevators direct patients to the desired office. However, within the building, there is no help. Even the

signs on the doors are inadequate: black letters on a dark brown background.

RIGHA and HCHP give too few clues to be clear, and both depend on info. desks. Graphics at HCHP are limited to door signs, and the elevator is virtually lost. RIGHA's signage is diminished by its use of the many-arrowed RIGHA logo. Its monumental stair dimensions are too uniform, providing no directional

MGH is again the loser. It could hardly be helped because of the scale and randomly additive nature of the institution. Large, clear graphics and mural sized maps with color-coded hallways (a la Nemch) would help.

PROMOTES CONFUSION



GUIDANCE

The skylit atrium of the Crimson Galleria contains an open stair which connects the three levels. The organization of the building is abundantly clear, and recognition of shops is immediate

Additional clarity in the same building is provided by a graphic directory which is actually a series of floor plans with labeled stores.

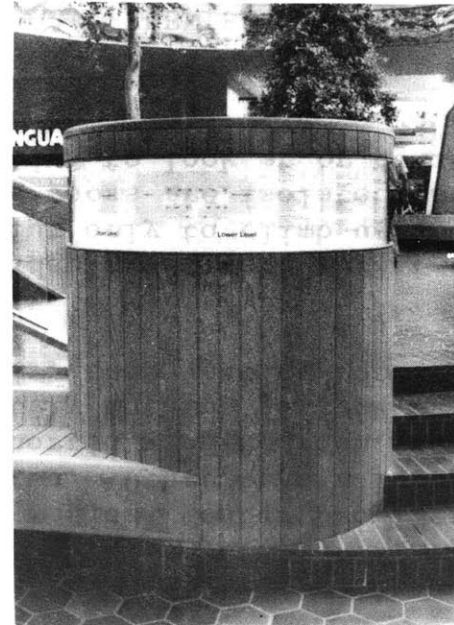
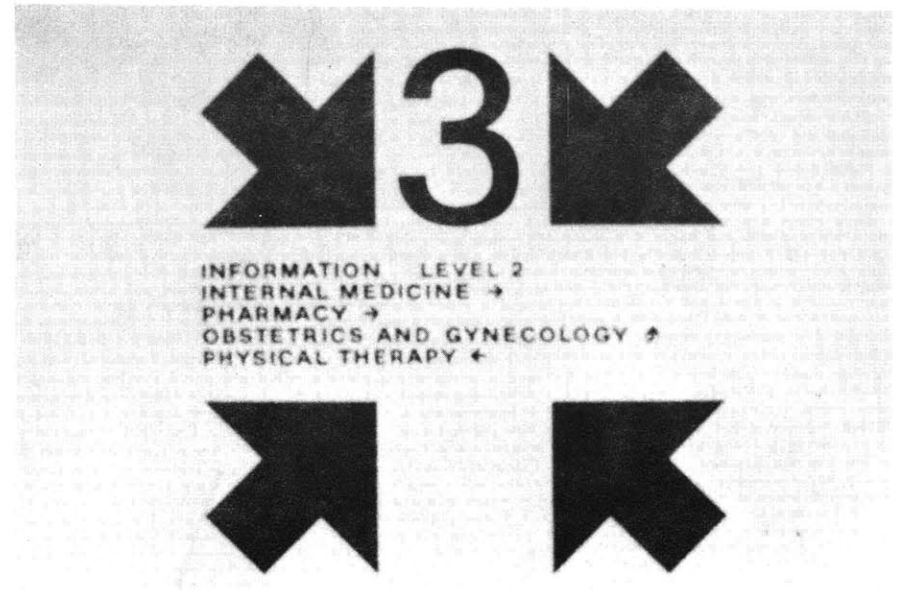
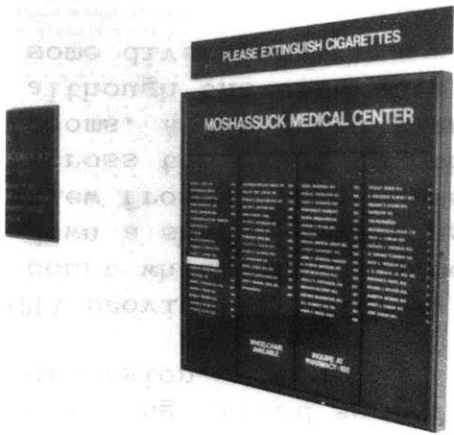


The building register in the Moshassuck Medical Center. The organization is clear, but gradation of spaces is essentially absent.

RIGHA graphics. No comment is necessary.

HCHP Cambridge Center. The elevator is on the right between the entry and the information desk (small sign projecting from wall on right near ceiling). It is undistinguished by lighting, graphics, or color, and it is rarely used.

A lighted, sign-bearing kiosk at the Chestnut Hill Mall. It is pleasant, albeit less than totally clear; but in such a straightforwardly linear building it is probably redundant anyway.



## PROVIDES DIVERSION

38

Chestnut Hill Mall, with its constantly active visually connected two levels, fountain, skylit space frame roof, and overblown sparkle has more than its share of diversion--too much, perhaps, for a medical facility.

Mercantile Wharf

Hyatt Regency

Crimson Galleria all provide diversion chiefly by natural light and internal vistas. In addition, all provide dining on the public edge, and the "sidewalk cafe" is as pleasant for the passers-by as for the patrons.

Joslin has two views, to court and to street. There is a linear relationship between the two, and most parts of the building afford some form of visual diversion.

RIGHA provides a brightly lit central stair court which brings some natural light down a shaft to waiting rooms. The view from waiting rooms, however, is across the court to other waiting rooms. A few green plants would help, although the structure itself provides some diversion.

Moshassuck Medical Center provides the least diversion. Other than a lobby drugstore and a horrid vending room, there is absolutely nothing to look at or do. Fortunately, some waiting rooms have outside views.

HCHP/Cambridge gives us a skylit central stair but only to climb up and down. Waiting rooms are isolated and there is nothing to look at or do in the corridors.

## DENIES DIVERSION



DIVERSION

The Mall at Chestnut Hill. This overblown collection of sparkle is widely appreciated in suburbia as an air-conditioned indoor park, full of activities to occupy an otherwise wasted afternoon or evening. The prototypical indoor shopping street.

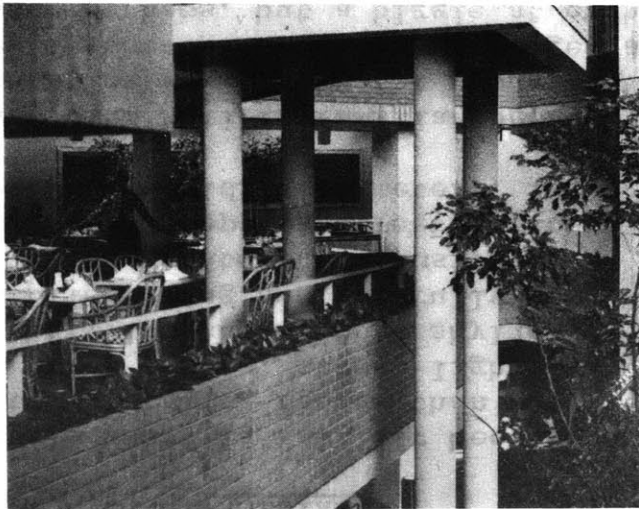


The lobby of the Hyatt Regency-Cambridge. Retail uses on a far smaller scale than the Chestnut Hill Mall are successfully incorporated into the rich fabric of the lobby space.

The Stock Pot Restaurant on the ground floor of the Crimson Galleria. Located under the skylit atrium court, and adjacent to a tiny but delightfully musical fountain, it is a most relaxing place to dine.

The mezzanine restaurant at the Hyatt. Overlooking the multi-level indoor court, it is a gracious diversion from the workaday business world.

The vending machine room at the Moshassuck Medical Center, under glaring fluorescent lights, and finished in garish reds, yellows, and oranges, can hardly be called a diversion from anything.



FAMILIAR

Mercantile Wharf is familiar because of what it recalls, rather than what it is. The brick arches, street lights, brightly lit shops, huge skylight, and tile paving are carefully contrived to create the illusion of a pedestrian shopping street. Except for the overriding symmetry, it works.

Chestnut Hill Mall is familiar because it is a shopping mall, like the thousands that grew in the 60's and 70's. Bigger and posher perhaps, but a biggie at each end and little's down the middle.

Moshassuck Medical Center is familiar as the standard medical office building. It is expected that each office will be complete and isolated behind its opaque door, and it holds no surprises.

HCHP/Cambridge Center is familiar as it recalls a large hospital outpatient clinic. Hallways with chair-filled waiting rooms opening out at intervals allude to physician office buildings and to outpatient facilities, but are neither.

Joslin Clinic is neither hospital or office building, and its reinforced concrete structure is of a thoroughly non-domestic scale, though it certainly is no longer totally foreign to most. The sloping

windows, and suspended structure are, however, unusual.

Hyatt Regency-Cambridge is a space with which people can find few comparisons (except for other hotel complexes of similar genre, too recent to be familiar). Most visitors are surprised at the scale of the atrium lobby, and at the vastness of the internal vistas provided.

FOREIGN



FAMILIARITY

The shopping arcade at the Mercantile Wharf Building. Brick arches, streetlights, and store fronts give a great sense of familiarity; that of the street, albeit lushly planted and without traffic.



Nothing is familiar about the Hyatt; but that somehow doesn't seem to matter all that much.

The double-loaded corridor of the Moshassuck Medical Center is the prototypical medical office building. As such it is straightforward and familiar, if somewhat unappealing. Compare with the hallway in the Hyatt shown in gradation of spaces.

The main skylit atrium space of the Mercantile Wharf Building. Only familiar in reference to other built indoor/outdoor spaces.

The Joslin Clinic, with its concrete waffle-slab construction and exposed columns, is not familiar in a domestic sense. It is, however, easily comprehensible.



### PLURALITY OF WAITING SPACES

Hyatt Regency Cambridge provides more types and a greater number of waiting spaces than all others. There are low, dark couches (with reading lights), low benches, high mezzanine spots, rooftop couches, etc. Including the restaurants, the range is remarkable and relates well to circulation.

Mercantile Wharf and Chestnut Hill Mall are well equipped with waiting spaces, though the former has quite uniform bench arrangements--saved in part by the indoor-outdoor cafe. Chestnut Hill's landscaped, park-like seating groups could perhaps be better removed from activity.

MGH has many individual and distinct waiting spaces, some along the main corridors and some isolated. Some are private and some very public, but which one is used depends on the activity it serves, not patient choice.

RIGHA is difficult to characterize. Waiting spaces are generally similar, but arrayed pleasantly about stair court. It is unfortunate that the skylit focal central court itself provides no opportunity for waiting. An additional vending/seating area is screened off from public and barely a part of it.

HCHP/ Cambridge affords few options to the pooled waiting area allotted each specialty. There are a few seats at the base of the central stair, but they are dim and rarely used. The large waiting rooms afford little privacy, and full-wall mirrors make them appear still larger.

Moshassuck Medical Center has two benches adjacent to the main entrance. All other waiting space, including that for lab and X-ray, both on the main level, is behind doors closed to the circulation space. A potential waiting area with vending machines is too hideous for use.

### SINGULARITY OF WAITING SPACES

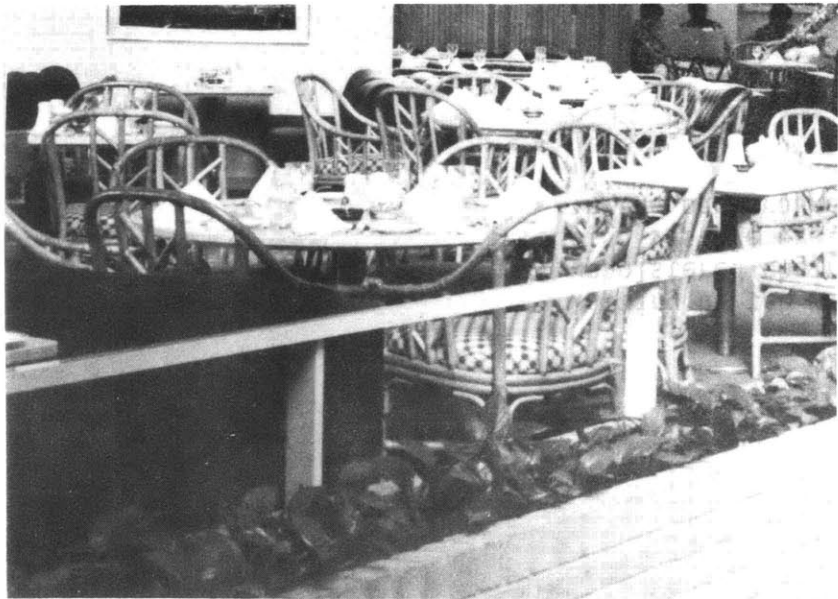


WAITING SPACES

Table and chairs at the edge of a balcony. This, here in the mezzanine restaurant at the Hyatt, affords privacy (looking down from above) as well as space and light.

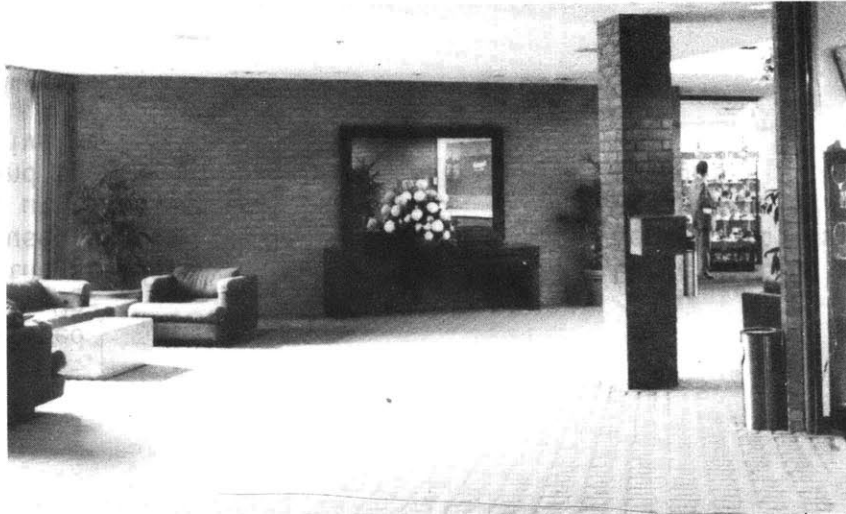
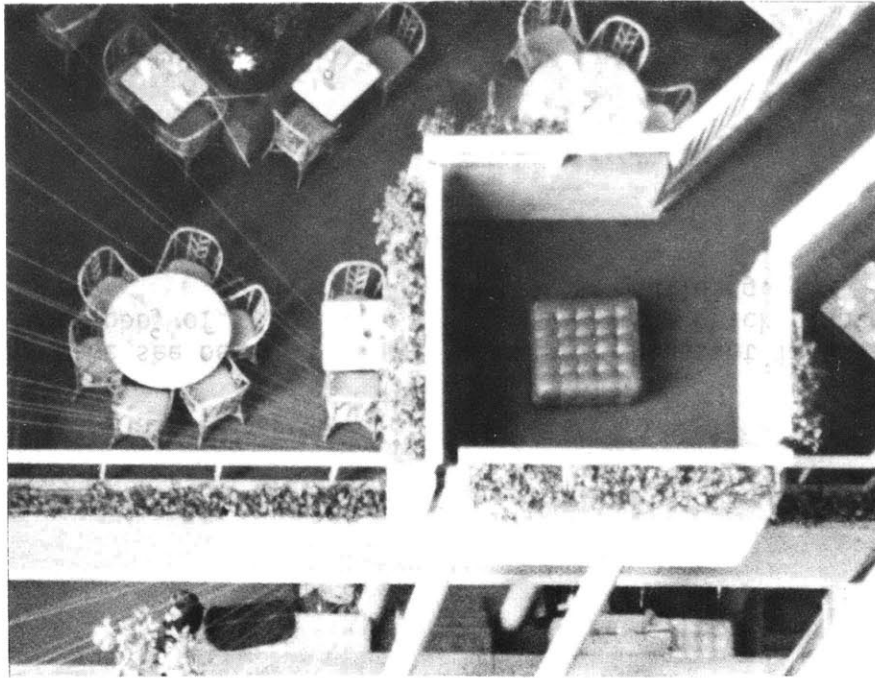
Planting-and-bench combination at the Chestnut Hill Mall. An opportunity to be away from the crowd yet continuous with it.

A sofa in a brick alcove is downright cozy, largely because of the sensual qualities; also because of the sense of protection. Again, this at the Cambridge Regency Hyatt.



The "crow's nest" at the Hyatt.  
it is an extravagant, private,  
lofty aerye.

Waiting by the window, in well-  
upholstered chairs and couches.  
Also visible are the retail uses  
in the background.

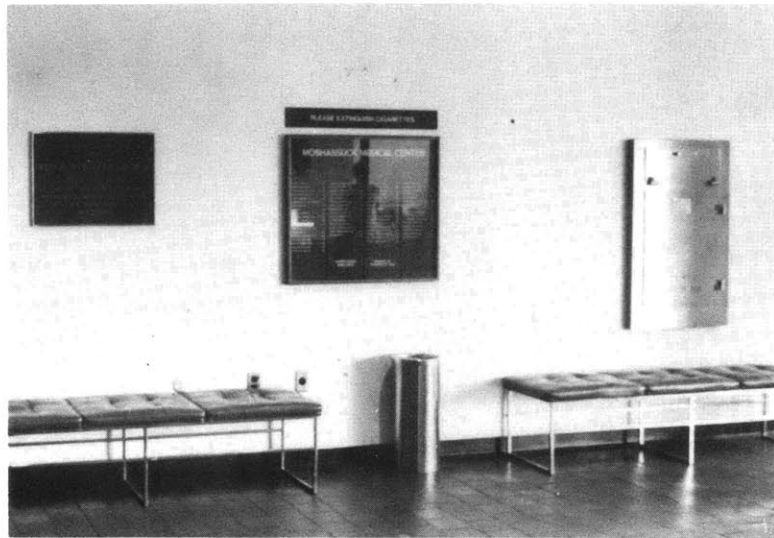


Tables and chairs under sloped glass at the Joslin Clinic. Opportunity for other than the standard waiting room posture and use. Snacks are eaten, the tables are utilized for additional seating, and the space becomes much more lively.

Large waiting room at the HCHP--Cambridge Center. It is by no means private, and its acceptance of furniture was clearly an afterthought.

Again, an afterthought. Here we see benches against the wall in the lobby of the Moshes-such Medical Center.

Pleasant if uniform and exposed seating among the brick planters in the Mercantile Wharf Building.





# **user needs**

In addition to the qualities revealed above, others have evolved as well. In the following discussion these attributes, listed here and clarified by their opposites, will be related to the needs of users of ambulatory care facilities:

- |     |  |  |
|-----|--|--|
| 1.  | Comfortable                                  | Threatening  |
| 2.  | Gives Guidance                               | Promotes Confusion   |
| 3.  | Gradation of<br>public and<br>private spaces | Abrupt Discontinuity<br>between public and<br>private spaces |
| 4.  | Major focus or<br>or reference               | Sameness of spaces   |
| 5.  | Plurality of<br>waiting spaces               | Singularity of<br>waiting spaces                             |
| 6.  | Provides diver-<br>sion                      | Denies diversion   |
| 7.  | Provides<br>refreshment                      | Denies refreshment   |
| 8.  | Provides edu-<br>cation                      | Denies education   |
| 9.  | Familiar                                     | Foreign  |
| 10. | Adjacencies<br>appropriate                   | Adjacencies in-<br>appropriate                               |

## COMFORT

Certainly all built environments should be comfortable (as opposed to threatening), with the possible exception of some theme parks and amusement park "funhouses." What makes comfort particularly important for the patient, is of course, that the mere act of seeing a doctor is threatening enough by itself. Regardless of the nature of the visit, there is always some degree of concern: Will the routine physical show diabetes? Will the pap smear show cancer? Has my blood pressure been controlled? Is my bone mending properly? Is my cold turning into pneumonia? The list of such questions is endless. And although the fears are often groundless, the shared theme is one of vulnerability. At the time of a visit to a doctor, we become acutely aware of our own mortality, even if this awareness fails to reach a conscious level.

We must be comforted by the built environment. If we feel threatened by it, our symptoms are exacerbated. If we feel reassured, our symptoms may be relieved. In fact, when confronting a physician it is not unusual for a patient to relate the disappearance of symptoms to arrival in the doctor's office--simply because they know that relief is near.

Those factors which make a building comfortable are somewhat elusive. They include environmental features. They include all the other attributes discussed below. But above all, an office building is comfortable if it reassures the patient about his state of health and ability to cope. If the plantings, pavings, textures, and so on are of a scale to which the user is able to relate; if the structure and graphic elements leave little doubt about where he is in the building and where he must go; if he always knows a bit about the space he is to enter before he quite gets there; if he has an opportunity to do other than dwell on his afflictions, but may also find a quiet, private spot for reflection; in essence, if the building succeeds in responding to the needs of its user, it will be comfortable.

## GUIDANCE

The simplest building organization is the one which is least confusing. It is no wonder that most shopping centers are linear: wide "malls" lined with shops. In a medical building particularly, need for clarity in design is critical. The patients' need for comprehension is enormous, and the built environment must provide him with ample information. The more deviation there is from the direct, linear pattern, the more clues must be provided. Optimally, they should be inherent in the structure itself. At the MGH, innumerable information desks of varying style dot the corridor system. In addition to requiring personnel to staff them, they are an affront to the patient's sense of independence, which it is the public network's duty to foster. People in general, and men in particular, are often reluctant to ask for directions. They should not be required to do so. From the time of their entry into the building, the path should be clear. They should be able to see their destination, and, once there, see where they've been. Ideally, they should be aware of the points of major vertical as well as horizontal circulation. It is often helpful to have stair towers well articulated and clearly related to the main public distribution.

It is rarely adequate to rely on

graphics alone to provide the needed information. People may look at a sign for several minutes without being able to understand its relation to the building, and the signage at RIGHA is a case in point. Graphic elements should reinforce the guidance inherent in the organization of the public network. Their function is less to lead one to a destination than to enhance one's recognition of where that destination is. In this regard, the analogy of the retail-commercial building is informative. In a shopping mall, for example, recognition of services (stores) is mandatory for economic viability. A store needs a specific image which when seen stimulates the recall from memory of a similar image against which it is registered. This act is what we refer to as recognition. Advertising firms spend billions for it. Medical facilities usually ignore it.

Referring again to the retail environment, if we enter a shopping center and see the big red characters spelling SEARS, we immediately associate the sign with what it means, and the type of shopping it represents. Similarly, the reserved lower-case lettering of Bloomingdales, the yellow and red letters and "arches" of MC Donalds, and the script of the Friendly's sign are all elements carefully designed

Recognition--the perception of something as identical with something previously known or in the mind. From <u>re</u> -Latin for "repetition", and <u>cognitio</u> , Latin for "a getting to know".
--

to promote recognition. By comparison, when shopping in a huge discount store and looking for "hardware" (whose sign, though large, is stylistically identical to that for "housewares"), the process of guidance by graphics is far less effective. Interestingly, some large supermarkets identify their delicatessen and dairy departments, for example, with cartooned cold cuts and cows, as well as names. And even this minimal effort greatly enhances identification.

When retail and commercial facilities seek recognition, they used logotypes. In the "logos" their names or initials appear always in the same typeface and color, occasionally with a distinctive symbol or border. While it is true that a part of the reason for their use is to enhance identification of the enterprise in different locations, they are also meant to attract the consumers' attention when, for example, he returns to the same shopping center. They are effective because they stimulate pictorial rather than verbal recall, and pictorial memory is enormously more powerful in recognition. In the ambulatory care facility, distinguishing between medicine and laboratory is like choosing hardware or housewares in the discount store. In the initial design of professional building graphics, great efforts are made to achieve

uniformity of typeface, color and style in signage--occasionally, to reinforce that of the professional group occupying the building, but more often solely for the sake of conformity to some arbitrarily selected set of esthetics. One way that guidance within the professional building can be improved is to allow some "professionalism" to be deleted from the graphics in order to improve their recognition. Each service (medicine, laboratory, pediatrics, etc.) should be able to design its own logo, appropriate to the service provided, and composed of colors and characters unique to that service. A specific, pictorial image would then be formed, and could easily be called to consciousness for matching to the environment on the next visit. In addition that recognition could be reinforced by use of the same logo, business and appointment cards as well as stationery.

Guidance within ambulatory care facilities has many determinants--clarity of building organization is the major one, and use of appropriate, informative graphics is an important subordinate one. Two other qualities which contribute to a patient's comprehension of the health care environment are gradation of public and private spaces, and provision of a major focus or reference. These will be discussed next.

## GRADATION OF SPACES

Discontinuities of space are unsettling. There is a collective, genetic, instinctive fear of the unknown. That fear is amplified when a threat of pain (shots, bloodletting, proctosymoidoscopy) is present. It is diminished when information about the nature of a space is available before that space is entered. Opaque doors on a corridor are the least informative and the most discontinuous. For that reason, a split-second of hesitation often precedes their being opened, for fear that the door selected is the wrong one. A single open space is the most informative; all is revealed. Somewhere in between lies the appropriate solution.

In most buildings, and in ambulatory care facilities, particularly, an hierarchy of spaces exists, from most public to most private. In the prototypical office building, such as the Moshassuck Medical Center, the lobby (public) is separated by an elevator from the hallways (semi-public), which are separated by blank doors from the waiting rooms (semi-private), which are separated by doors from the professional corridor and exam/treat rooms (private). Each level in the hierarchy is discontinuous with the others. It might be argued that privacy dictates this type of separation, but absolute privacy is demanded only in the exam/



treat/room and professional space. The waiting rooms are large and usually rectangular, and afford one waiting patient little privacy from others. Other areas in the building neither demand privacy nor provide it.

Where privacy is mandatory, it can be provided by screens, turns in the circulation paths, or if needed, doors. Where privacy is not an issue, territory can be demarcated clearly with partial closure, avoiding abrupt discontinuity of space. Changes in level, ceiling height, color, flooring, material, etc., may also define areas with great clarity, while not impeding continuity of the larger space. In most parts of the building, then, subtle transitions between hierarchical levels of privacy are possible.



### MAJOR FOCUS OR REFERENCE

The four commercial establishments evaluated had one outstanding common characteristic. Each is designed around a skylit central space which served as a centripetal focus for the public network. From any point it is possible to refer directly to the larger, brighter space for orientation. The resulting clarity of organization is a major guiding element in these buildings. In the Chestnut Hill Mall and the Crimson Galleria in particular, the user is able immediately to discern his destination, because the shops enfront this main focal space and--with their distinctive graphics--can be immediately recognized.

An attempt was made in the design of the HCHP Cambridge Center and the RIGHA building to provide a central skylit space, but in the former it is in no way focal. It cannot even be seen from much of the public network, and it does not visually connect the different levels with nearly the amount of information provided in the retail facilities. The RIGHA building is a substantially bolder attempt to provide a major focus, but the central skylit atrium/court falls short of that goal because its use is limited to climbing from one level to another. It is not a place to be. Furthermore, the services (waiting rooms) do not address the court, but rather the circulation surround-

ing it--from which they are separated by doors as well.

The indoor pedestrian shopping street is a design concept which works exquisitely in retail environment. It is a public network with utmost clarity. Yet its use, even in modified form, appears not to have been attempted in the context of the health facility. As a major focus for a public network, it has several outstanding advantages. Among these are comfort (a climate-controlled, indoor-outdoor space which affords textures, plantings, and natural light conducive to well-being) and, of course, guidance. Many of the desirable attributes which are described below are also at home in such a scheme.

## WAITING SPACES

In the typical office building, whether private practice, group practice, HMO, or hospital outpatient facility, waiting occurs in waiting rooms. The rooms may be large, as when shared by several practitioners; or small, as when serving a single sub-specialist. In the crowded hospital outpatient department chairs may spill out into the lobby or hallways. The waiting rooms may be tastefully and even expensively furnished, or they may be spartan. They have one thing in common: they are designed to accommodate the entire queue expected to be waiting for a given physician or service. In the context of network analysis, they are uniformly a part of the semi-private office space, more or less sharply divided from the public network. And when each office has a waiting room large enough to accommodate the largest queue expected, 95% of the time, a great deal of space is needed.

Furthermore, the use of the waiting room affords no alternative to sitting in a chair and reading a six-month old issue of Newsweek. The obvious question is whether any waiting options are desirable. The answer, at least for visitors who accompany patients to the facility, would certainly appear to be affirmative. These souls will often be found sitting outside the doorway

or wandering through the corridors in their efforts to escape ennui--and perhaps to avoid proximity to the dreaded physician. For patients who will be seen promptly, a seat near the entry to the private network is desirable. But when there will be delays, or when the doctor is tied up at the hospital or called out on an emergency, or when the patient arrives early, sitting in a waiting room chair can be agonizing. Another common scenario is that in which a patient is referred for a lab test, X-ray, or EKG and then is to return with the report to the referring physician. In this case, there are three separate waiting episodes involved, all connected by the public network.

It may be seriously questioned whether at least some of the waiting space should be part of the public network. Certainly, not all waiting, as we have seen, demands privacy; and true privacy simply does not exist in any waiting room with more than one chair. By aggregating a substantial part of the waiting space within the public network, though, an enlarged and more pleasant major focal place becomes possible. If the queue in the individual waiting room were to become too long, spillover into the public network would be comfortably accommodated. In fact, the office receptionist might simply inform the patients at the end of the queue that a

twenty (or thirty or sixty) minute wait is anticipated and to return to the smaller, more private and adjacent waiting room at that time. To go a step further, a number of means are possible--including television monitors such as airports use; or a numerical call schedule like those at the delicatessen section of the supermarket; or even a small electronic personal paging device--by which patients could be informed at a distance from an office that the doctor (or X-ray tech, etc.,) is ready for them.

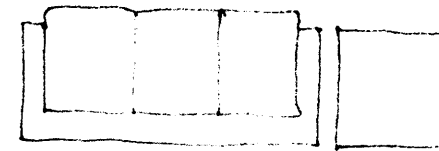
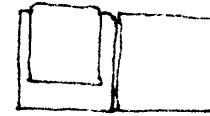
If it is accepted that waiting space can be removed from the waiting room, it may then be helpful to consider a typology of waiting spaces:

1. The chair, the unit of "seating" is the basic building block from which most "waiting areas" are composed. It rarely finds a place for itself alone, except in small ante-chambers or examining rooms.



2. The simplest "furniture arrangement."

3. The sofa implies great familiarity among its occupants, and therefore is more common in cocktail lounges than professional buildings. It might occur once or twice, however, as a pleasant alternative to the norm.

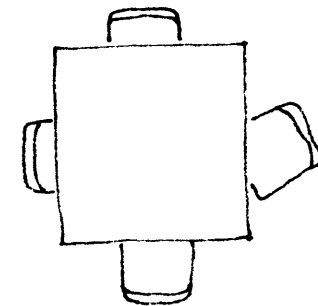


4. A typical modular "waiting room" assemblage.

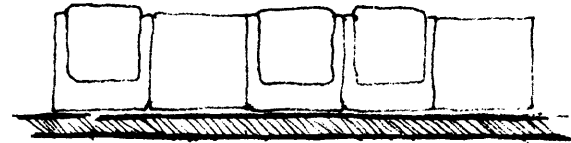


5. A different relationship between table and chairs, usually seen at an edge.

6. Seats around a table generating activity, such as game-playing or dining.

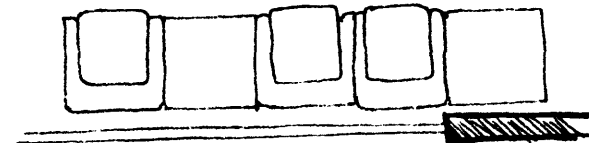
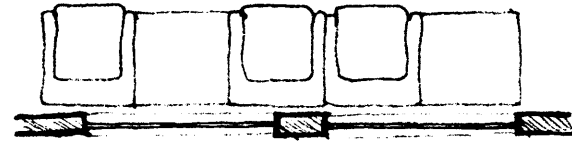


1. The Modular grouping against a wall is the prototypical seating arrangement. Anxiety is diminished by the knowledge that one's loins are protected, and casual observation will reveal that people choose to sit along the edge, with their backs to the wall. The view here is into the room.

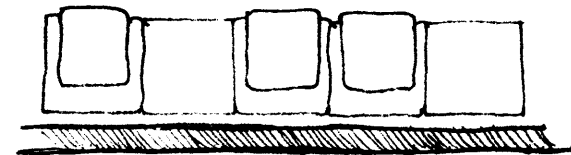
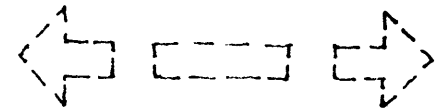
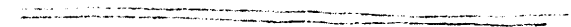
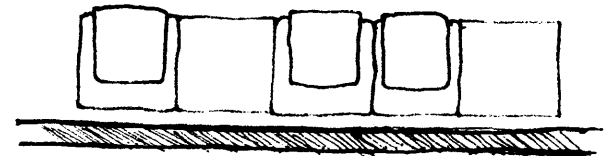
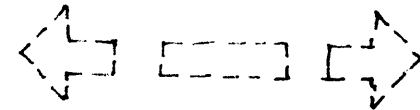
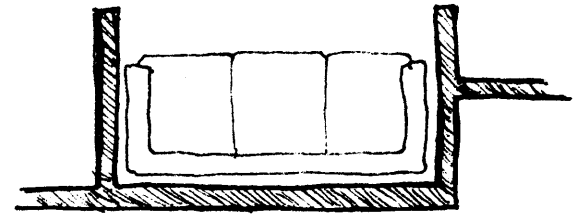


2. Sitting against a window permits entry of natural light. A view to the outside is available as well.

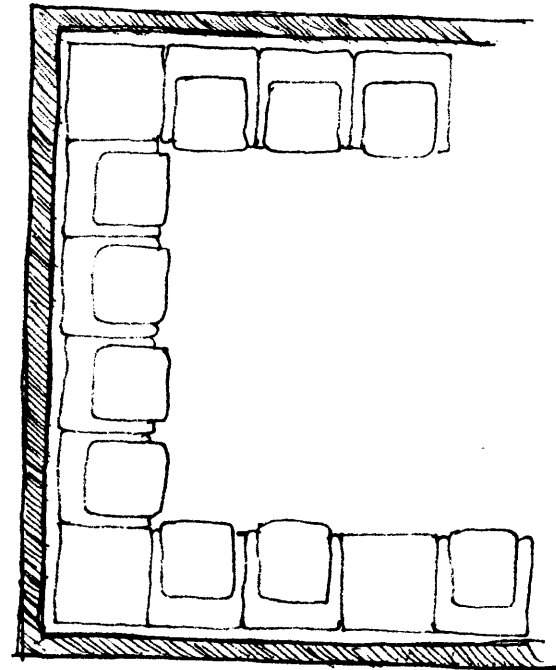
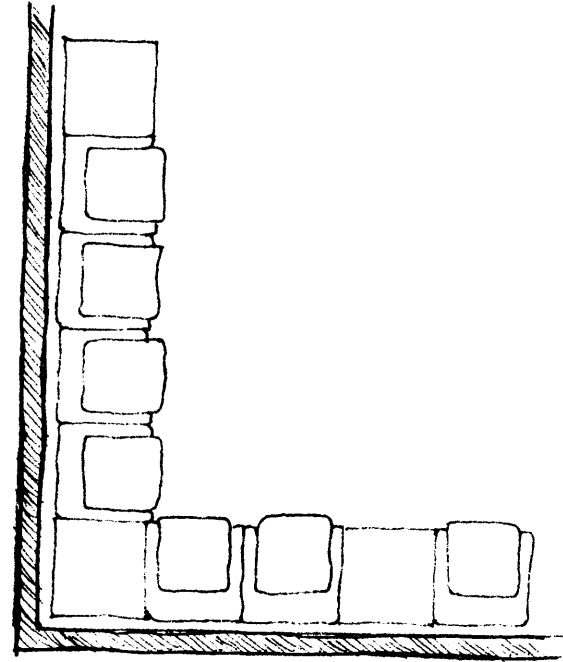
3. Seats against the rail of a balcony or terrace are more common in residential context than a commercial one. Feeling is like sitting against a window but more open.



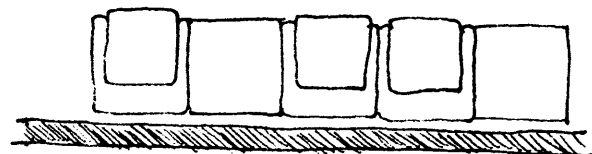
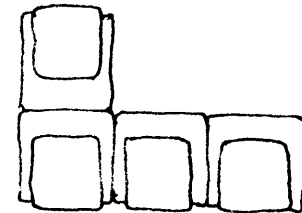
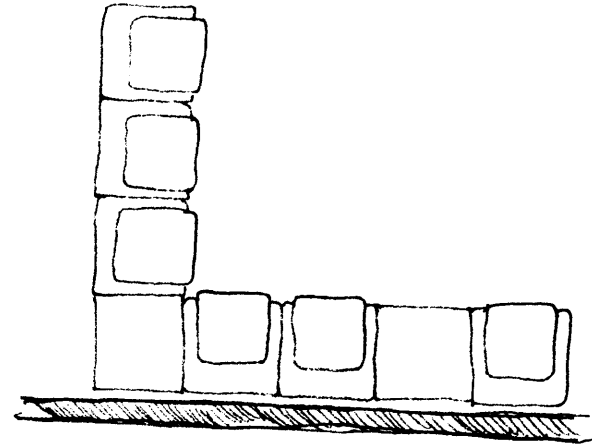
4. Alcove--not necessarily sofa-sized or filled.
5. Seating alone one edge of a corridor. Usually a response to an unforeseen need for waiting space. Dreadful because one's only view is of passers-by and the wall beyond and one feels on display.
6. Sitting along a corridor across from an open balcony railing gives a major diversion to seated occupants as well as passers-by. With plants or partial closure at either end of the seat grouping, the experience approaches that of sitting in a sidewalk cafe.



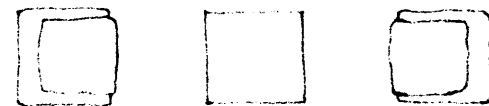
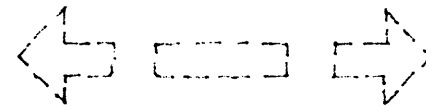
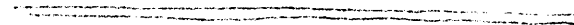
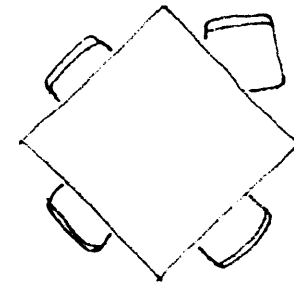
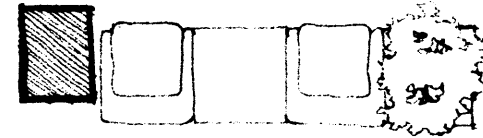
1. A common and adequate arrangement, it permits a view out into the room.
2. A less satisfactory design. Occupants of seats directly opposed will studiously avoid looking at each other and will bury their noses in their magazines.



3. Seating which turns a corner is an effective form of partial closure, of enclosing space without the use of walls. Care must be taken however not to seat people with their backs to a space which could be perceived as threatening, e.g., a pediatric waiting area.
  
4. An arrangement frequently used to fill a square room labeled "waiting room" or an architectural drawing. The attitude is confrontational, and often people often must sit with their backs to the center of the room.

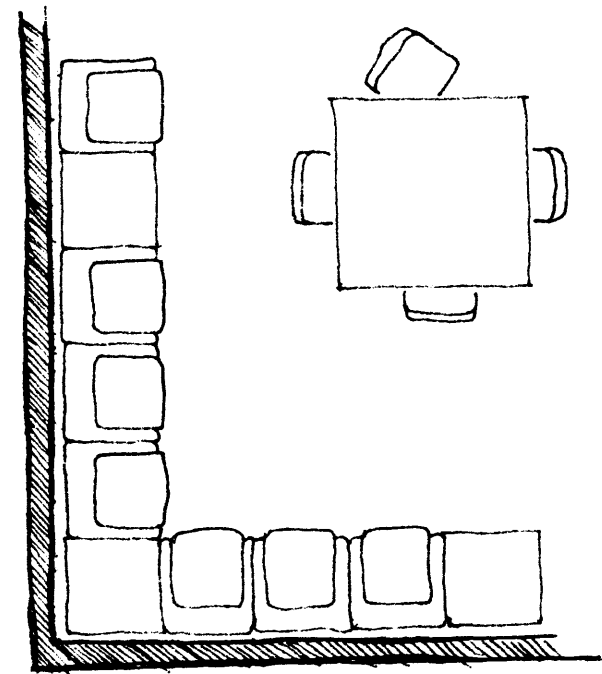
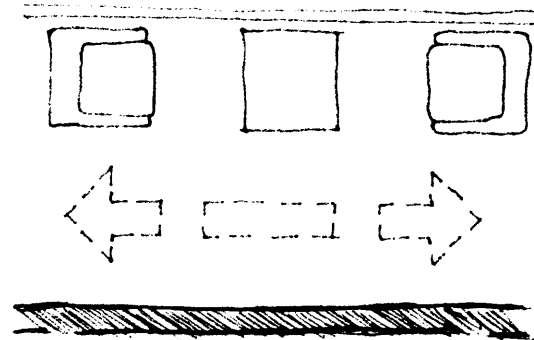


1. Seating within a "zone of columns" may help to define a circulation path while providing a view toward an open public space.
2. Table and chairs at the edge of a balcony--a fine place to wait, especially when dining as well.
3. Seating along a circulation path opposite a balcony railing (or window)--avoids confrontation with passers-by.

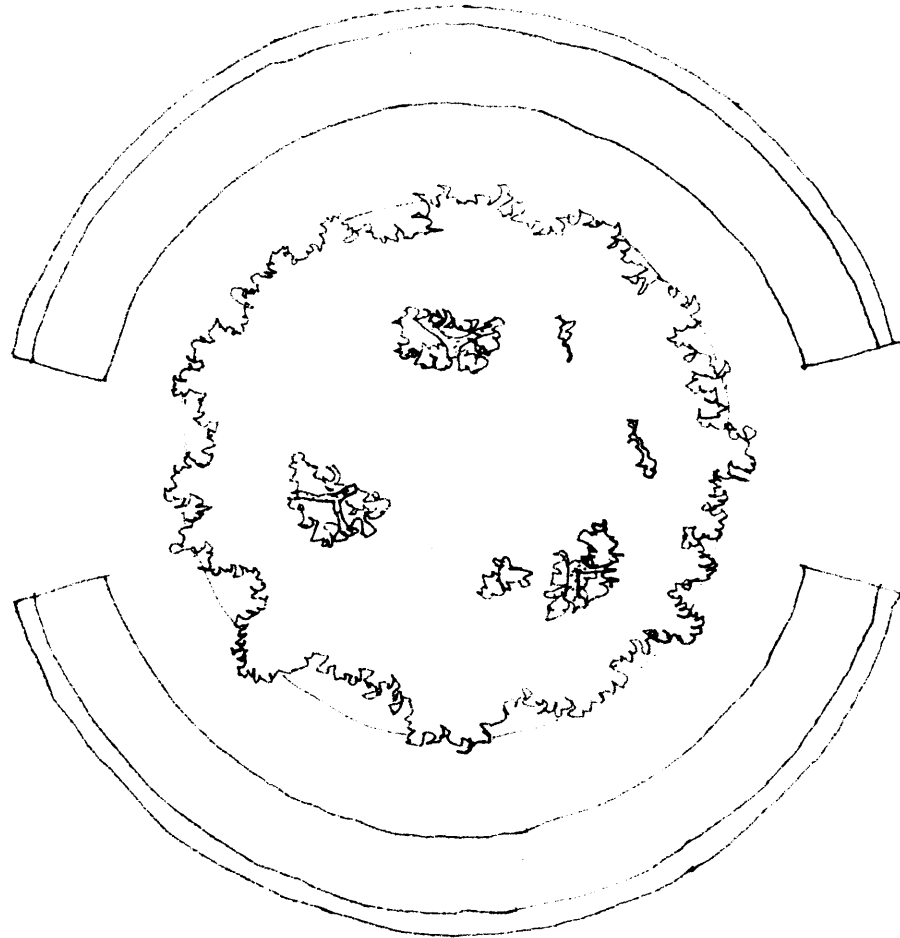


4. Seating adjacent to the railing, and becoming in effect part of the edge.

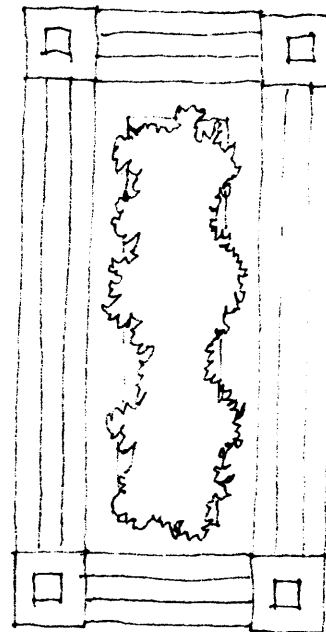
5. Tables and chairs surrounded by standard seating for which an object of interest is provided for by a pediatric waiting area.



1. A bench around central planting (or fountain, etc.). A restful oasis in a busy active pedestrian area, common in shopping malls.



2. The reverse. The object of interest here is the external environment rather than an internal focus.



The foregoing was meant simply to suggest some of the infinite permutations, combinations, and adjacencies with which chairs, benches, etc., compose waiting spaces. In no way, however, need waiting posture be limited to sitting. The next section treats some of the other options.

### DIVERSION

When discussing the type of patient using ambulatory care facilities, we mentioned that they often welcomed the opportunity to avoid dwelling on their state of health. A closed, strictly semi-private waiting room fails to provide such relief, except insofar as it might have a window out of which a seated patient can gaze (though usually only if they look over the heads of those seated under the window). A bright, cheerful major focus in the public network offers a welcome respite from the waiting room blues, particularly if it is bustling with enough activity for a patient to gain the privacy of being lost in a crowd. He can then either sit in a quiet alcove watching the people go by, or perambulate through the space himself.

In order to make the space more active, there should be a way of drawing people to it. Architectural "pizazz" alone is unlikely to be sufficient. There must be a special use which transforms the space into something unique. One way in which this could be

done would be to allow a part of the public network to become a mixed-use environment. A few small-scale retail establishments (pharmacy, book store, card shop, etc.) could radically alter the character of the public space, similar to but more expansive than what happens near a hospital gift shop, or the flower shop in the MGH corridor. Not only would a focus be provided to increase the activity of that portion of the public network, but the diversion--both for patients and the visitors who accompany and must wait for them--would be greatly enhanced. What is more, in a moderately large facility, there would be ample traffic to justify to a merchant the rental expenditure.

The idea of providing diversion for users at ambulatory care facilities leads again to the concept of the indoor pedestrian shopping street as the major focus of the public network. Further support for this concept is provided by the need to provide the user with:

## REFRESHMENT

All the retail-commercial establishments studied have restaurants, and three of the four have open-air cafes enfronting the public way. By contrast, the Moshassuck Medical Center has an unabashedly hideous vending machine room and RIGHA and HCHP-- Cambridge Center have small and rather concealed vending areas. It is not uncommon, particularly while waiting for test results, or a prescription to be filled, or consultation with a specialist, for a patient to become hungry. A decent place to dine helps greatly to fill just such slack time and is a welcome treat after completion of an exam as well. In addition, particularly if the facility draws patients from their place of employment rather than their homes, they may find it convenient to combine a lunch-hour trip to the doctor with lunch in the doctor's office building. Although an ambulatory care facility would have to be of very substantial size indeed to be able to support a complete restaurant, a small coffee shop (perhaps like those located in Veterans Hospitals and staffed by the blind) would be a welcome addition.

EDUCATION

Related also to the issue of diversion is that of education. There are a number of ways in which the public network in a professional building can surreptitiously educate the user. Although such information must be sugar-coated to be palatable, it can unquestionably be provided in acceptable form. The historical displays at Joslin Clinic are exemplary: they are intriguing, attractive, and readable. Exhibits which illumate more current public health issues could well claim spots along the public way, providing diversion as well as information for users of the building.

Additionally, some services could be given storefront entries with display windows. For example, an automated blood analyzer could be shown functioning in the window of the laboratory, informing users about at least one aspect of the service to be provided. In keeping with the desire to avoid discontinuities of space, such a means of providing information could ease the transition from public to semi-private, while simultaneously enhancing patient understanding.

## FAMILIARITY

Before I evaluated the medical and commercial environments described above, I thought that familiarity was a critical quality for a health facility to possess. My feelings remain, but they have been modified greatly. The Hyatt Regency Cambridge is so unfamiliar, yet so well appreciated and clearly understood by its users that my conception of familiarity had to be modified.

It certainly couldn't mean "similar to most professional buildings", of which the Moshassuck Medical Center is certainly typical. Nor could it mean "domestic", for the successful buildings evaluated are anything but that. In the context of the ambulatory care facility, familiar applies only in terms of what it recalls. In other words, the Hyatt may recall a multi-level indoor park, and the Mercantile Wharf Building an indoor street. Both contain familiar elements, such as brick arches, ponds, street lights, and trees. The familiarity of their composition, whether in the professional or commercial structure, is irrelevant if clarity of organization and the other needed attributes are present.

## ADJACENCIES

Services in the ambulatory care facility do not have the same complex and interdependent relationship that hospital services do. The relationship which is critical is that to the public network, especially the entry. In addition to an information desk, certain functions appropriately occupy space along this network. They are the "medical collectors", those areas most intensively used by the greatest number of patients: X-ray, laboratory, EKG and pharmacy. Certainly if there is a pedestrian shopping street, one or more pharmacies belong here. X-ray and EKG, also, should be part of--or at least enfront upon--the public network. The laboratory specimen procurement section certainly belongs here as well, while the specimen processing section may be elsewhere, as long as it is connected with the procurement station by e.g. a pneumatic tube.

There are two reasons why these "collectors" should be part of or adjacent to the public network. The first is that they encourage activity in this area, promoting diversion and a sense of privacy in numbers. The second is that, because they are often a part of a visit to the building, they should be encountered on the way in. Their location will then be registered in the users mind for easy retrieval should a lab test, X-ray, or drug be required on the way out.

## SUMMATION

User needs demand a built response quite different from the current norm in ambulatory facility design. It is not an edifice reeking of sterile professionalism, nor is it a random collection of offices and corridors. It is rather an hierarchical grouping of semi-private and private spaces, connected by a professional network and related to a public network carefully contrived to include bright, active areas as well as quieter, more private ones; and composed with an organizational clarity which precludes confusion. In order to test this solution, the design of such a building was undertaken. It will be presented in the next section.



# **the blackstone polyclinic**

## PROGRAM

The program is an outgrowth of one adopted by Professor Imre Halasz in his Fall, 1977 architectural design studio, for a mixed-use commercial-retail facility. The site is identified as Boston Redevelopment Authority parcel E.96. It is located in the Blackstone Block, one of the oldest and most historically significant collections of buildings in Boston. It is directly across Hanover Street from the incredibly active Quincy Market, and it links Creek Square (to be developed as the heart of the historic neighborhood) with the markets to the south. It also links the markets to the major hotel planned to the north. Thus it must have a pedestrian spine linking two centers of activity; a requirement most conducive to the development of an active public network.

Two dilapidated masonry buildings of dubious architectural merit currently occupy part of the site. I have elected not to retain them. Additionally, a thoroughly nondescript, two-story structure stands on the corner adjacent to the site. Because one of the proposals submitted to the BRA included a negotiated settlement to purchase and raze that structure, I have assumed that the entire corner is available for new construction. The facility

to be constructed would house a comprehensive group practice, probably an HMO, called the Blackstone Polyclinic. It would require 60,000 square feet of space and provide medical, dental, surgical, pediatric, obstetric-gynecologic, and psychiatric services. Administrative and secretarial/transcription offices would be required, as of course would X-ray and laboratory. Spatial requirements were excerpted liberally from the program for the Rhode Island Group Health Association building in Providence. Other goals were taken from the preceding sections.

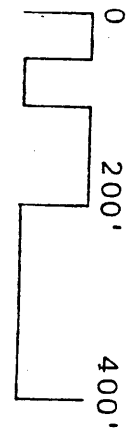
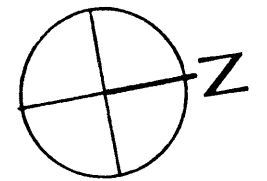
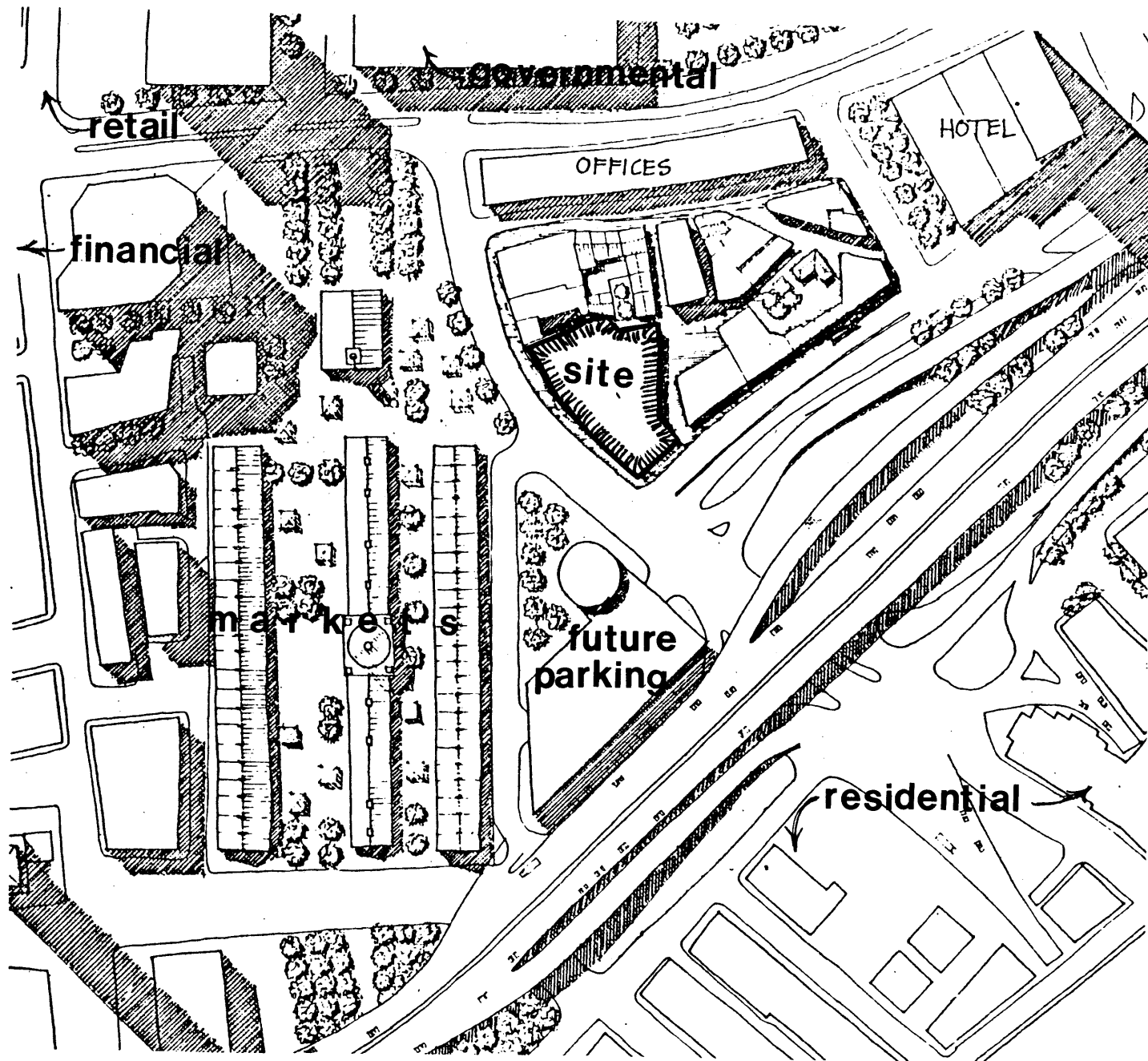
Although the medical use was imposed upon the site for the purposes of testing by design, the conclusions drawn in the foregoing analyses, it is not farfetched. In fact, one of the submissions to the BRA for development of E9-b was a medical office condominium. A number of organizations, notably the Group Health Cooperative of Puget Sound, have found that their patients often prefer to make their doctor visits from work than from home. Thus in addition to serving the needs of North End residents, the clinic could draw patients from nearby retail, financial, government, and Quincy Market districts. Practitioners could care for in-patients at, and be drawn from the staff of, the Massachusetts General Hospital a few blocks away.

Moreover, public transportation by MBTA is convenient and construction is about to begin on a parking garage across the street.

# the blackstone polyclinic

context

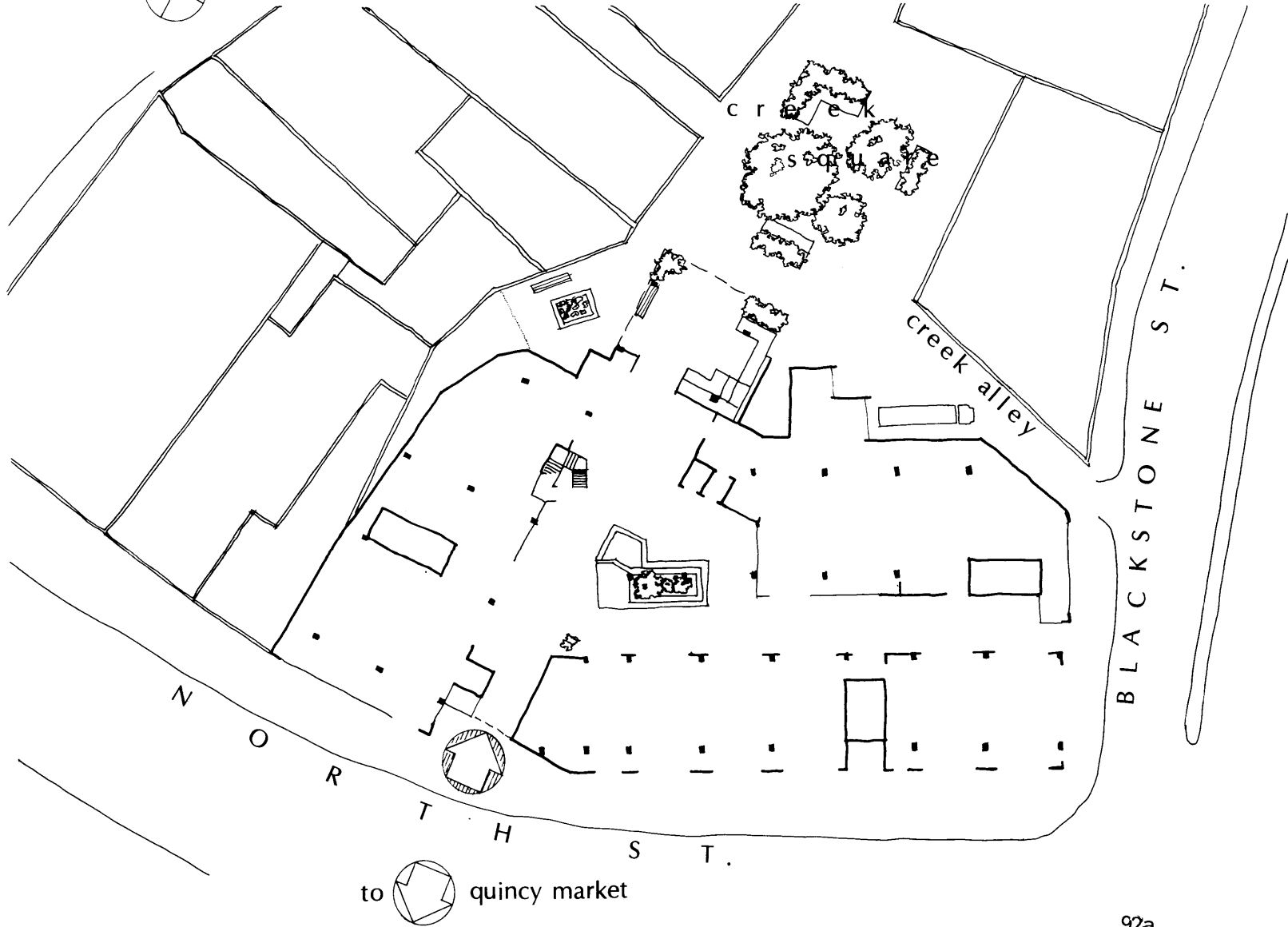
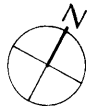
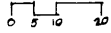
1" = 200'



# **the blackstone polyclinic**

**site plan**

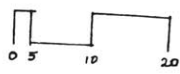
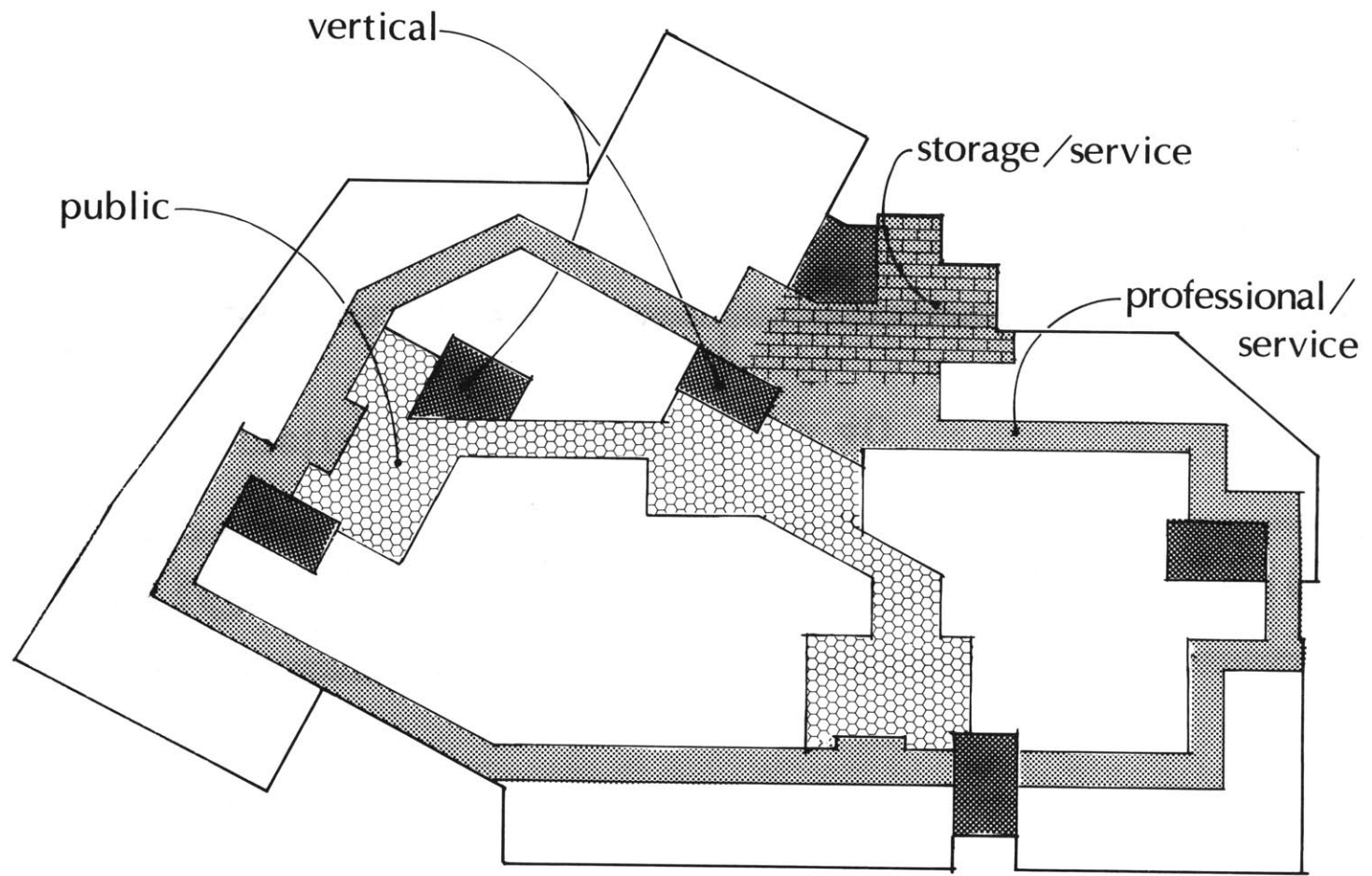
**1" = 40'**



# the blackstone polyclinic

network diagram

1" = 40'

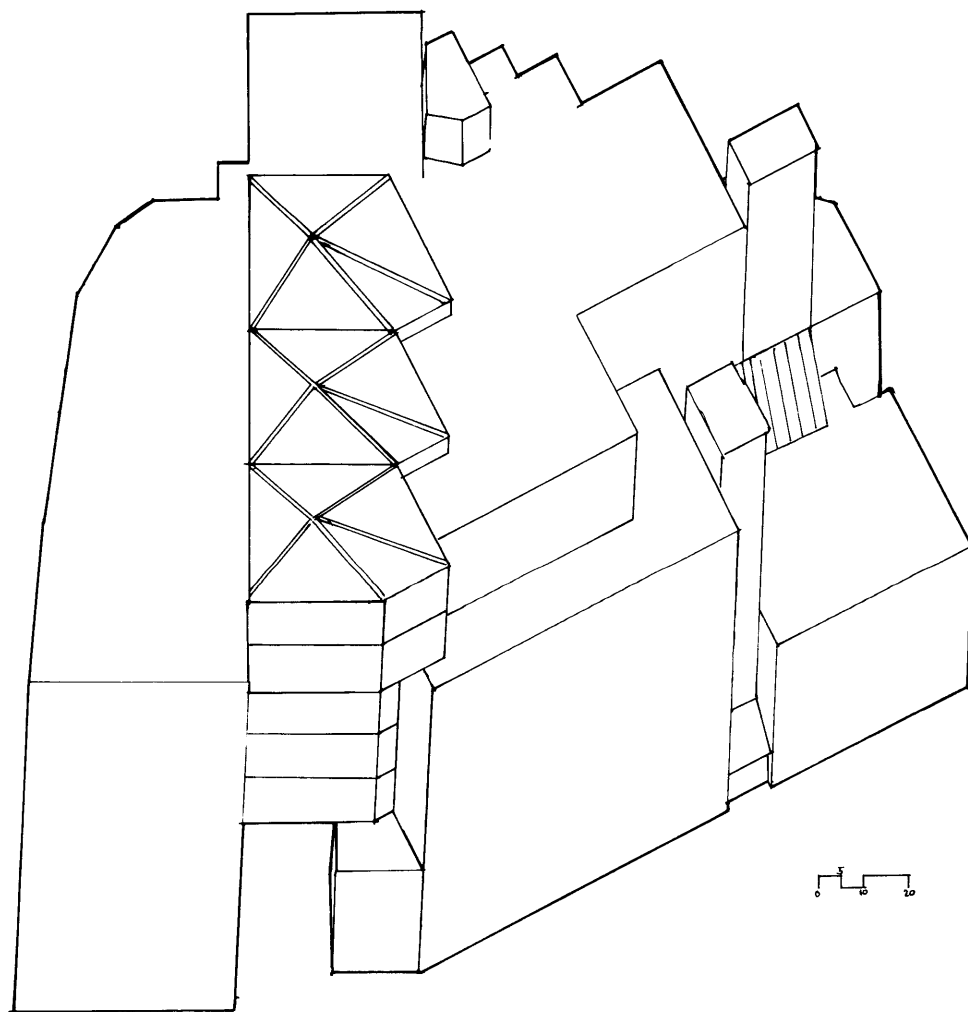


93a

# the blackstone polyclinic

axonometric (for massing)

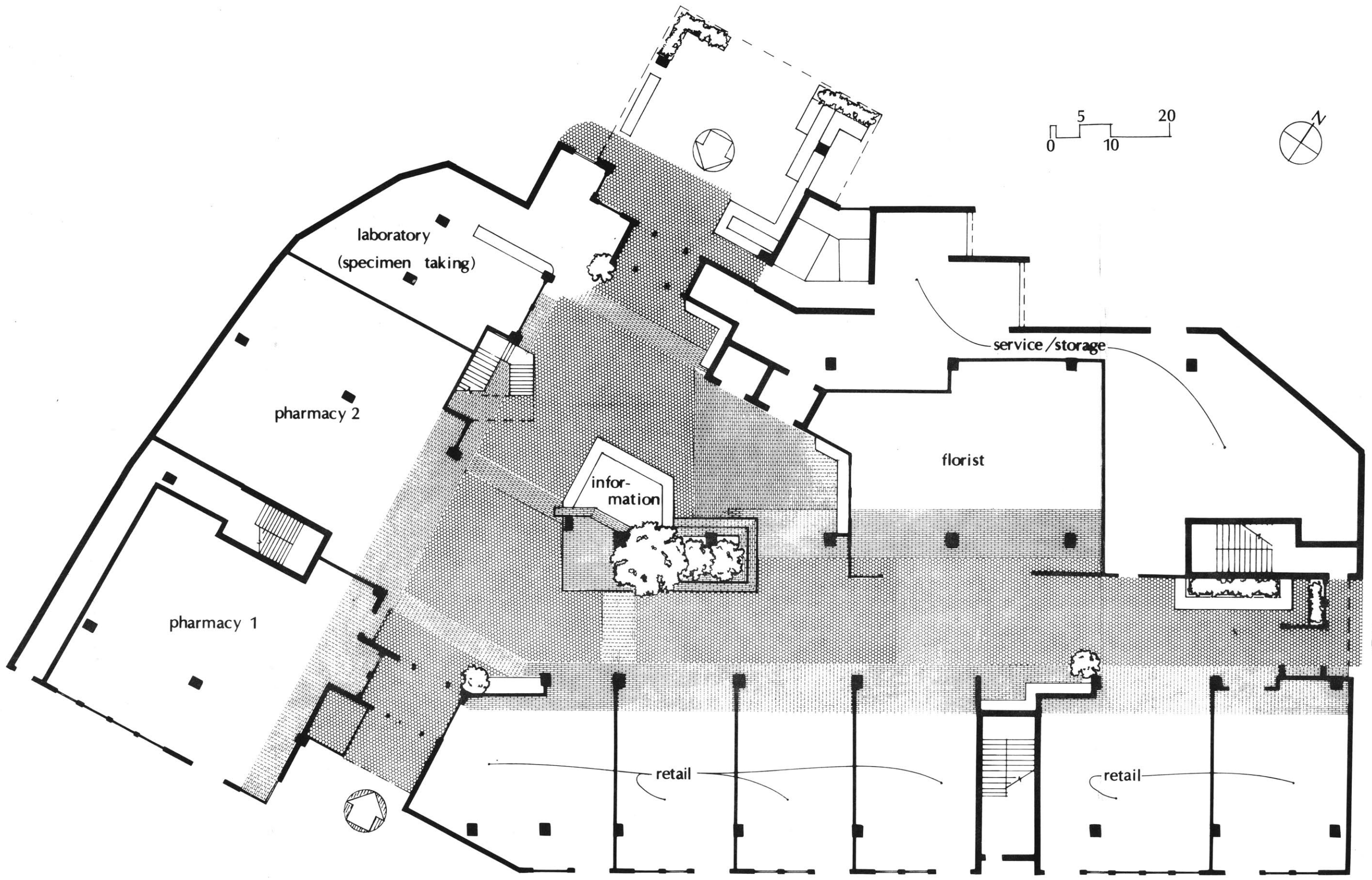
1" = 40'



# the blackstone polyclinic

ground floor plan

1" = 16'

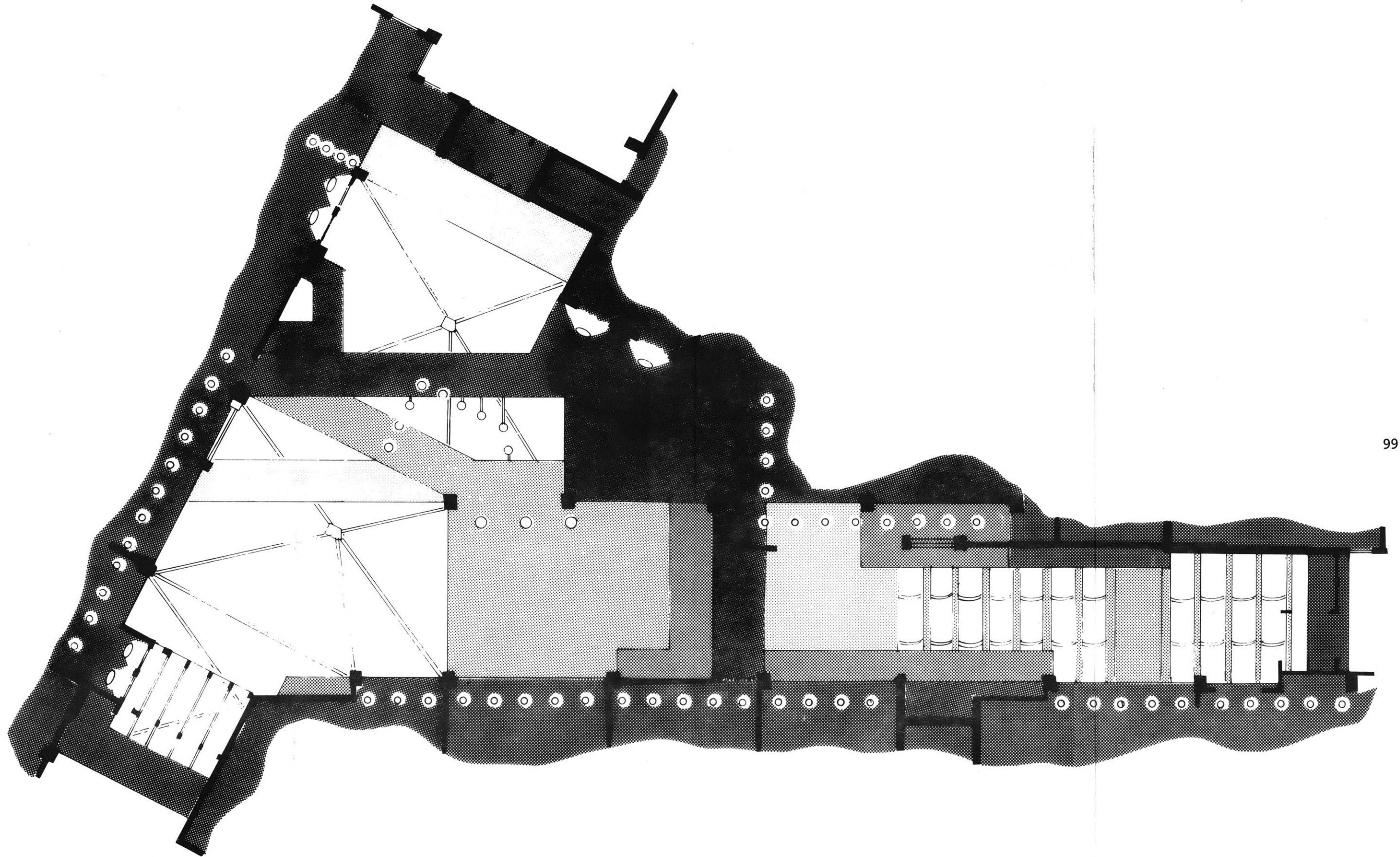


97a

97b

# **the blackstone polyclinic**

**reflected ceiling plan**



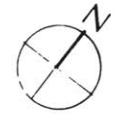
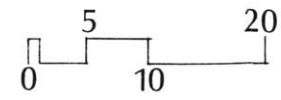
99a



# the blackstone polyclinic

second floor plan

1"=16'

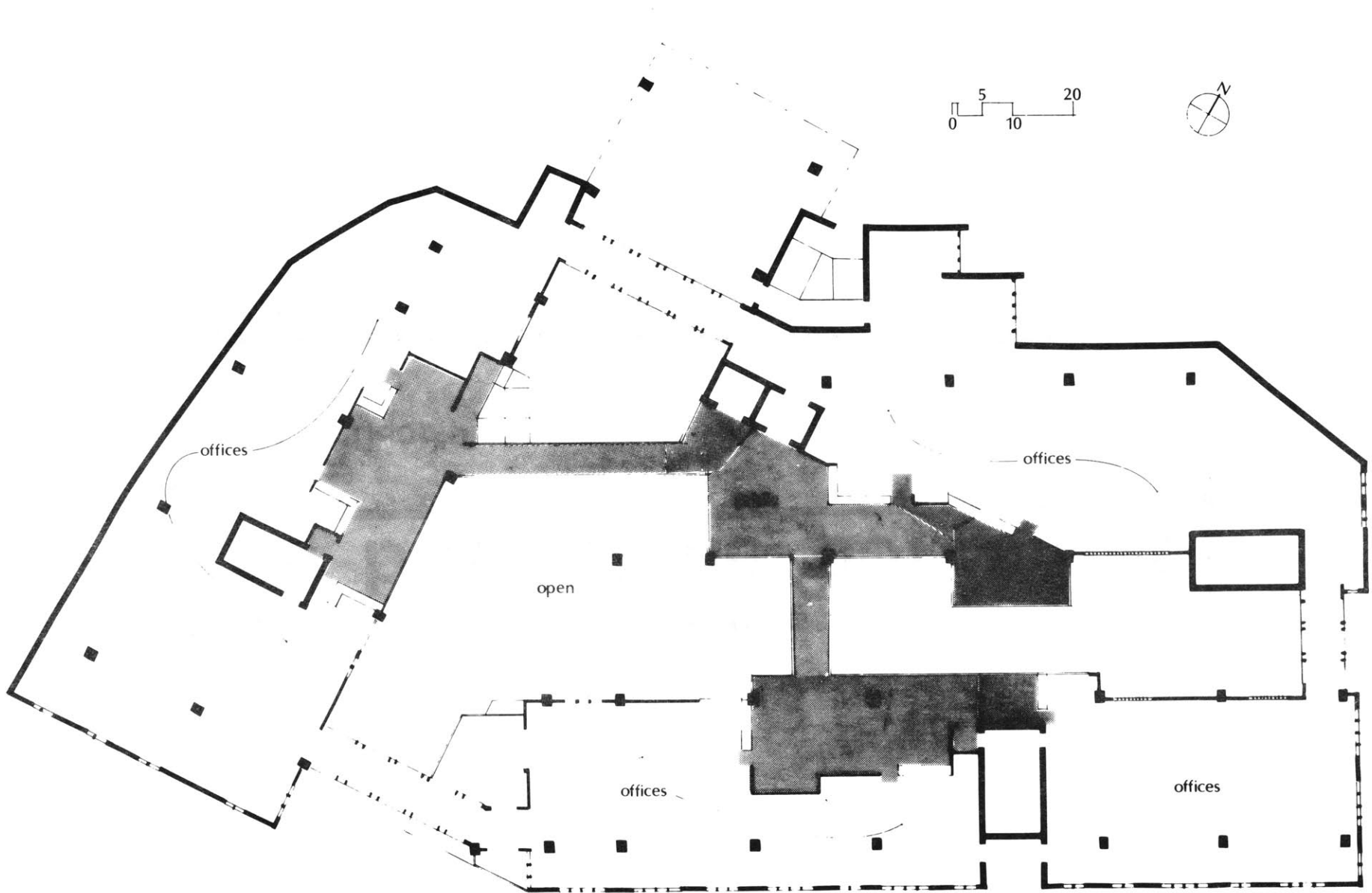


101a

101b

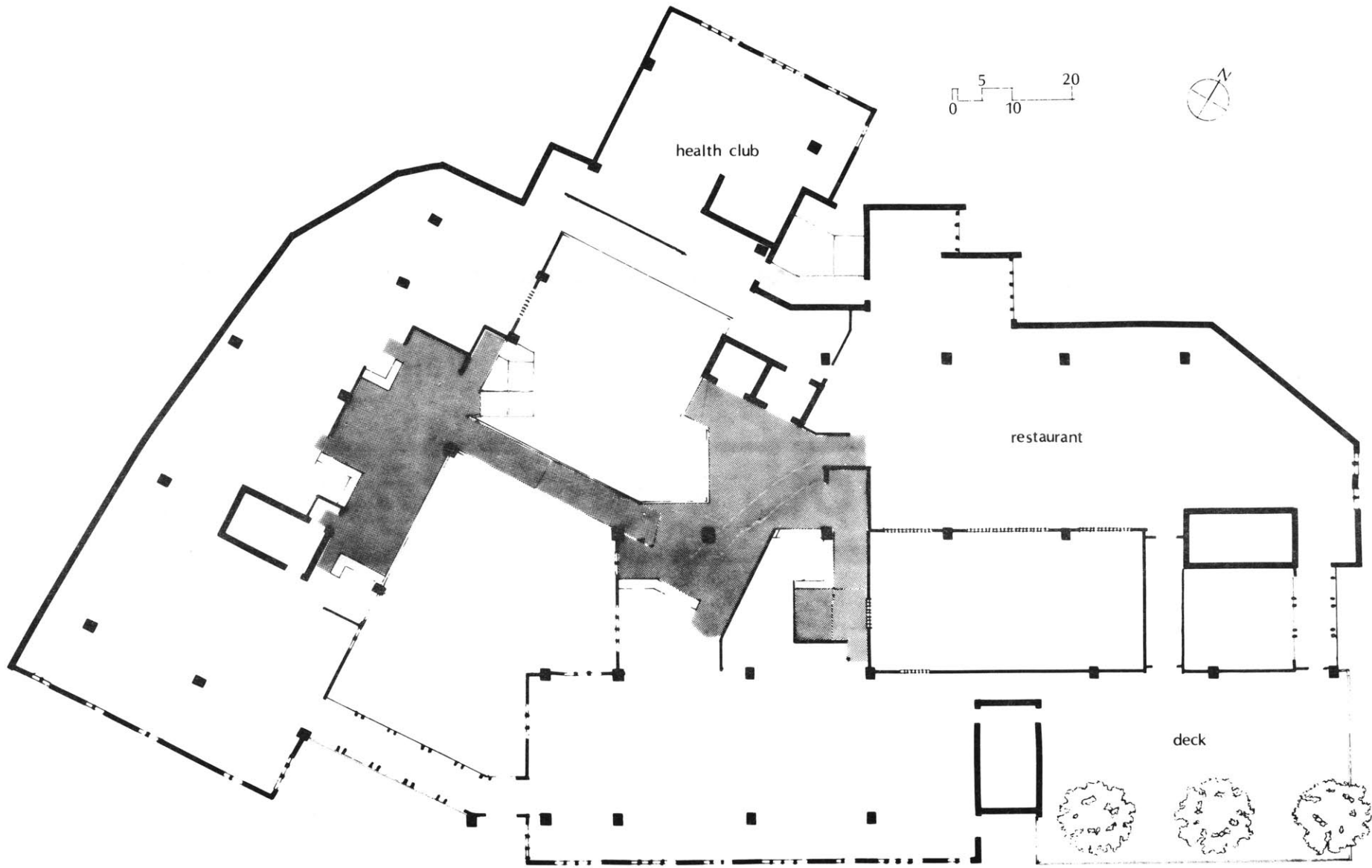
# **the blackstone polyclinic**

**third floor plan**



# **the blackstone polyclinic**

**fourth floor plan**



health club

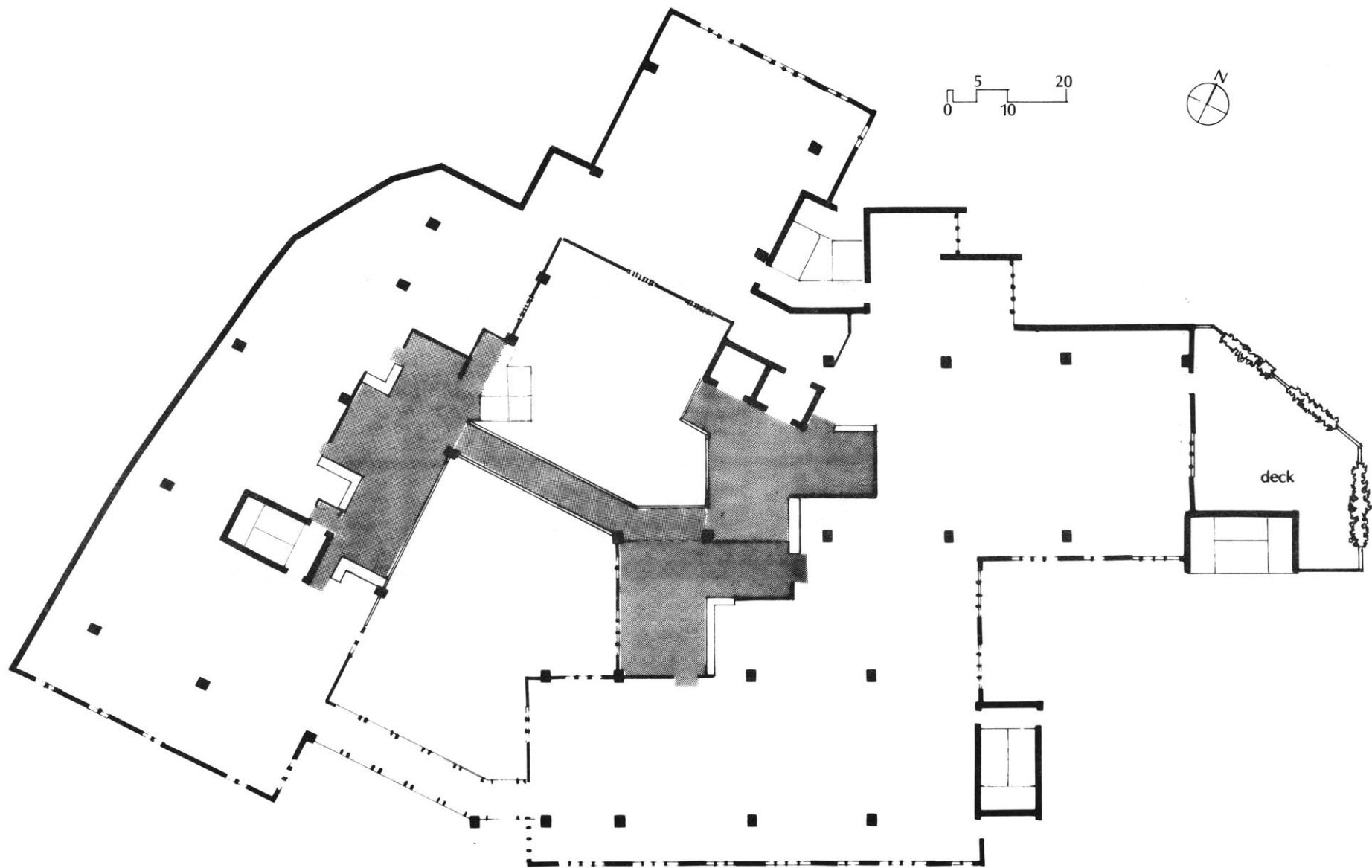
restaurant

deck

105

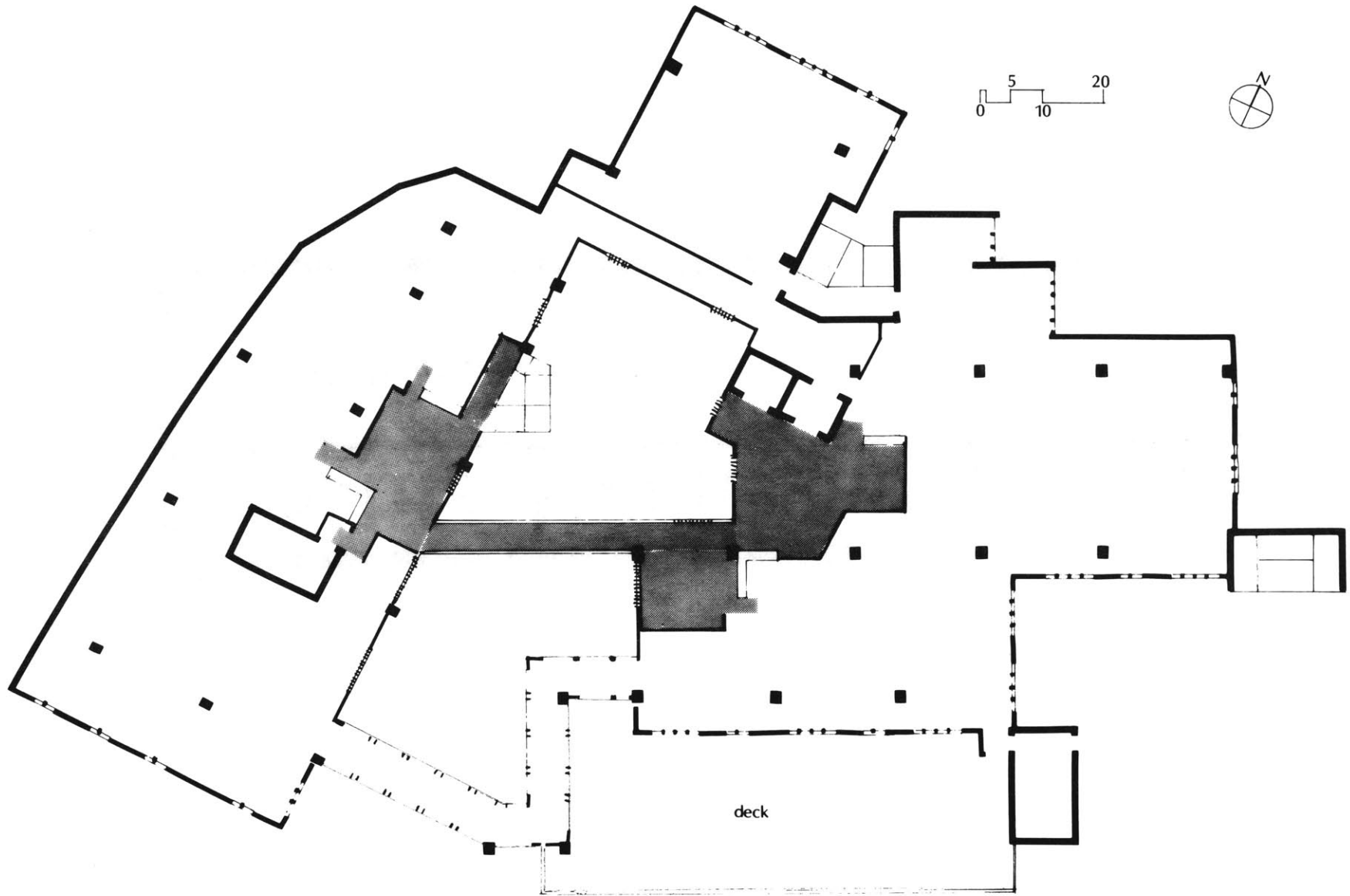
# **the blackstone polyclinic**

**fifth floor plan**



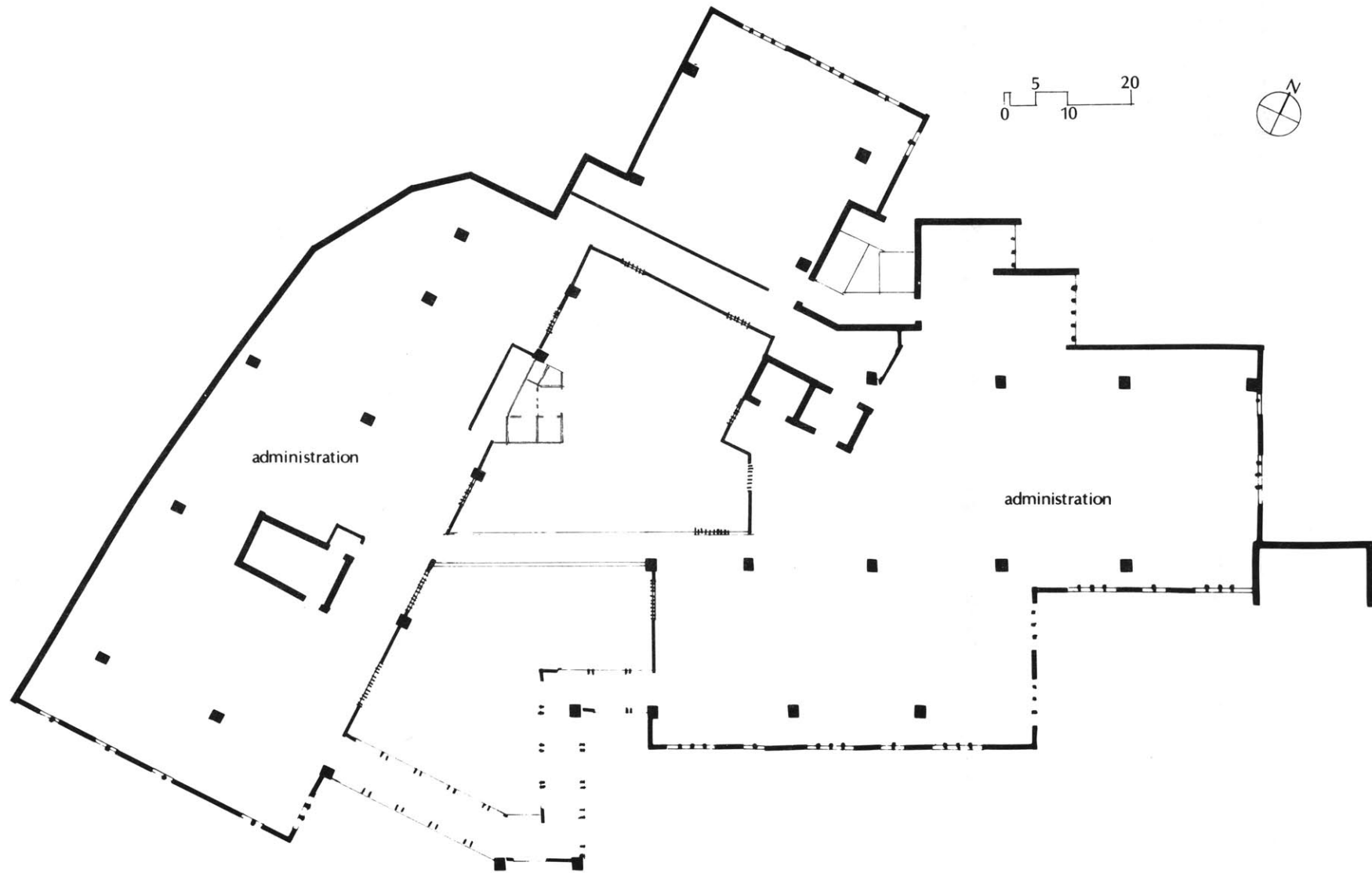
# **the blackstone polyclinic**

**sixth floor plan**



# **the blackstone polyclinic**

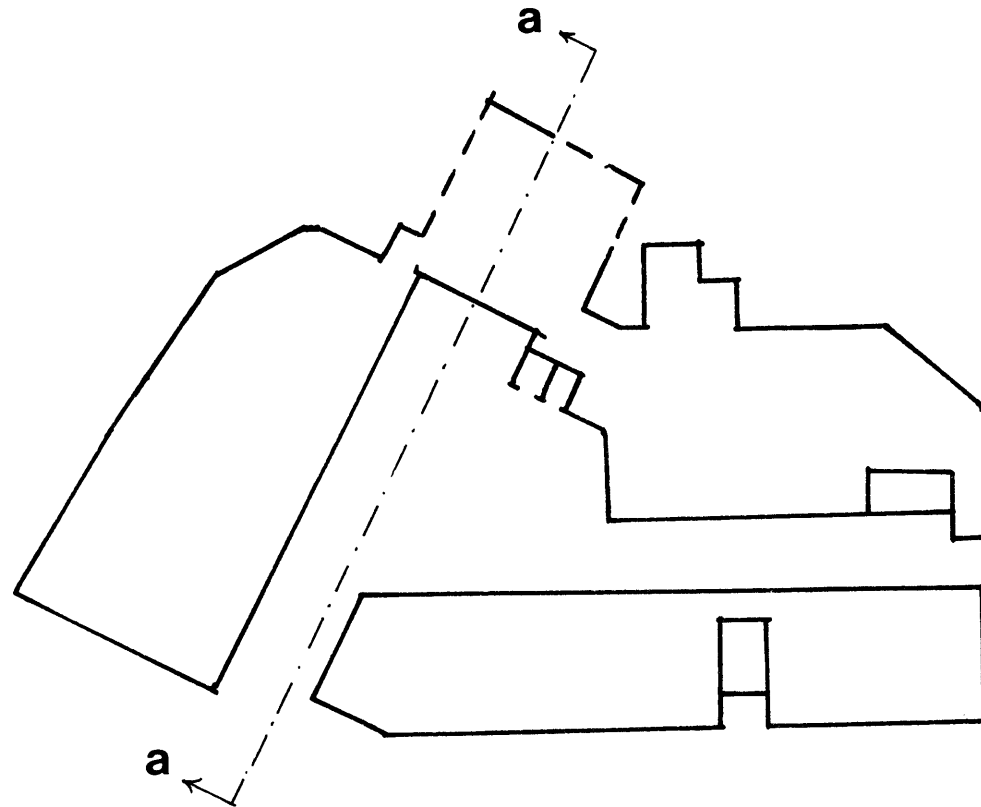
**seventh floor plan**

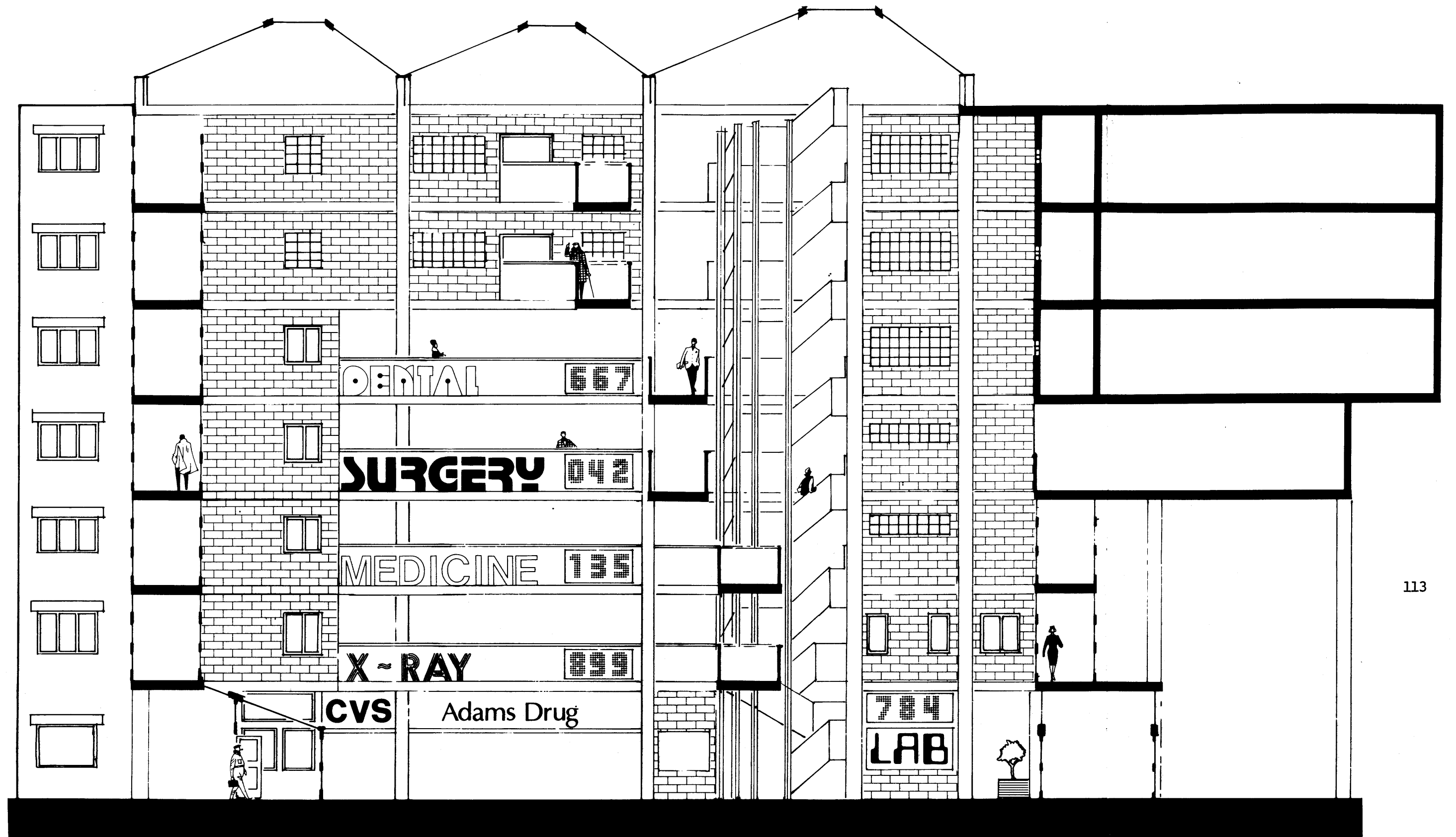


# the blackstone polyclinic

section a-a

112





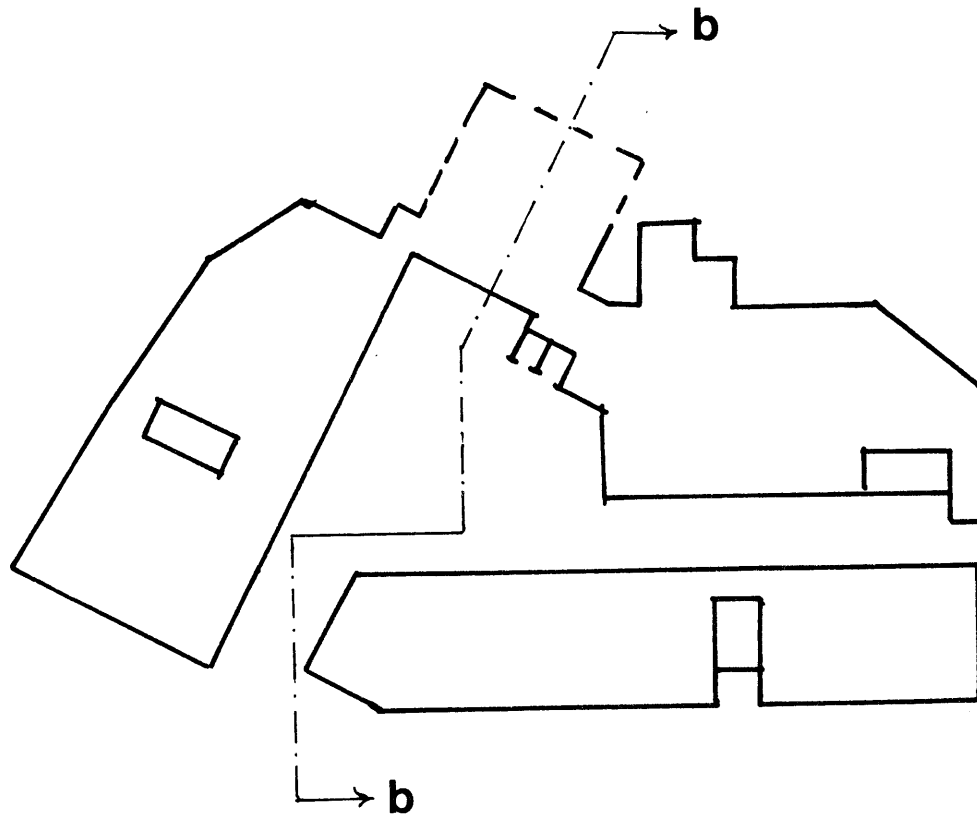
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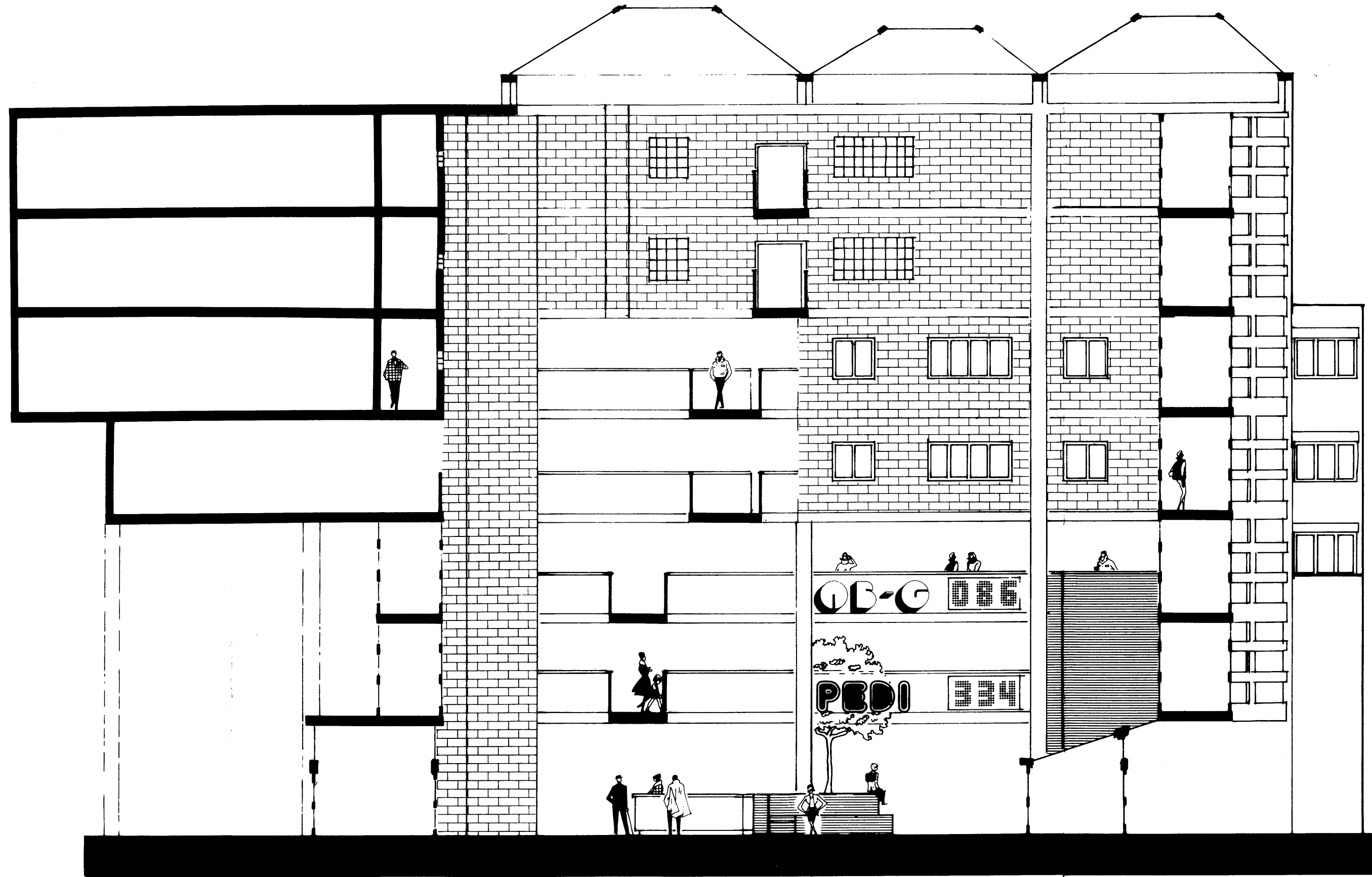
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# the blackstone polyclinic

section b - b

114





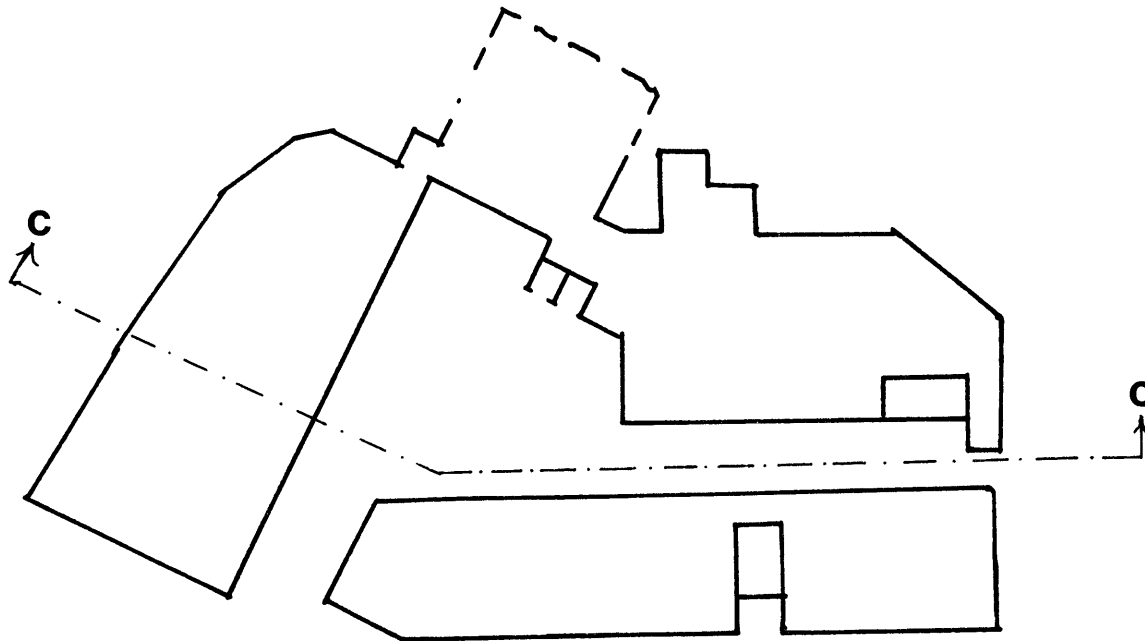
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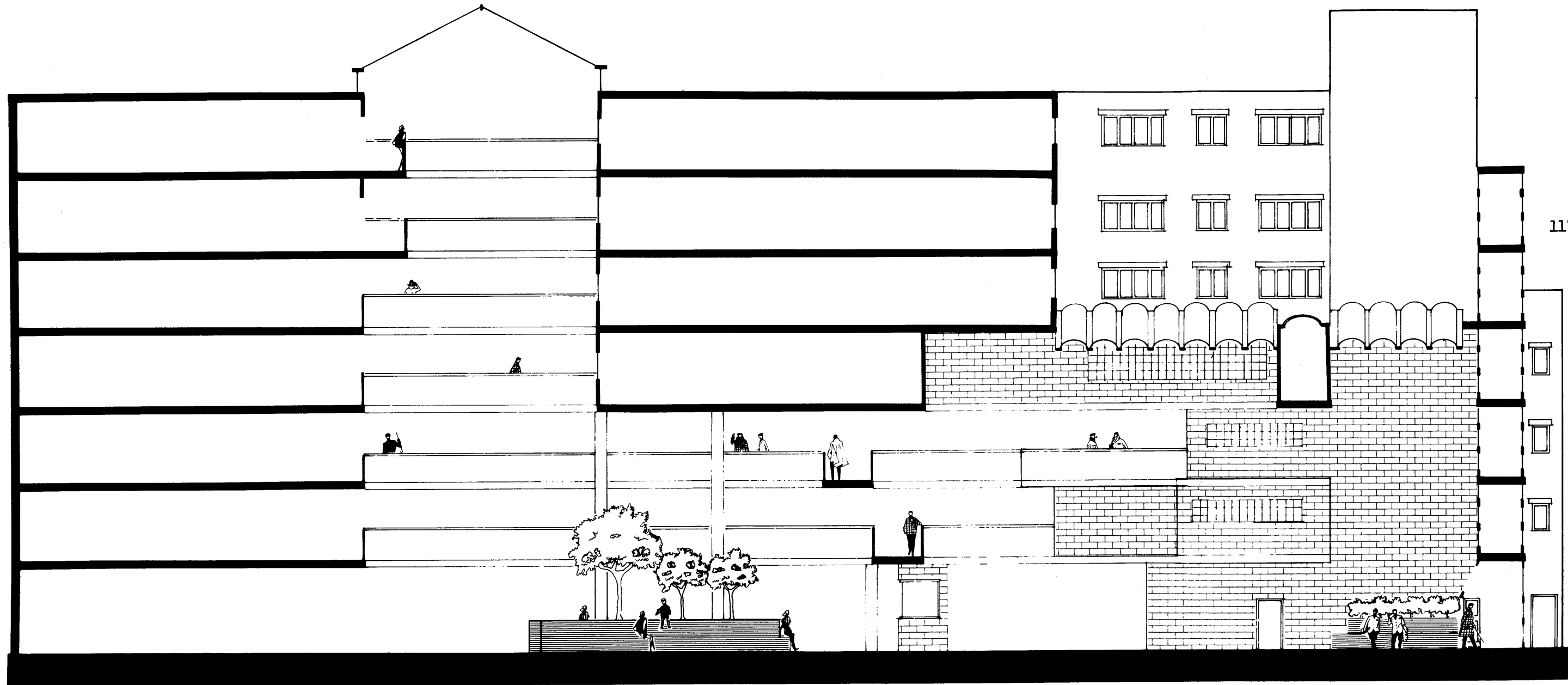


# the blackstone polyclinic

section c – c

116





117a

117b

## DISCUSSION

Because the level of definition reached herein remains quite schematic, and because some of the choices which were made are not obvious in the drawings, I will attempt to explain why some of the decisions were made.

Initially the building was conceived as one strong and one weak mass, delineating indoor-outdoor (enclosed, skylit, heated) pedestrian street. In an effort to occupy the entire site with a single building, the immediate problem was bringing natural light into the interior. Because Hanover Street curves the two general masses must repond to different directions. The public spine occurs where the two geometries meet. When the major axis was found to be inadequate, a minor axis was added. The programmatic requirement for a pedestrian easement connecting Creek Square with the Quincy Markets became a major element in generating the rest of the building.

The decision to design an ambulatory facility for a group practice was made rather late during the design phase. Although in most specialty areas it is possible for individual practitioners to have their own secretary-receptionists, the amount of pooled semi-private waiting space

virtually precludes participation by solo, fee-for-service physicians. The attempt to use distinctive graphics would also break down if too many (individual doctors') names were used. In effect, it was the testing by design which led to the conclusion that an active, public network which shares space with physician offices is probably only possible in the group practice or hospital-based outpatient context.

The greatest efforts were directed at the public and professional (service) networks (the paucity of the detailing of the information network reflects my belief that this will be reduced to a set of electronics within a very few years). An attempt was made for the building itself to be a map. The patient can see, from the lobby, any service he is likely to use; and he is immediately informed of how to get there--without asking at the information desk. In addition, an illuminated numerical display is adjacent to each sign, so that patients can, by looking skyward from the main public way, know when they are to be seen. The laboratory specimen procurement station is on the public way; and although X-ray is not, it is immediately and unavoidably in evidence on the second floor.

The professional network, which shares some space and function with the service

network, occupies the typical position between the public circulation and building edge. Two glazed towers are part of this professional, service network, partly to achieve continuity of the network across the public way and partly to allow natural light to fill the indoor streets.

The service network, in addition to the space it shares with the professional network, also occupies the northeast section of the building and communicates via Creek Alley with Blackstone Street. Supplies can thus be delivered, and waste removed, without intruding on the public network. In addition the occasional patient who requires ambulance transport to the hospital can be picked up at one of the two truck docks reserved for this purpose.

Presence of other sought-for qualities is perhaps more difficult to establish. The things which make a building such as this comfortable and familiar result from decisions made on a scale considerably larger than those presented. I believe that generous use of brick, tile and plants under diffused natural light will provide these attributes; but that assumption cannot be tested by the work herein presented.

One other goal which was at least partially met was gradation of spaces. A fairly clear vertical and horizontal

hierarchy is present in the Blackstone Polyclinic, although transition from semi-private waiting space to private office space is not thoroughly worked out--chiefly because the character of the office space is not a part of this thesis.

In sum, the Blackstone Polyclinic represents a partly successful first attempt to reconcile a set of deduced environmental requirements for ambulatory care facilities with the design of an actual building. Although flawed, I feel it succeeds in suggesting the type of public network which may be quite common in facilities of the future. Annual depreciation costs for health care buildings generally run from 5 to 10% of the total budget. If, by spending an additional one or two per cent, a public network could be built which would attract patients and save on labor costs (by always having a queue of patients waiting to be seen), the extra expenditure would be likely to be cost-effective. The intangible benefit of user satisfaction and well-being would in any event be worth a slightly higher price tag.