

DESIGNING DENTAL CLINICS FOR CHILDREN

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A THESIS

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## CHAPTER I

### INTRODUCTION

The majority of dental facilities today are standardized, sterile establishments that exhibit little thought for human comfort. The architecture and interior features of medical offices seem to intimidate patients rather than welcoming them. Some facilities even resemble prisons, where doctors and nurses are guards and patients or visitors are the accused.

Why do so many medical facilities have a cold, impersonal ambience created by long corridors and white décor (Figures 1 and 2)? It is no wonder that patients are apprehensive about entering such settings; who can fault them for letting a disease progress to an advanced stage before subjecting themselves to the fear inherent in a trip to a medical facility?

Although function is an important consideration in the design of medical offices, we should stop thinking of patients as inmates and view them as guests. Dental and medical lobbies, business offices, and operatories should possess a more pleasant, homelike atmosphere. If patients

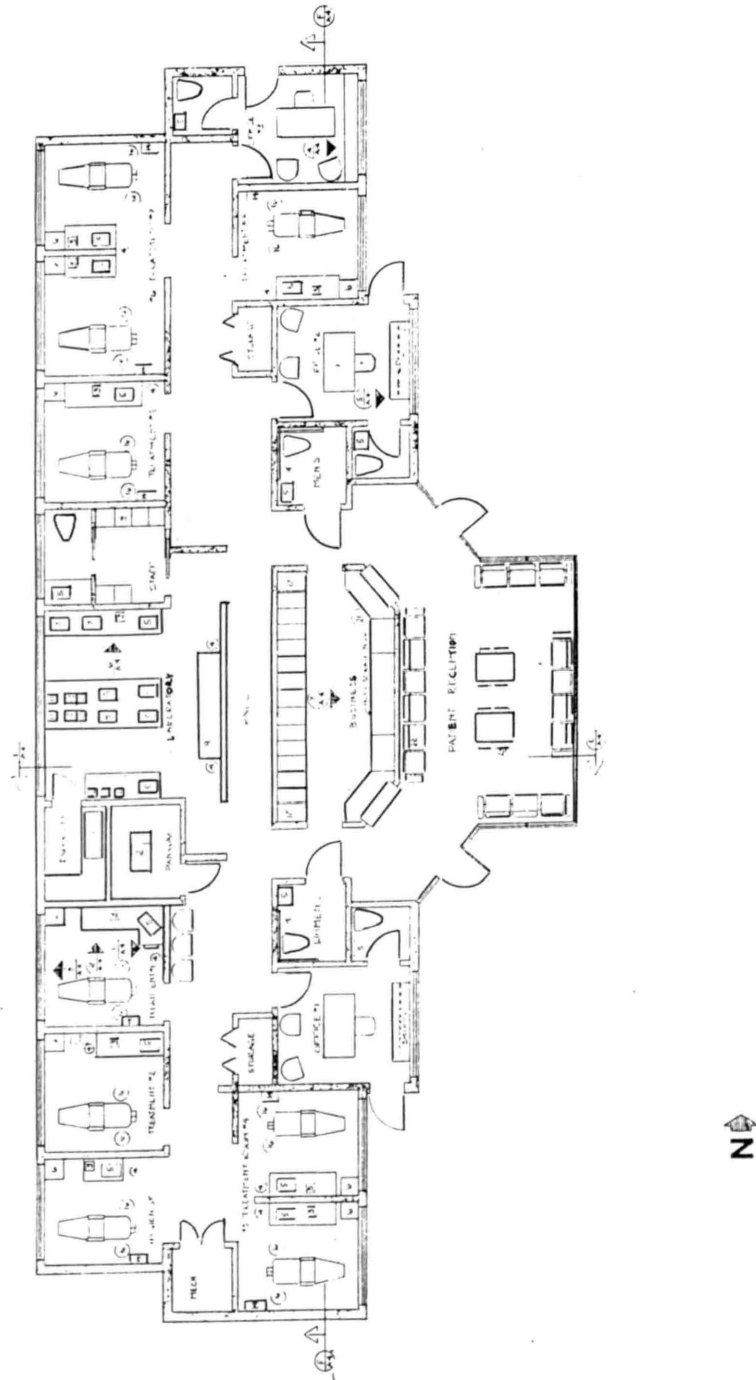


Fig. 1. Floor Plan of Traditional Dental Clinic

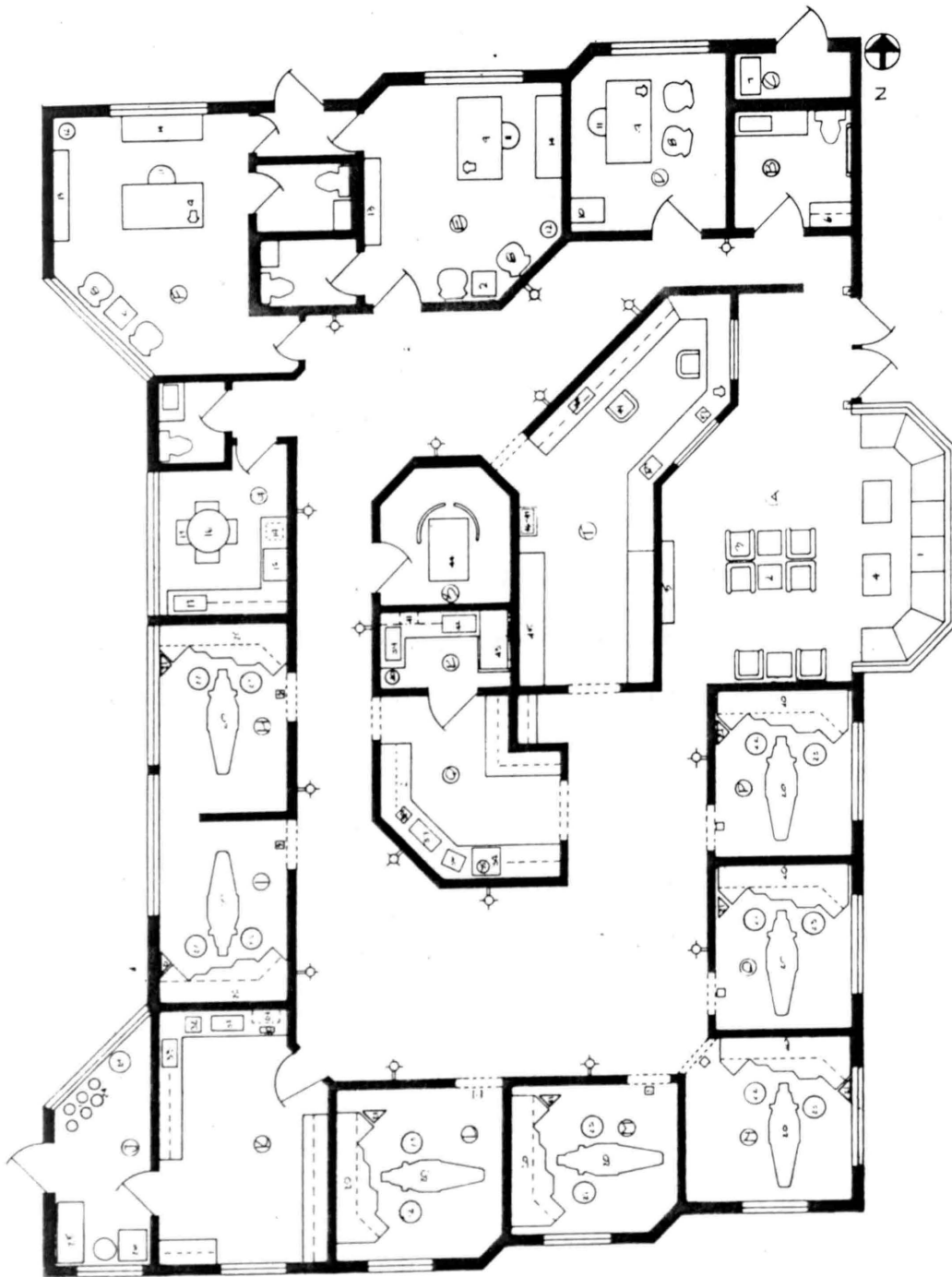


Fig. 2. Floor Plan of Traditional Dental Clinic

can make a positive association between the medical environment and something else that they have experienced, their anxiety will be greatly reduced.

In general, the appearance of dental clinics is rigidly stereotyped, and a need therefore arises for the décor of these institutions to appeal to their clientele. The writer is interested in meeting this need by concentrating on the area of pedodontics. Pedodontics is the branch of dentistry that specializes in the care of children; it is based upon a philosophy of prevention.<sup>1</sup> Thus, children from the ages of two to twelve visit this type of clinic.

This thesis will analyze the effect that a specialized environment such as a dental clinic can have upon a child and will survey the procedures used by dentists to introduce children to dentistry. The writer will also discuss designing a pedodontic clinic, employing detailed textual descriptions augmented by floor plans and other illustrations (Figures 1 through 33) as well as photographs (Plates I through VII).

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<sup>1</sup>Jain Malkin, The Design of Medical and Dental Facilities (New York: Van Nostrand Reinhold Company, 1982), p. 242.



## CHAPTER II

### THE CHILD'S FIRST CONTACT WITH DENTISTRY

When a child is brought to a dental clinic for the first time, he should be prepared in advance for his office visit. It is recognized that the thoughtful preparation of the child and his parents before the first visit will result in a better behavior pattern in the dental office.<sup>1</sup>

The following discussion of a child's initial contact with dentistry is only a suggested basic procedure, which should be altered as necessary to accommodate the circumstances of the individual situation and to meet the needs of the staff. McDonald and Avery state,

The indoctrination to dentistry is primarily teaching the child to meet a new situation and to follow the instructions of the dental personnel. The process may be accomplished if the dentist will allow the child to survey the dental office and the environment casually but at the same time attempt to impress the child with the necessity and the importance of the occasion.<sup>2</sup>

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<sup>1</sup>Ralph E. McDonald and David R. Avery, Dentistry for the Child and Adolescent, 3rd ed. (St. Louis: The C. V. Mosby Company, 1978), p. 186.

<sup>2</sup>McDonald and Avery, pp. 29-30.

Before a child can feel comfortable in the new environment of the dental clinic, his parents must explain the objective of the visit to him in a positive manner. The following techniques may be used to help prepare the child for his first visit to the dentist:

1. The day of the appointment should be as easy as possible for the child; no other plans for that day should be made.

2. If possible, the appointment should be scheduled early in the day, and the child should be well rested.

3. The child should be told about the dental visit on the previous night or on the day of the appointment in order to give him less opportunity to hear about unpleasant experiences from his friends and less time to think about any "bad vibrations" that he may receive from other family members.

4. The dentist should be referred to as a friend, and the child should be informed that going to the dentist is not a new experience for the family, and the visit should be spoken of only in a positive way.

5. Such words as "hurt," "grind," and "drill" should be eliminated from the dental vocabulary; in fact, it is a good policy not to discuss specific dental procedures with the child in advance.

6. The child should be made to feel that dental visits are a part of growing up. Rewards should not be offered, and the child should not be given the impression that there is anything to fear about the visit.

7. If the child should ask searching questions, he should be told that the dentist intends only to examine and will always explain what he is going to do before he proceeds.

Children can sense the fear or anxiety that may remain with their parents from their own past dental visits; thus, parents should try to convey only positive feelings about their past experiences.

The first contact with the patient--adult or child--is often one of the most crucial contacts the dental staff can have. The dentist may not see the patient until after he has been greeted by another staff member, perhaps the secretary, receptionist, or hygienist. Each practitioner will develop his own office procedures regarding patient contact. It should be clear that the personnel in the dentist's office and the procedure for patient admission will reflect the dentist's philosophy of patient care. Patients are very receptive to such cues and will react accordingly. Thus, the dentist who hires an indifferent,

cold receptionist will often run the risk of losing some of his clientele.<sup>3</sup>

Upon arrival at the office, the child should be greeted as soon as possible by the receptionist or secretary. Since the child is the patient, it is important that he be greeted first, by name, rather than the parent. On the first visit the child will be placed more at ease if the staff member approaches him in the waiting area instead of looking out at him through her window or from behind her desk. A child who is made to feel welcome and treated like a special guest rather than just another patient will experience more security in this new environment.<sup>4</sup>

After the child has been greeted, it is important for him to become accustomed to his new surroundings. This also gives the parents sufficient time to complete any necessary paperwork, but it is also important on the first visit that the child not be made to wait for an extended

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<sup>3</sup>Gerald Z. Wright, Behavior Management in Dentistry for Children (Philadelphia: W. B. Saunders Company, 1975), p. 94.

<sup>4</sup>Martin R. Protell, Jack D. Krasner, and Benjamin Fabrikant, Psychodynamics in Dental Practice (Springfield, Ill.: Charles C. Thomas Publisher, 1975), pp. 181-182.

period of time.<sup>5</sup> A child who is kept waiting for a protracted period may become apprehensive if he hears negative sounds or sees negative expressions on the faces of children or adults leaving the office. On the other hand, a child should not be snatched up the minute he walks into the clinic. It is considered wiser to let him examine the reception room by exploring the play area, read a book, walk around, or just settle down and prepare himself for the visit.<sup>6</sup>

Some clinics use the child's first visit as an occasion for him to "get acquainted" with the dentist prior to any initial examination. Some believe that this visit helps to minimize the sense of strangeness and, hence, reduces the child's anxiety. Research, however, has not strongly supported the effectiveness of the "get acquainted" visit. The individual dentist's philosophy of patient care will determine what procedures will occur on the first visit.<sup>7</sup>

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<sup>5</sup>Gerald Z. Wright and Gerald D. Alperm, "Variables Influencing Children's Cooperative Behavior at the First Dental Visit," Journal of Dentistry for Children 38 (1971): 61-63.

<sup>6</sup>Edward S. Mack, "Practical Pedodontic Practice," Journal of Dentistry for Children 23 (1956): 13.

<sup>7</sup>Barbara D. Ingersoll, Behavioral Aspects in Dentistry (New York: Appleton-Century-Crofts, 1982), pp. 117-118.

During the initial visit some dentists prefer that the child's parents accompany him through the tour and examination. Others encourage parents to accompany their child in the treatment areas only if he is under the age of five, and still others prefer that all parents remain in the waiting area. The dentist's customary practice is usually stated and explained in the pre-appointment letter sent to first-time patients.

Many dentists feel, especially for children under five, that the parents' presence is often comforting and reassuring to the child in a new situation, and a number of dentists request the parents' presence even during subsequent visits. It is important to note that all encourage the parent to be a "silent" partner so that the dentist can establish a good, direct relationship with the child. A number of dentists encourage parents to allow their child to bring a special toy, doll, or blanket from home to increase his sense of security.

Other dentists prefer that parents remain in the waiting area until the tour and examination are complete. At this point some dentists call the parents to the consultation area where they can discuss necessary procedures for the parents to follow. This group of professionals

feels that the time spent alone with the child gives the dentist a chance to become acquainted with him without his "hiding" behind his parents.

As stated in the introduction, pedodontics is based upon a philosophy of prevention. That is why a considerable amount of time is spent with each child teaching him the proper way to brush and floss his teeth. This is usually done by the dental assistant or hygienist. After these procedures are discussed, the staff member usually takes the child on a tour of the treatment area and explains the use of the equipment in it. When the tour is complete, the child is returned to the dentist, who is already sitting down. Some dentists feel that eye level contact is important so that the child does not feel intimidated. When the child is placed in the operatory, the dentist should be facing him.

The examination should begin only after a level of communication has been established between the dentist and the child. At this point, if the dentist senses that the child is uneasy, he gives further explanation of the equipment or the procedure he intends to utilize. After the level of communication is established, the towel may be placed and instruments picked up. All initial efforts should be directed at establishing a level of communication.

It is not necessary for the child to carry on a conversation during the examination, but the dentist should be sure that he is being heard and understood. The use of remarks such as "Do you know what I am going to do now?" can be helpful in determining whether the child understands what the dentist is saying and doing.

Every pedodontic clinic has its own terminology that is passed on to the child and his parents during their first visit. Some dentists have different names for the instruments they use, such as "whistle," "train," and the like, while other dentists use expressions such as "I fix teeth," "I shine teeth," or "I make teeth so they can chew well." This positive language, along with a tour of the clinic and clear explanations during the examination, helps the child to feel at ease during his visit. As Wright declares, "A child who feels that a dentist fixes teeth is much more positively oriented than a child who feels that a dentist pulls teeth."<sup>8</sup> Knowing that the dentist will explain the steps of his procedure as he goes along, the child is reassured. After the examination is complete, it is important for the dentist and staff

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<sup>8</sup>Wright, p. 186.



members to make positive comments to the parents such as "Look at his beautiful teeth," "He was a lot of help to me," and so on.

The first visit to a dental clinic establishes communication with the child, informs him of the dentist's objectives, involves him in a few simple procedures, and allows him to leave feeling happy and proud to have been to see the dentist. Although the methods used may vary from one practitioner to another, the results and philosophies of most dentists are closely related. It is very evident that the first visit to the dentist is of major importance to a child in relation to a clinical environment.

## CHAPTER III

### PLANNING THE CLINIC

#### Initial Considerations

It is the writer's intent in this paper to present guidelines for the space planning and design of a pedodontic office. In the beginning stages of design, the designer must determine whether the dentist wishes to remodel an existing office, rent space in a complex of offices, or build his own clinic. In doing this the designer must learn as much as possible about the dentist's business operations. He must determine how large the office should be and ascertain whether space will be available for expansion if the need should arise, whether existing plumbing and electrical conduits are sufficient, and whether existing conditions are flexible enough to meet the requirements of the client. One of the first steps in planning the clinic's design is determining what kind of dental equipment will be used. This process of investigation is called programming. Designers must conduct extensive research into the client's working pattern, equipment, and actual needs. After these

factors are determined, the dentist and designer together analyze the future requirements. This will include the spaces and rooms within the clinic, the goals of the clinic, and what is to be achieved in the space comprising the clinic as a whole.<sup>1</sup>

In completing the decision as to where the office is to be located, all options should be considered. The first of these, remodeling, requires evaluation of several factors. The first step is looking into the possibility of enlarging the existing space and of moving or relocating existing walls. At this point a feasibility study should be made with plans drawn to reflect the proposed expansion, to analyze how the space could be most efficiently utilized, and to determine whether the benefits to be gained from the construction would be worth the required investment in time and money.

The second option is to rent a space. One of the major factors to be investigated for this option is the expense of the utility system involved in dentistry. One of the reasons why dentists are considered to be expensive

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<sup>1</sup>Ray Faulkner and Sarah Faulkner, Inside Today's Home, 4th ed. (New York: Holt, Rinehart and Winston, Inc., 1975), pp. 113-135.

tenants in rented offices is the complexity of the utilities they require. A well-equipped office may include the following systems:

1. Cold water
2. Hot water
3. Sewer system
4. Central vacuum system
5. Air
6. Gas
7. Electricity
8. Telephone
9. Air conditioning
10. Sound (music)
11. Intercommunications<sup>2</sup>

If the dentist chooses to rent, he will find it considerably less costly and more feasible to move into a complex that is currently being planned rather than one that has already been built; at this early stage, much more flexibility is possible in office design. If the dentist should decide to move into an existing rental space, he should give a great deal of consideration to the expense of adding a utility system that would be sufficient for his needs. Another factor to keep in mind when renting is the possibility that an additional monthly parking charge will be assessed.

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<sup>2</sup>William W. Howard, Dental Practice Planning (St. Louis: The C. V. Mosby Company, 1975), pp. 49-50.

The third option is the decision to build a new facility. The first step when making this decision is hiring an architect to conduct a feasibility study to determine the maximum size building that could be constructed on the chosen site, allowing for adequate parking. Then an interior designer should develop space plans to determine the basic dimensions required for the building. At this point the architect should adapt the proposed design of the building to conform to the special interior requirements and to fit the dimensions of the site, again allowing for adequate parking.

#### The Role of the Designer

A good design is based upon a number of complex factors. The total plan of the clinic is related to the architectural shape and form of the building. Other factors include the budget, the construction materials, the type of practice, the philosophy of the dentist and his staff, and the desired image. Other considerations are the location or neighborhood, the type of clientele--including its social status--and the number of patients treated per day.

The achievement of a well-designed plan includes proper size and space allotments for each function; the

correct placement of operatories, business and support areas; a smooth traffic flow; and an aesthetic relationship of the forms created within the office. A successful, well organized plan will allow the users of the clinic to carry on their activities with a minimum of excess effort and a maximum of pleasure and efficiency.

Space planners have a conceptual and interpretive role in the design of facilities. The most important consideration in designing is understanding the people who work in the environment and empathizing with their needs and the functions they perform. Whether the dentist decides to remodel, relocate, or build a new office, the initial steps in creating a plan are the same. All the research compiled in written form is not complete until the designer spends a full day in the office observing the routine of the working staff.

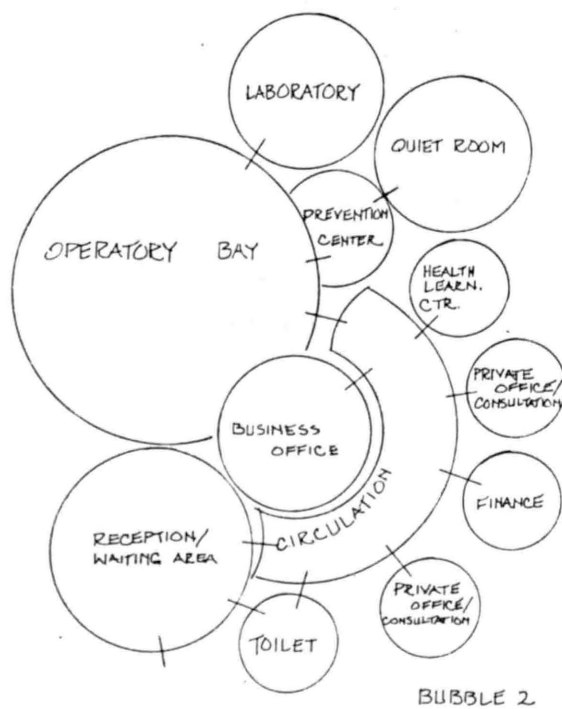
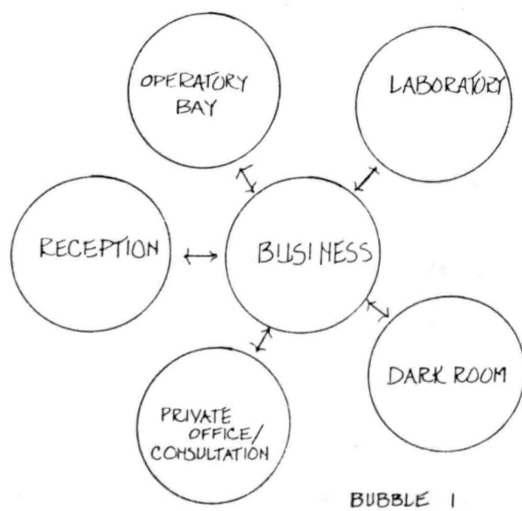
The individual needs and philosophy of the dentist determine the best shape and size of the operatories, the best style of equipment, and the best layout of the available space. Through behavioral studies of all staff procedures, the designer can observe patterns of both productive and non-productive procedures of which the staff is unaware. After these evaluations have been conducted, preliminary plans can be prepared.

Before drawing up a preliminary plan, the designer usually uses a bubble diagram (Figure 3) to determine the functional relationship of each area within the clinic. This method helps to clarify the highly sophisticated planning problem posed by dental offices resulting from the continuous circulation of patients and staff among the various areas within the clinic.

Several preliminary plans are usually developed (Figure 4) until a final set of plans is prepared. These include a dimensional plan; partitions, furniture, and equipment plans; and plumbing, electrical, lighting, and ceiling plans.<sup>3</sup>

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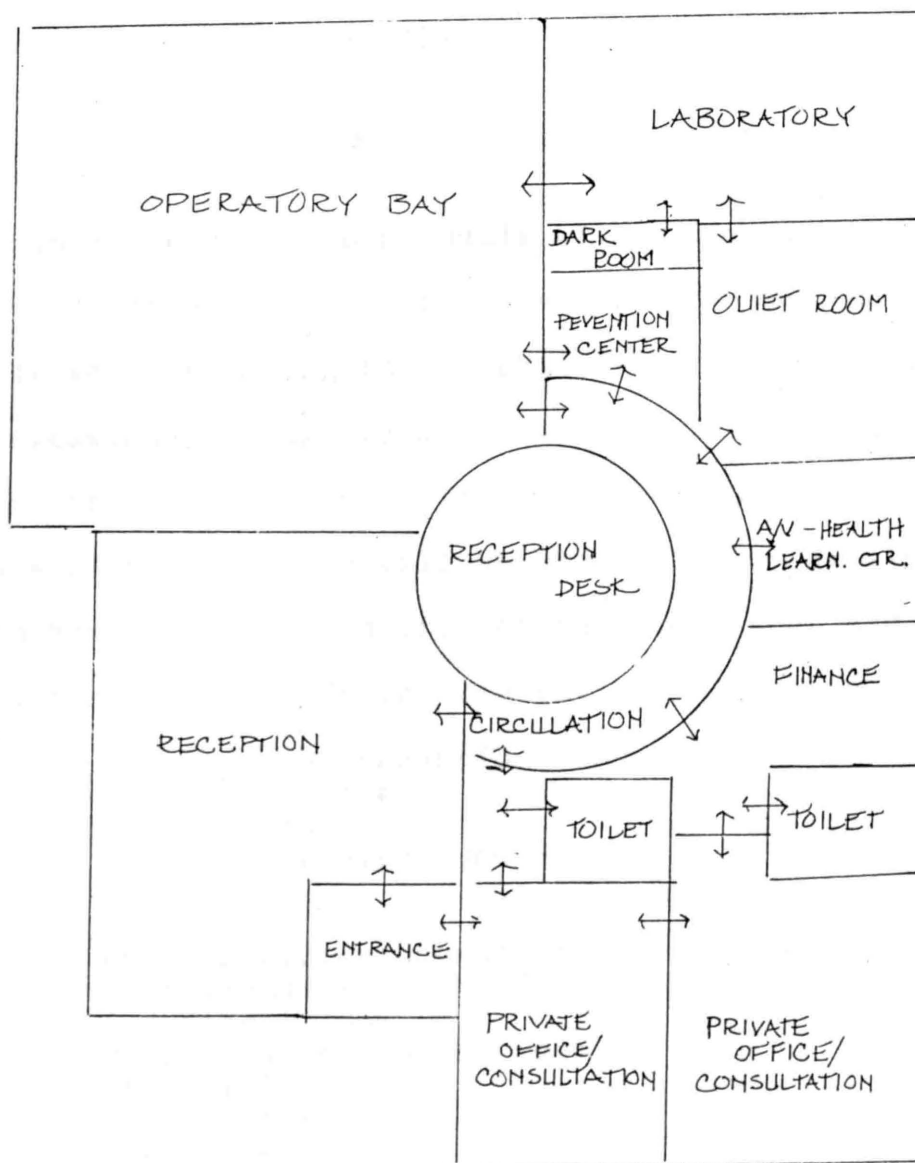
<sup>3</sup>Arnold Friedman, John F. Pile, and Forrest Wilson, Interior Design: An Introduction to Architectural Interiors, 2nd ed. (New York: Elsevier North Holland, Inc., 1979), pp. 90-97, 134-142, 146-148.



BUBBLE DIAGRAMS

Fig. 3. Bubble Diagrams for Dental Clinic





PRELIMINARY PLAN

Fig. 4. Preliminary Plan for Dental Clinic

## CHAPTER IV

### THE OFFICE LAYOUT

Since the pedodontist deals with children, the designer must create a space for the dental clinic that is imaginative in relating to the children who will visit it but professional enough to meet the needs of the dentist and his staff. In planning, the designer must carefully evaluate whether an area will be productive or simply nice to have. Below is a list of the areas that are usually found in pedodontic clinics:

1. Waiting room/reception area
2. Business office
3. Operatories
4. Sterilizing area/laboratory
5. X-ray
6. Darkroom
7. Private office/consultation room
8. Audiovisual room/prevention center/educational room
9. Mechanical equipment room
10. Staff lounge
11. Supply storage
12. Restrooms

Many factors must be considered in determining priorities for the planned use of clinic space. In this chapter the writer has provided a survey for the use of designers and dentists in planning a facility.

### Waiting Room/Reception Area

The first total contact of the patient with the dental office takes place in the waiting room or reception area, which should be designed and furnished for his comfort. The receptionist should have a clear view of the patient as he enters the clinic. The waiting room should be larger than that found in the offices of other dental specialties since mothers often bring all of their children and sometimes a grandmother as well when only one child has a dental appointment. The room should offer ample scaled seating for both adults and children. Some tables or flat areas should be provided for mothers with infants or toddlers in carriers. Children become bored quickly, so the designer faces a challenge in making the waiting room exciting. Children may also grow rowdy while playing together, so an effort should be made to occupy them with some special pastime. A play unit to climb on may appeal to children. A fish tank, a toy box, or a table and chairs for reading or games might be provided. It is wise to place carpet on the floor and install upholstered play units with rounded corners to cushion possible falls. Other design ideas might include a tack board, a chalk board, or a magnetic tic-tac-toe board.

In a pedodontic waiting room one can break the rule of providing individual chairs. One can take liberties in furnishings since most of the clientele will be approximately the same age, come from the same neighborhood, and share a common interest--their children. Sound-absorbing wall coverings as well as carpeting should be used in the waiting room to muffle the noise of the drill in the operatory that might make waiting patients apprehensive. Many people experience a good deal of fear when visiting the dentist, so restful or exciting colors that appeal to children should be made an integral part of the waiting room's décor. Textured wall surfaces, luxurious carpet, pleasant music, comfortable furniture, and interesting art work will help patients to pass the time as pleasantly as possible<sup>1</sup> (Figures 5 and 6; Plates I, II, and III).

The receptionist is considered to be the director of all activity in the waiting room, and it is usually her responsibility to keep the area attractive. In this regard, a recurrent problem is the accumulation of old magazines.

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<sup>1</sup>Edward S. Mack, "Practical Pedodontic Practice," Journal of Dentistry for Children 23 (1956): 15-16; Jain Malkin, The Design of Medical and Dental Facilities (New York: Van Nostrand Reinhold Company, 1982), pp. 19-20, 243; Gerald Z. Wright, Behavior Management in Dentistry for Children (Philadelphia: W. B. Saunders Company, 1975), p. 144.

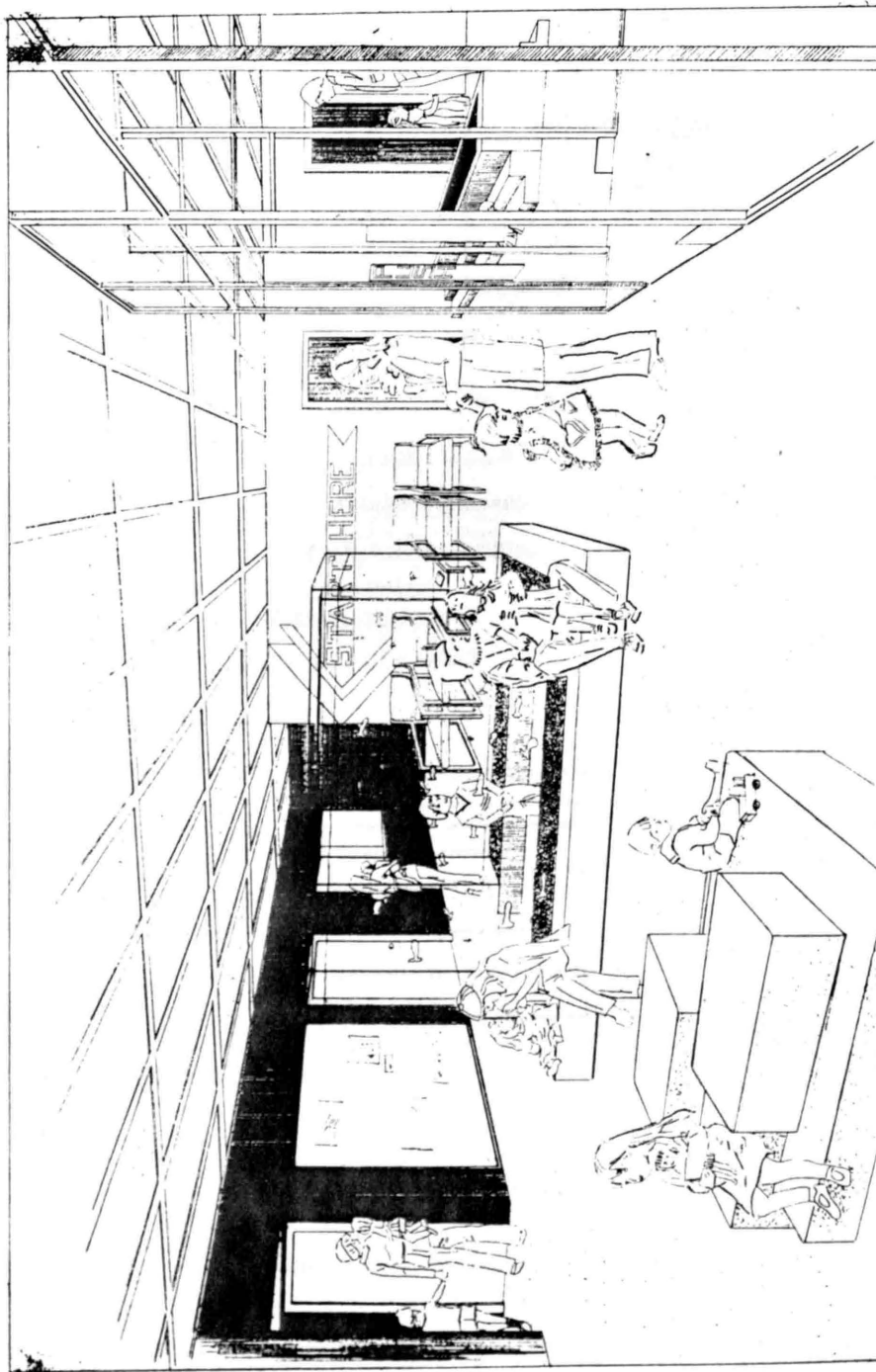


Fig. 5. Dental Clinic Waiting Room/Reception Area

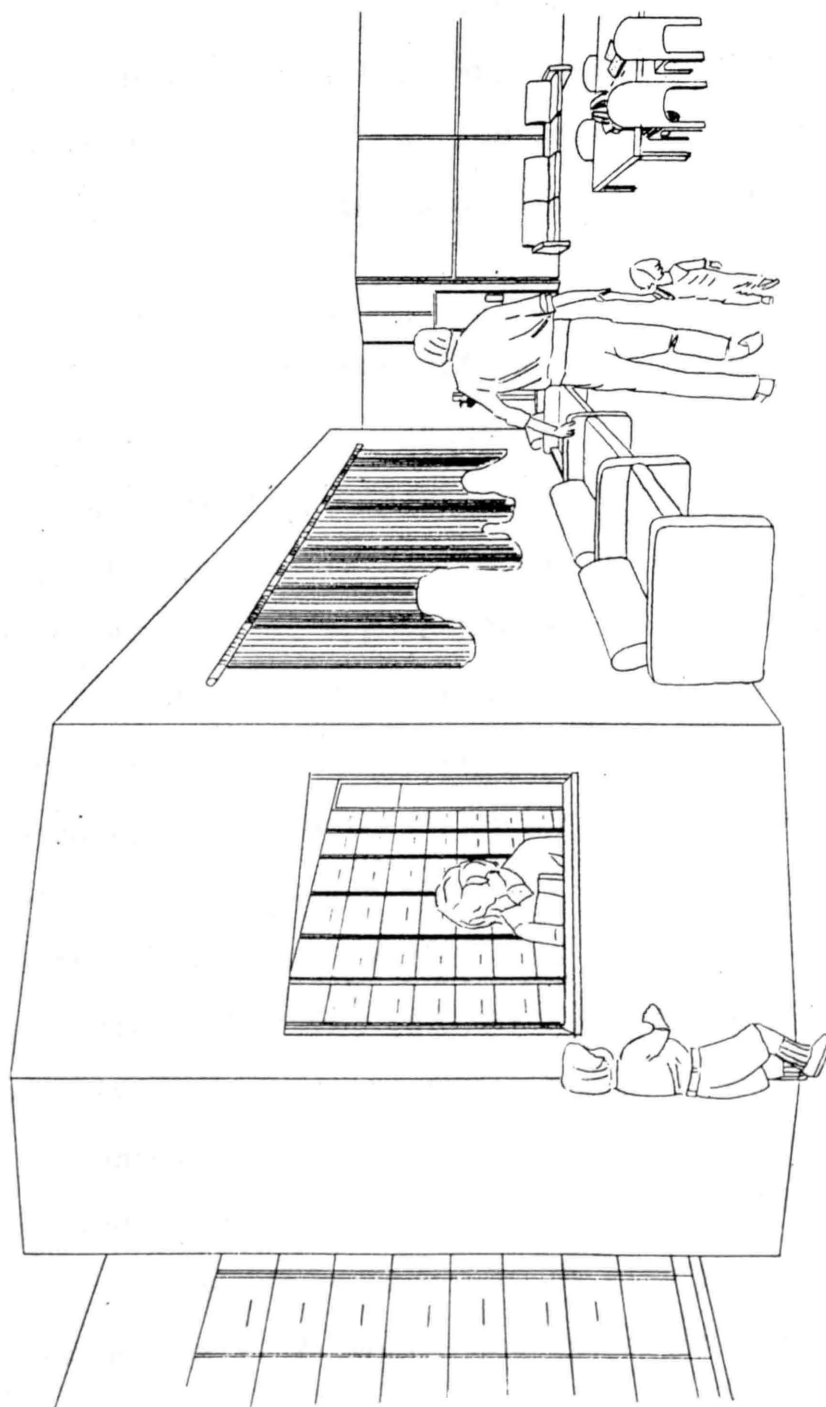


Fig. 6. Dental Clinic Waiting Room/Reception Area

It is the duty of the receptionist to keep a record of new magazines as they are received and to discard those that are old or worn. A neat reception area will make a good first impression upon patients as they enter the dental clinic.

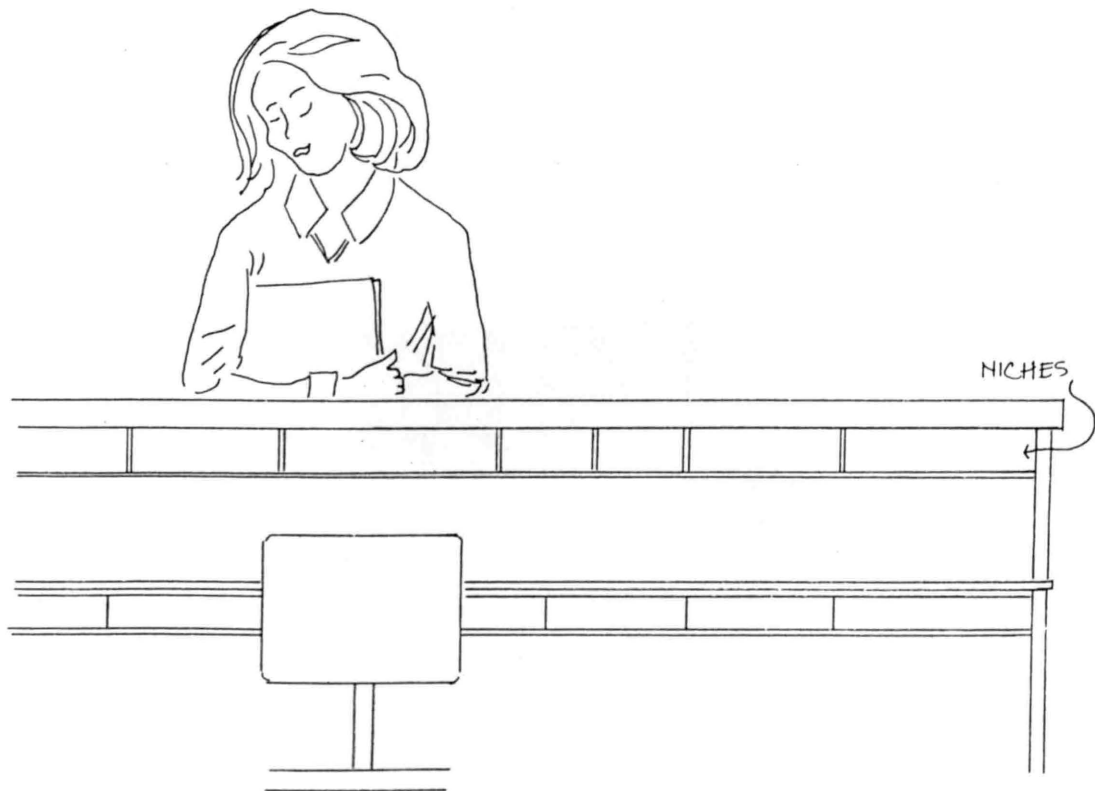
### Business Office

The business office, frequently referred to as the "front office," should be located adjacent to the reception area. This office is the center of a great deal of activity: scheduling of appointments, preparation of bills, storage of medical records, greeting of patients, and, occasionally, insurance and bookkeeping duties. Some large clinics separate the front office into two areas, one for the receptionist who greets patients and schedules appointments and the other for the staff in charge of bookkeeping, filing of medical records, and insurance processing. Again, in larger clinics a separate space may be provided for insurance personnel. The business office should be located so that patients must pass through this area when leaving the clinic. It should be designed to give patients privacy for the discussion of finances and other confidential matters.

Modern design elements for the business office should incorporate a custom-made work surface with an adequate sized counter for clients to attend to paperwork such as writing checks or making new appointments; this counter should be wide enough to support an infant in a carrier while the client carries out these operations. Well-designed desks for the receptionist and secretaries should be placed on the inner side of the raised counter to house records, appointment books, office materials, stationery, telephone books, and the like. Some desks include built-in compartments and niches designed below the writing shelf to store many forms used in the dental practice (Figure 7).

The arrangement of the business office should be based upon an analysis of an efficient work pattern. A wall-mounted telephone should be installed near the desk and counter or a movable trimline telephone placed on the desk so that it can be easily set on the counter or shelf for patients' use without interfering with the staff's secretarial duties. The work surface should be large enough to accommodate required business machines and an open appointment book. The appointment book should not be visible to the patients. Vertical files seem to be the most practical and require less floor space than





ELEVATION OF RECEPTION DESK

Fig. 7. Dental Clinic Reception Desk

older-style file cabinets (Figure 8). Open shelves may be built instead, or steel files may be used for

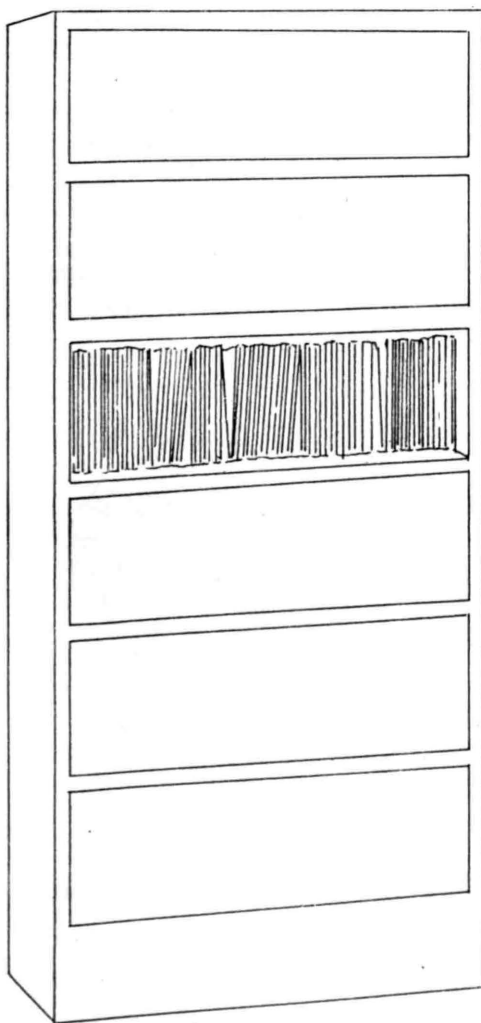


Fig. 8. Vertical File Unit

flexibility. Vertical files also make storage of other supplies handier. Other equipment for the business office may include the following:

1. Secretarial chair
2. Typewriter
3. Adding machine
4. Stapler
5. Recall file (Figure 9)
6. File cabinets
7. Supply index file
8. Wastebasket
9. Card file
10. Desk lamp
11. Fountain pen holder<sup>2</sup>

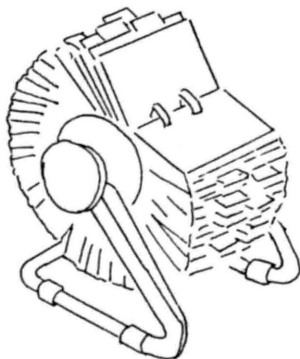


Fig. 9. Desktop Rolodex Recall File

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<sup>2</sup>William W. Howard, Dental Practice Planning (St. Louis: The C. V. Mosby Company, 1975), pp. 56-57; Robert K. Stinaff, Dental Practice Administration, 3rd ed. (St. Louis: The C. V. Mosby Company, 1968), pp. 31-33.

### Operatories

Pedodontists use the term "bay" to designate dental chairs installed in a communal space (Figure 10). Dentists who employ this type of arrangement have found that it tends to keep the crying of children to a minimum as it places them in a peer group situation. Children learn from one another, and the presence of other children in the bay seems to ease the pressure of going to the dentist for new and younger patients. The openness of the space offers a vast challenge to the designer. The layout of a pedodontic operatory bay is like that found in other dental offices, although the pedo chair is smaller than the standard dental chair; the chairs are arranged basically as in an orthodontic office, and similar cabinetry is utilized.

In a bay designed for one dentist, the operatory should include at least two identical areas in which all phases of dentistry can be performed equally well. Each area should have identical equipment and instruments placed in precisely the same position. Two other operatories with the same floor plan should be similar but filled with different small equipment and instrumentation so that both areas receive approximately equal amounts of use. These two areas will be specialized for certain types of

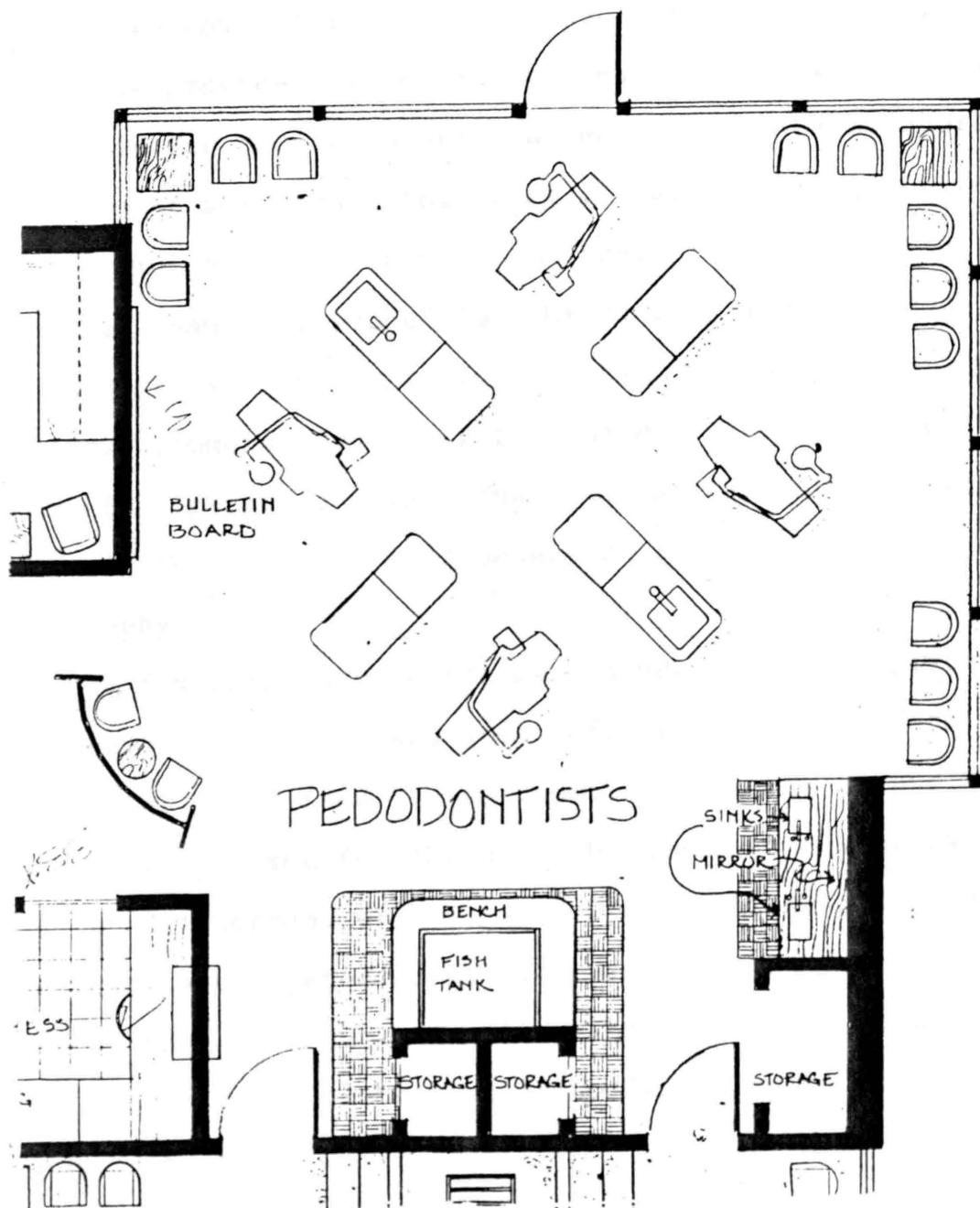


Fig. 10. Dental Clinic Operatory Bay

dentistry. Under this arrangement two of the operatories will be equipped for surgery, endodontia, peridontia, and removable prosthetics while the other operatories will be used only for general operative dentistry, such as short-appointment services. This type of layout does not offer the maximum of efficiency in its operation, but it provides a "change of scene" for the dentist and thus adds a touch of variety to his work. Some larger clinics may have two communal bays, one for the hygienist and the other for operator work. The size, shape, and arrangement of the two areas will depend on the dentist's philosophy.

A few clinics have followed a new theory of placing one operatory in a closed area referred to by dentists as the "quiet room" (see "quiet rooms" in Figures 30 and 33). This space is used for children who are known to be exceptionally nervous or emotional or for children who were referred to the pedodontist by general dental practitioners because they were unmanageable. This room is only used when necessary to prevent an epidemic of crying or unhappy patients.

In the bay or in an alcove near the hygienist's area a space should be provided with facilities scaled for children's use to enable them to brush and floss their

teeth. Since prevention is a primary concern of pedodontics, this space is very important and should be designed with the child patient in mind. Mirrors should be placed over the sinks to allow the children to practice what they have been taught about brushing and flossing (Plates IV and V).

The bay area should be designed so that the dental chairs are not the focal points of the room, even though they appear to be in the floor plan. This may be accomplished by decorative touches such as brightly colored chairs that blend with the wall coverings, mobiles hanging from the ceiling, or large windows to divert the children's attention. Concealed equipment also helps to reduce anxiety. Although the décor of the bay should be directed toward distracting the child and diminishing his possible nervousness and apprehension, clinical function and traffic flow remain the top design priorities.<sup>3</sup> The overall floor plans in Figures 30, 31, 32, and 33 present various possible layouts for operatory areas.

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<sup>3</sup>Malkin, pp. 198-200, 243-244; Martin R. Protell, Jack D. Krasner, and Benjamin Fabrikant, Psychodynamics in Dental Practice (Springfield, Ill.: Charles C. Thomas Publisher, 1971), p. 181; Stinaff, pp. 35-36.

### Operatory Delivery Systems

The term "delivery system" refers to the placement of the dentist and the assistant during the treatment of a patient. The placement which the dentist prefers should be established in the beginning stages of the design process.

#### Rear Delivery System

In a rear delivery system the dentist's and assistant's instruments are delivered from a portable or stationary cabinet behind the patient's head (Figures 11 and 12). This concept is most effective when employed in seated, four-handed dentistry. It is less efficient and more difficult to use in two-handed dentistry. One of the advantages of rear delivery is that the instruments are out of the patient's view. It allows good traffic flow in the treatment room (Figure 13).

#### Over-the-Patient Delivery System

In an over-the-patient delivery system the instruments and utilities are delivered from an area near the patient's left or right elbow or over the patient's chest. In this delivery system the doctor's unit is usually attached to the chair or mounted on an arm which is in turn mounted on a post (Figure 14). Over-the-patient delivery provides direct access to the patient's oral cavity and



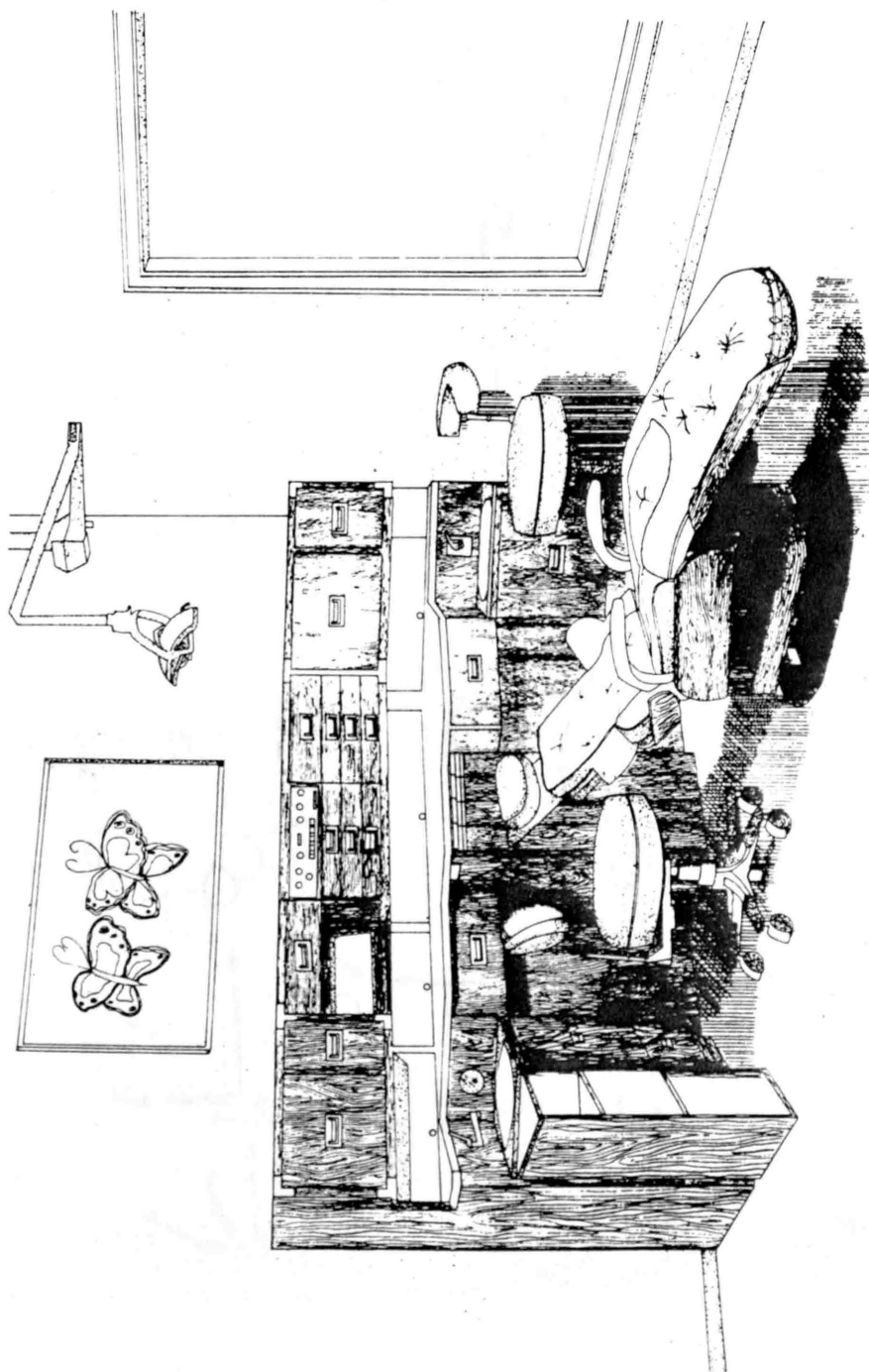


Fig. 11. Rear Delivery System

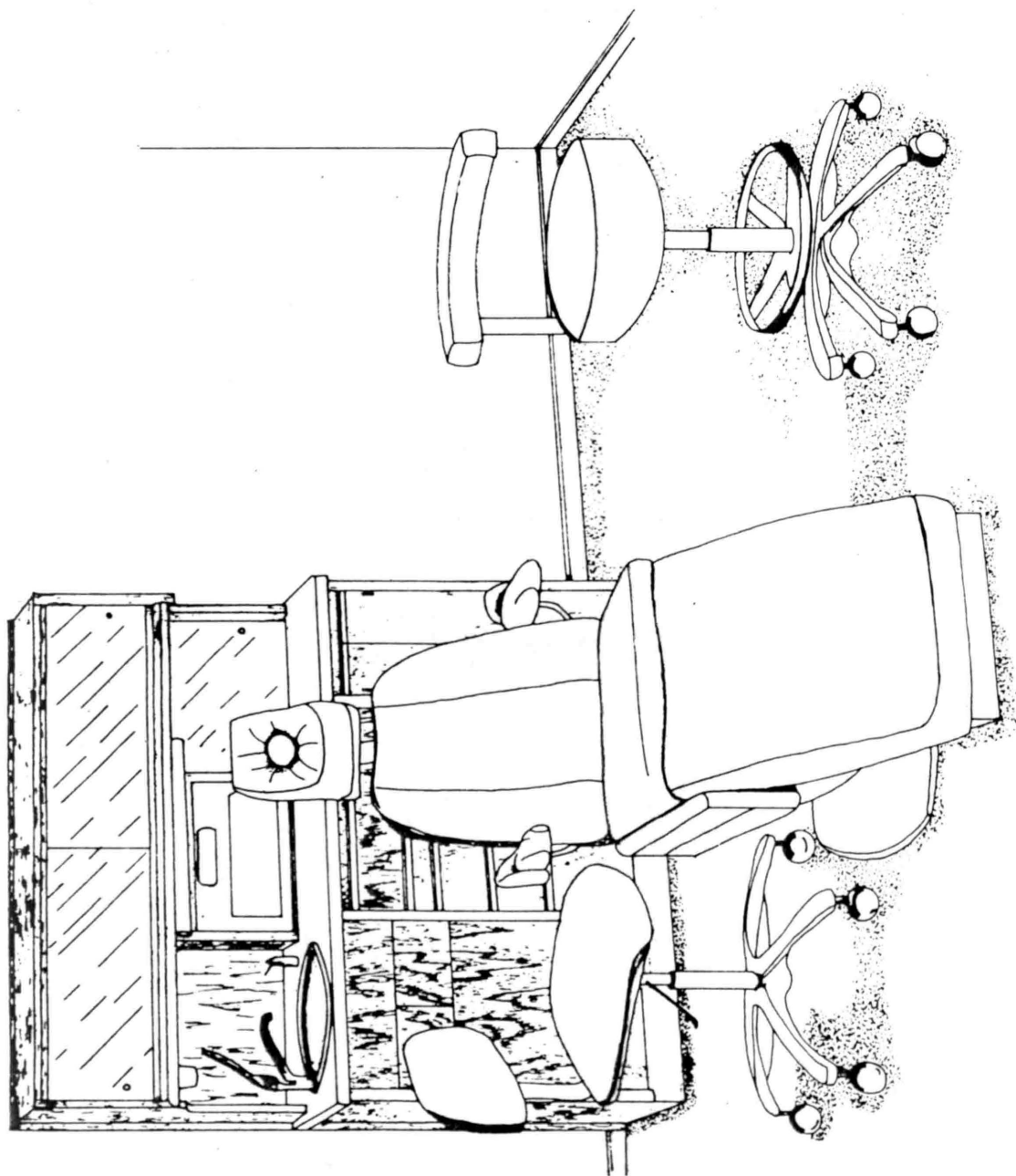
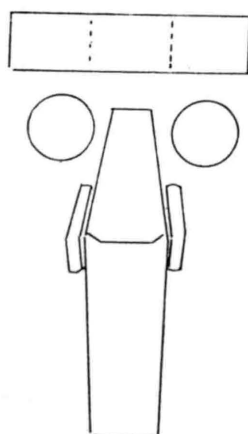
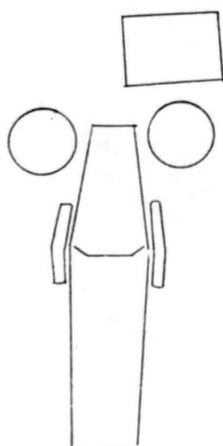


Fig. 12. Rear Delivery System

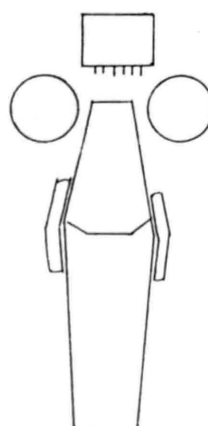
# REAR DELIVERY



CONSOLE OR FIXED  
CABINET FOR DOCTOR  
AND ASSISTANT.



SINGLE MOBILE CART  
WITH LARGE WORKING  
SURFACE FOR DOCTOR  
AND ASSISTANT.



SINGLE MOBILE CART  
FOR DOCTOR AND  
ASSISTANT.

Fig. 13. Three Variations of the Rear Delivery System

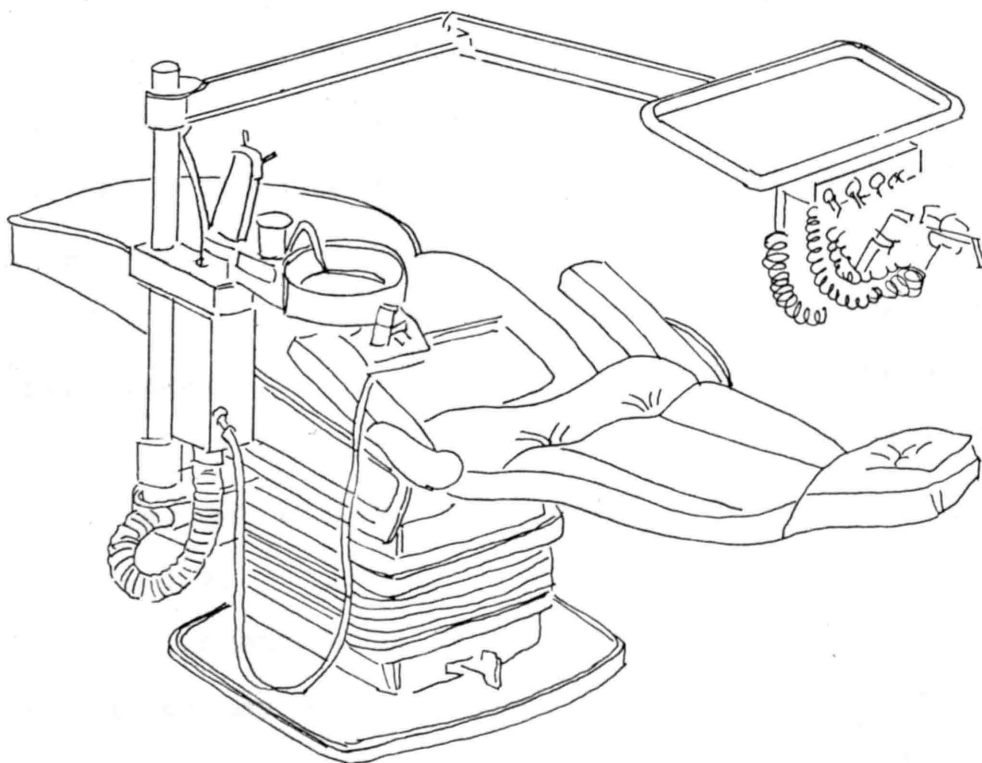


Fig. 14. Over-the-Patient Delivery System

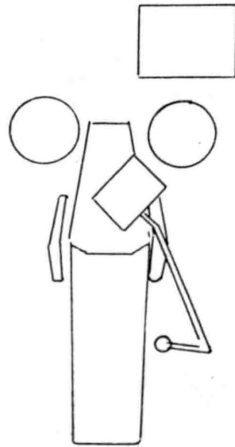
can be used for two- or four-handed operation, either sitting or standing. In this delivery the instruments may be in full view of the patient, and patient access to the chair may be somewhat restricted (Figure 15).

### Side Delivery System

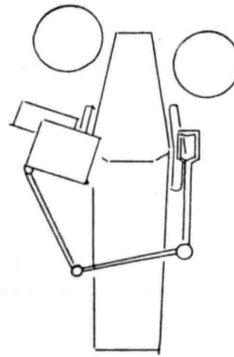
In a side delivery system the instruments are presented from the side of the patient. This type of system is also known as split delivery, in which two separate carts are used, one by the dentist and one by the assistant, or a cabinet or wall-mounted doctor's unit is employed with a separate work station for the assistant (Figure 16). The side delivery system is very flexible and allows good instrument access for both two- and four-handed operation, either sitting or standing. The instruments are usually out of the patient's view, and traffic flow is generally good (Figure 17).

Various combinations of the delivery systems described above may also be used. Individual features of the system to be utilized must be considered. Two such items are the use of the cuspidor versus central suction and the number and placement of sinks. Cuspidors or spittoons may be purchased with central suction operation or with a gravity drain, but most new dental offices use

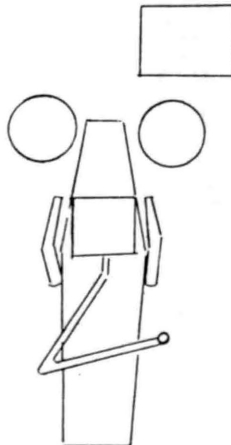
## OVER-THE -PATIENT DELIVERY



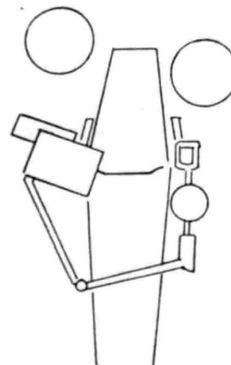
CHAIR-MOUNTED DOCTOR'S UNIT  
POSITIONED DIRECTLY OVER THE  
PATIENT'S CHEST; ASSISTANT'S  
MOBILE CART OR MOBILE  
CABINET.



CHAIR-MOUNTED DOCTOR'S  
UNIT WITH CHAIR-MOUNTED  
ASSISTANT'S INSTRUMENTATION.



CHAIR-MOUNTED DOCTOR'S  
UNIT POSITIONED DIRECTLY  
OVER THE PATIENT'S CHEST;  
ASSISTANT'S MOBILE CART OR  
MOBILE CABINET.



CHAIR MOUNTED DOCTOR'S  
UNIT; CHAIR-MOUNTED  
CUSPIDOR WITH ASSISTANT'S  
INSTRUMENTATION.

Fig. 15. Four Variations of the Over-the-Patient  
Delivery System

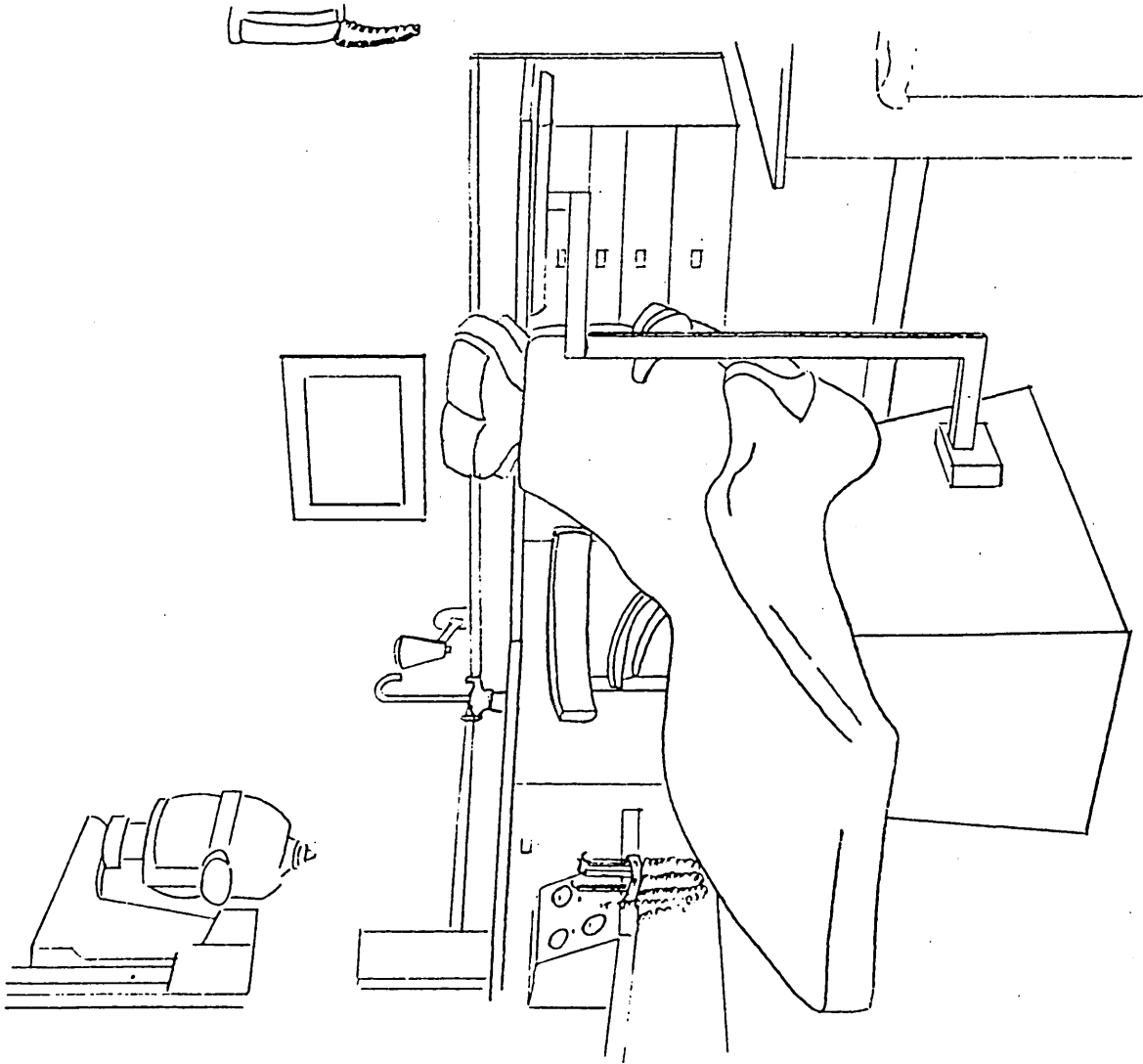
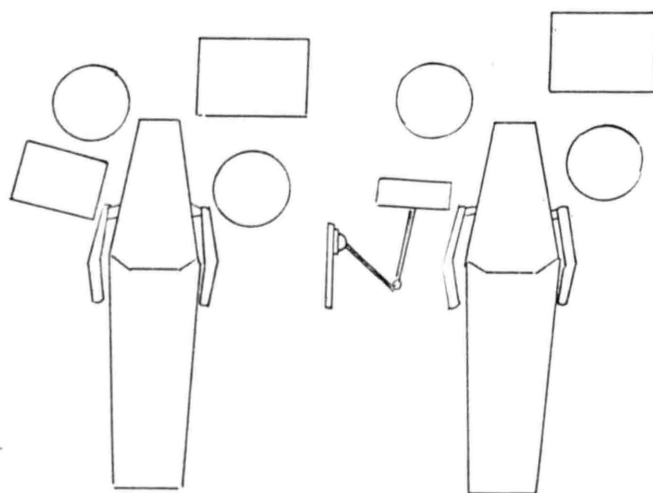


Fig. 16. Side Delivery System

## SIDE DELIVERY



MOBILE DOCTOR'S CART;  
MOBILE ASSISTANT'S  
CART.

CABINET OR WALL-MOUNTED  
DOCTOR'S UNIT; MOBILE  
ASSISTANT'S CART OR  
MOBILE CABINET.

Fig. 17. Two Variations of the Side Delivery System



central suction with no cuspidor, in which a suction hose placed at each operatory works from a vacuum pump that is located in an equipment or mechanical room near the operatories. Since the pump and air compressor are noisy, it is recommended that the room in which they are installed be sound insulated.

The only criterion for the placement of sinks is the convenience of the dentist and the dental assistants so that they can easily wash their hands before beginning work on a patient. The number of sinks will depend on the design of the space; additional sinks may be needed for the dentist or his assistants in order to save time and steps. Stainless steel sinks function well.

The dentist's choice of delivery system and the number of sinks desired must be determined early in the space planning since the placement of air, vacuum, waste, and electrical facilities is contingent upon these decisions.<sup>4</sup>

#### Tray Setups

Instruments that are sterilized and set up in advance on trays for various procedures should be centrally stored.

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<sup>4</sup>A-DEC, "The Delivery System Guide" (Newberg, Ore.: A-DEC, 1979); Howard, pp. 52-54; Malkin, pp. 201-203.

Trays may be stored in a stationary or portable cabinet that is convenient to both the bay and sterilization area. This cabinet should be closed and sheltered from public exposure.<sup>5</sup>

### Sterilizing Area/Laboratory

In some clinics the sterilizing area and laboratory may be called the clean and dirty labs. The two may be combined in a single space or they may be situated in two separate areas (see alternate locations depicted in Figures 30, 31, and 33).

The sterilizing area, or clean lab, may be located in an alcove convenient to the operatories or in a separate room adjacent to the bay area. This lab requires ample cabinet space for the cleaning of trays and instruments and the setting up of trays. A sink, a trash slot, and an ultrasonic cleaner must be provided as well as an area with fitted slots for tray storage. The three methods of sterilization from which to choose are the following:

(1) Dry heat--this method, which employs a long cycle at high temperature, is desirable in that it does not rust or dull sharp instruments, but the oven radiates a great

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<sup>5</sup>Malkin, p. 209.

deal of heat, and the process is usually slow. (2) Steam--this method is fast, but it dulls instruments; various products are available to inhibit rusting and dulling. The steam autoclave combines live steam and pressure. (3) Chemical--alcohol-based chemical vapor sterilizes the instruments. Most dentists use either steam or chemical sterilization. A few dentists employ both of these methods, and some utilize both steam and dry heat.

The steps of the sterilizing sequence are scrubbing of dirty instruments in the sink, cleaning in the ultrasonic cleaner, wrapping or bagging, sterilization by one of the methods described above, and placement in storage trays or cabinets. In planning the sterilizing area it should be noted that certain sterilizers require separate electrical circuits.

The dirty lab should comprise a space large enough to accommodate all the necessary equipment to support the procedures performed in this area. The lighting in the lab must be excellent. Lights should be placed over individual work stations--sometimes called benches--and these benches should be installed at a convenient height for personnel to work while sitting. Upper cabinets should also be positioned so that they are accessible to seated technicians without too much stretching. Proper

ventilation should be placed at work stations to remove heat and fumes effectively. The air compressor and vacuum may be located in the lab or in a mechanical room, but a hose should be provided to help recover dust from lathes and handpiece areas. The lab requires gas, compressed air, water, acid-resistant drainage lines and a sink with a plaster bin, and many electrical outlets. The electrical service must be of sufficient capacity to accommodate the high usage requirements of the various pieces of equipment used in the lab. Sufficient drawers for instruments and supplies should be provided with adequate counter space for equipment and devices. The décor should be light in color with smooth surfaces for easy maintenance. Ample storage space should be provided for the needs of the office, especially since many dentists order supplies in bulk to lower costs. Since the lab tends to be messy, it is advisable to place a door between it and the operatories and patient area.

The laboratory area is probably the most overlooked in dentistry. It is commonly a closet-size nook located in some out-of-the-way spot in the clinic. Additionally, it is frequently employed by the staff to house coffee

machines, coats, purses, and cartons of unpacked supplies. In designing the clinic, enough space should be included to accommodate these "extras."<sup>6</sup>

### X-Ray

In some clinics every operatory is equipped for X-ray while in others these facilities are confined to one operatory or to a special area equipped with both panorex and interoral X-ray units. The dimensions of this special area or room are usually approximately 5 by 8 feet. The panorex X-ray unit is one in which the patient stands or sits in a special chair while the X-ray head revolves around him, making a film of the entire mouth rather than a limited area (Figure 18). Some pedodontists encounter facial developments in their patients for which a cephalometric X-ray unit is needed; this unit takes a lateral film of the entire head and jaw.

In operatories that are equipped for interoral X-rays the X-ray head must be located on the wall either to the side or behind the patient. The position of the mount is very critical in that the arm swings into several positions but only extends 4 to 5 feet. The wall that supports this

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<sup>6</sup>Howard, pp. 58-59; Malkin, pp. 213-217.

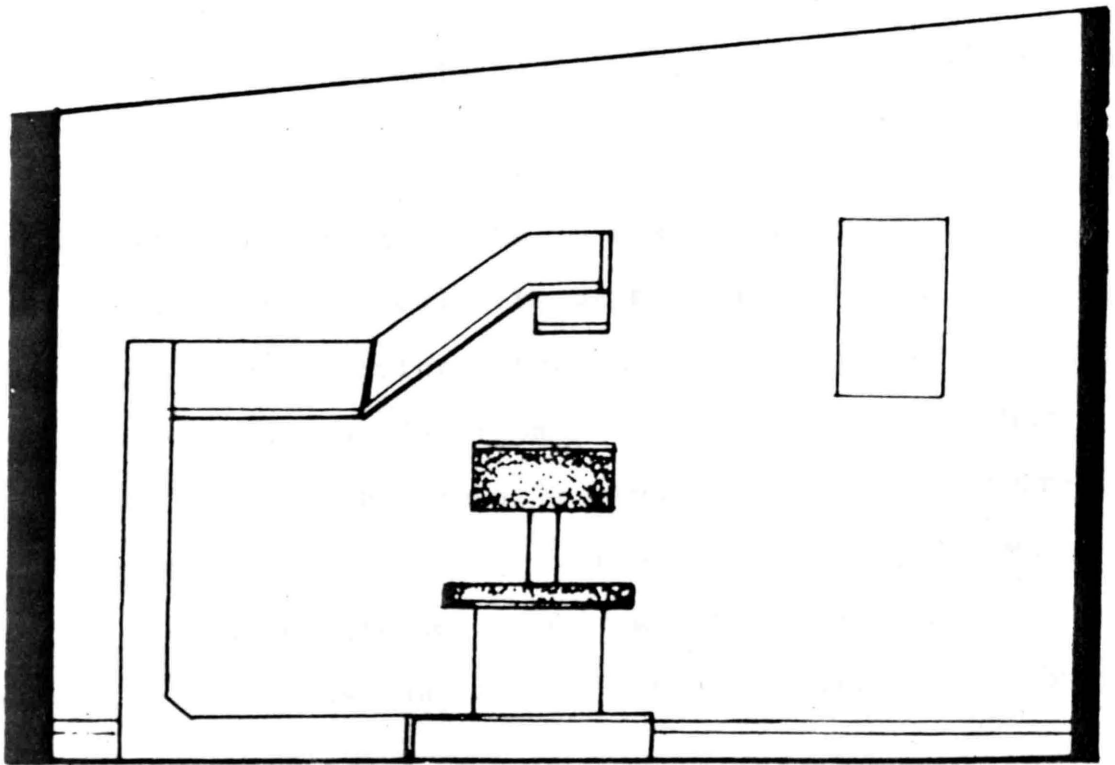


Fig. 18. X-Ray Unit

unit must be reinforced to support as much as 1,500 pounds between the starting height of 36 inches from the floor and the terminating height of 72 inches. Most areas or rooms in which X-rays are made have walls lined with lead to shield the operator and other patients from radiation scatter. The Bureau of Radiological Health must approve the plans and lead-shielding specifications.<sup>7</sup>

#### Darkroom

The darkroom should be located in a separate space out of the normal circulation path of patients and staff. Some clinics have employed the lab as a darkroom, but this double use means that darkroom work interrupts all other functions in the lab. Thus, a separate room with dimensions of approximately 4 by 5 or 4 by 6 feet is recommended (see alternate locations depicted in Figures 32 and 33). The films used may be developed manually or by an automatic processor.

A manual developer requires hot and cold water with a temperature control valve, a waste drain in the floor near the tanks, and a sink. If an automatic processor is not used, the room should be set up with a wet and dry

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<sup>7</sup>Howard, p. 56; Malkin, pp. 224-225; Stinaff, p. 53.

side and two parallel counters or an L-shaped counter top. An automatic processor requires hot and cold water with or without a temperature control valve. In some darkrooms only cold water facilities are installed, supplemented by separate heating units. A waste drain, a 110-volt electrical outlet, and, if space permits, a deep sink with a sprayer for cleaning the rollers should be provided.

Most dentists use automatic processors. The processors should be located so that they may be easily serviced. A 30-inch counter height should be used if an automatic processor is preferred; other counter heights are normally from 36 to 42 inches. Racks should be provided to dry film and store unused X-ray holders. Open shelves should be placed over the counter for storage of chemicals.

Other requirements for a darkroom include an exhaust fan, a calendar to keep a record of solution changes, a timer, and four electrical outlets. Two sources of light are necessary, an incandescent, either recessed or surface-mounted to the ceiling, and a safelight plugged into an outlet 60 to 72 inches from the floor. Some clinics install a warning light outside the darkroom to let others know when developing is in process; a latch may also be used to prevent persons from entering the darkroom during



developing. The door should be only 24 inches wide, should swing inward, and must have a lightproof seal.

A sorting and viewing area should be located outside the darkroom. This area needs to include only a shelf with a view-box illuminator to enable the technician to check the film. Dental film should be kept in a lead-lined dispenser unit which may be either wall-mounted in the X-ray area or stored in a drawer.

Local building codes usually require a vacuum breaker on piping to all darkroom tanks to prevent a backup of chemical waste. Since this waste is very corrosive, acid-resistant pipes are recommended.<sup>8</sup>

#### Private Office/Consultation Room

Many dentists question the expenditure necessary to construct two separate spaces to carry out the duties performed in a private office and a consultation room (see alternate locations depicted in Figures 30 and 33; Plate VII). A private office is just what the name implies, a place for the dentist do to paperwork, study, rest, and return telephone calls without outside interference (Figures 19 and 20).

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<sup>8</sup>Malkin, pp. 230-231; Stinaff, pp. 52-53.

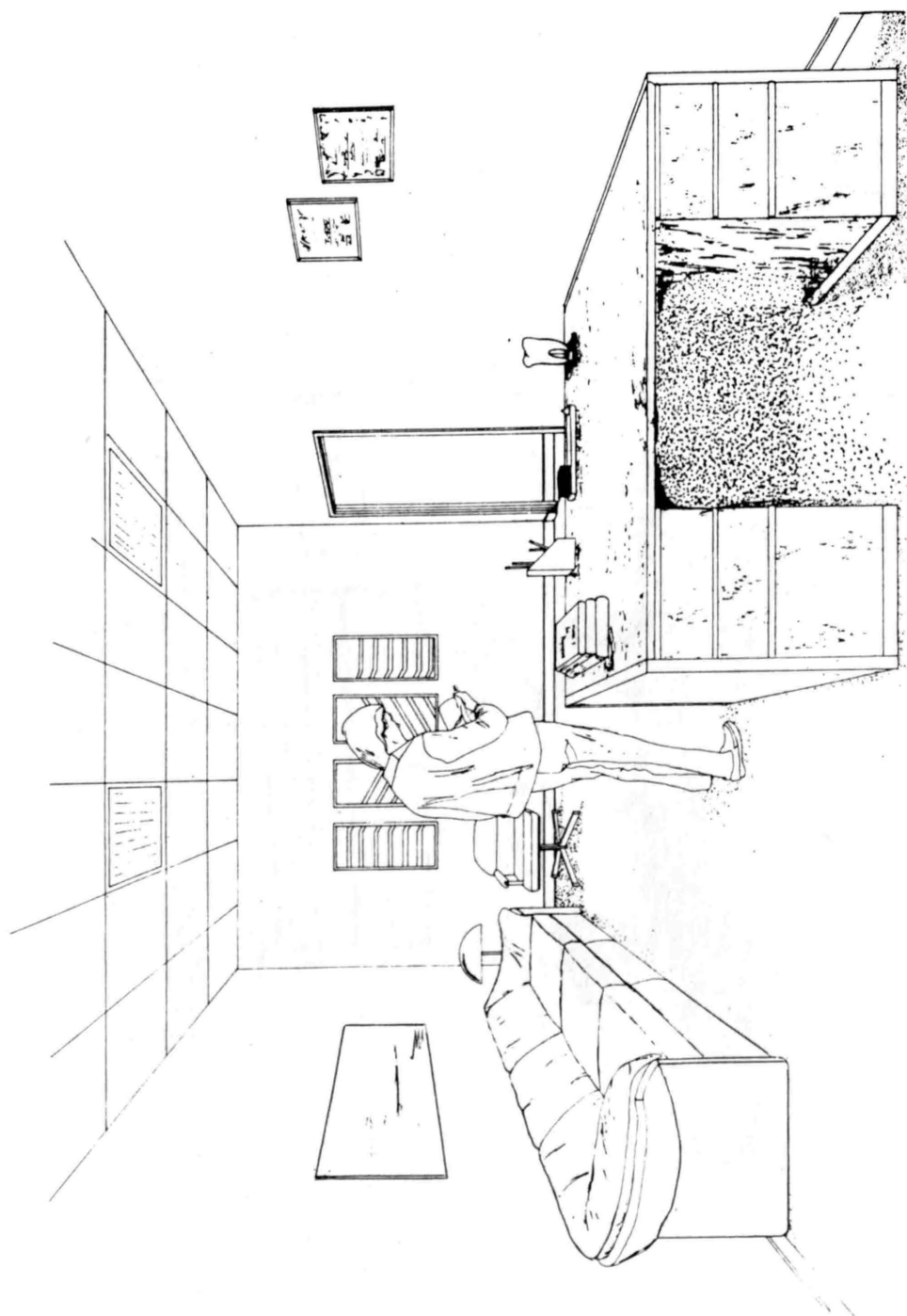


Fig. 19. Private Office

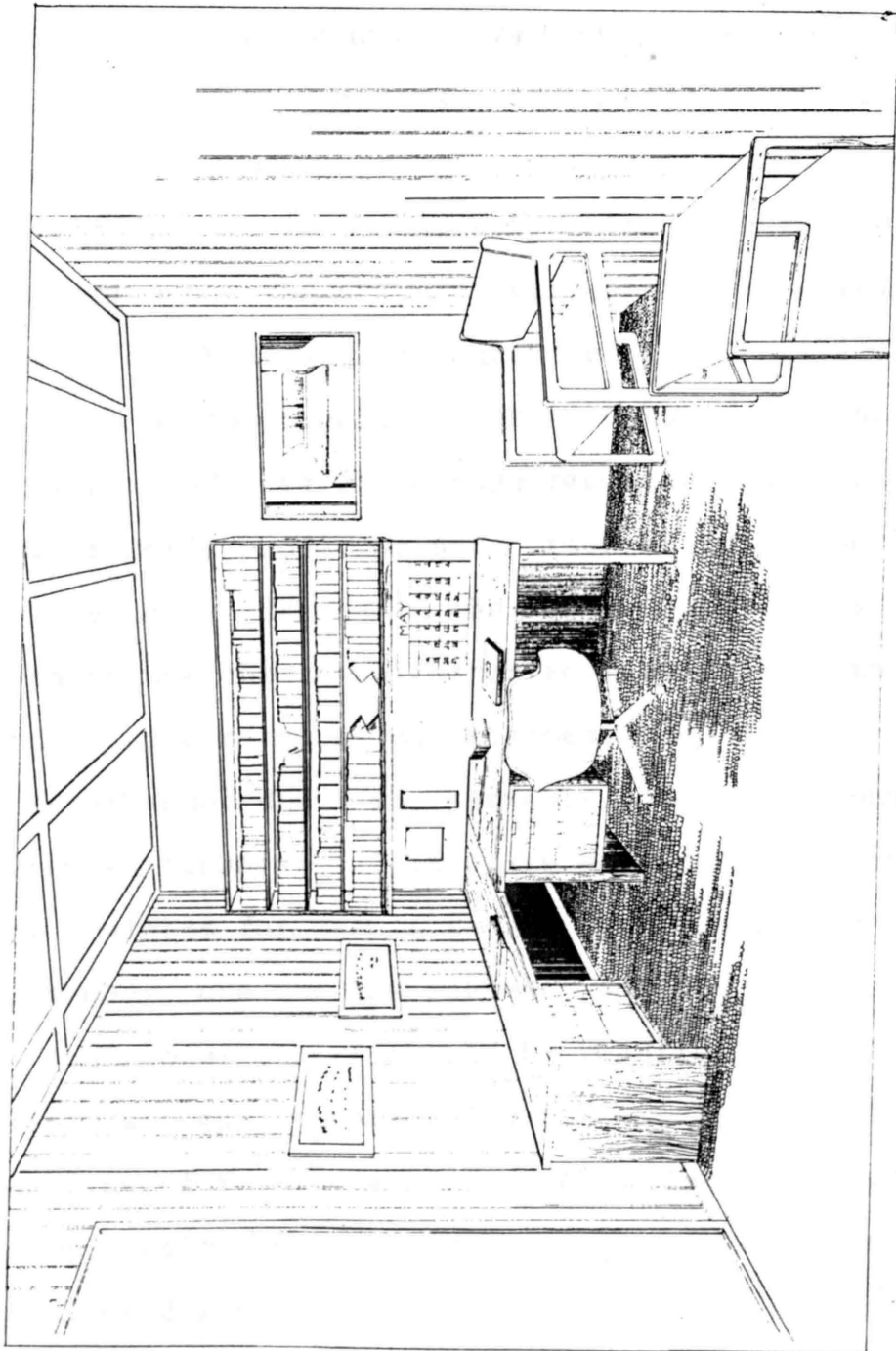


Fig. 20. Private Office

A consultation room is a necessity in a pedodontic clinic. This room or space is used by the dentist and his staff in discussing treatments with parents and children. More than other areas in the clinic it should be out of the line of traffic, and it should embody the principle of undisturbed privacy. The shape or size of the consultation room depends on the practice concept of the dentist. The design should be functional enough to allow for a radiograph view-box and possibly a tape recorder and a slide projector or movie projector and screen if educational lectures are to be offered in the room. Most dentists and staff members use the consultation room to conduct interviews and to discuss types of treatments that can be performed, recommended diets for patients, and, occasionally, their clients' finances. This space should include at least three places for people to sit: one for the dentist or staff member, one for the patient, and one for the parent. Additional chairs should be readily available if both parents accompany their child to the clinic.

The type of furniture used depends upon the degree of formality desired by the dentist. The room may be formally planned with a desk and chair for the dentist and other chairs or a sofa placed across from it. Other dentists prefer to create a more informal atmosphere in

the consultation room by using a round table and chairs or even placing the furniture in a semi-circular pattern. The appearance of the room may be enhanced by draperies or shutters, wallpaper, and other accessories, but nothing should be used that will distract the attention of the child and parent from what the dentist or staff member is saying. The décor should be simple with diffuse or indirect lighting to ensure that the patient sees everything that goes on. In some clinics the consultation room is located adjacent to the operatories for ease of movement to and from the work area; in others it is placed near the business and exit area for the convenience of patients and parents.

This space can also be used as an educational room if sufficient funds are available to purchase the supplies and equipment necessary for the latter. If they are, cabinets should be installed to store literature and books. The consultation room may also be used for staff meetings, the preparation of reports or appointment schedules during regularly assigned periods, or the passage of free time by staff members. The size and the philosophy of the dentist's practice should determine whether the consultation and

educational rooms should be combined and how many consultation areas will be needed.<sup>9</sup>

Audiovisual Room/Prevention Center/  
Educational Room

Many dental clinics include small patient education rooms with built-in counters, stools or chairs, and several electrical outlets for plugging in audiovisual training machines, either photographic or video. Slides, filmstrips, 16mm films, recordings on disks and tape, pamphlets, charts, and models are available from a number of sources for use as teaching aids. Education of parents as well as children is desirable so that they can reinforce the good dental habits learned at the clinic and supervise their children in carrying them out at home. In the educational room patients and parents may watch or listen to presentations on flossing teeth, reducing the incidence of cavities, or complicated dental procedures. Such presentations save time for the dentist and staff and relieve them from the obligation of repeating this information to a long succession of clients.

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<sup>9</sup>Joseph De Chiara and John Hancock Callender, eds., Time-Saver Standards for Building Types, 2nd ed. (New York: McGraw-Hill Book Company, 1980), p. 808; Mack, p. 19; Malkin, pp. 69, 221; Stinaff, pp. 50-52; Wright, p. 146.

In some clinics the educational area is located in the consultation room. Some dentists do not have audio-visual equipment but rely instead on the facilities used in the hygiene area, which is usually equipped with two or three sinks and a well-illuminated wall-to-wall mirror so that a dental assistant can explain and demonstrate proper brushing and flossing techniques. The educational aspects of a pedodontic practice stress the importance of preserving the teeth and periodontal tissues and the regular use of practices conducive to good dental health<sup>10</sup> (see alternate locations of educational/prevention area depicted in Figures 30, 31, and 32).

#### Mechanical/Equipment Room

Depending on the location of the clinic, the mechanical room may be equipped with a hot water heater; air conditioning and heating facilities; an air compressor, vacuum pump, or turbine; a natural gas connection; and a telephone terminal panel. This room should be located so that any necessary maintenance may be carried out without interrupting the routine of the office.<sup>11</sup>

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<sup>10</sup>Sidney B. Finn, Clinical Pedodontics, 4th ed. (Philadelphia: W. B. Saunders Company, 1973), pp. 6-7, 11; Malkin, p. 217.

<sup>11</sup>Howard, pp. 49-50; Malkin, p. 235.

### Staff Lounge

A small staff lounge is desirable to improve office morale and allow dental personnel to take an occasional "break" from their demanding work. The furnishings of this area may include a coffee maker, refrigerator, lockers or drawers for employees' personal effects, a table or counter, and chairs; some also provide a cot or sofa.<sup>1 2</sup>

### Supply Storage

Storage of supplies is especially important if the clinic is not located near a supply house. Some offices buy in large quantities to help cut costs, so the shelving and drawers used in the clinic should be designed for adequate and efficient storage. The storage area should be readily accessible to employees and easy to keep orderly and clean. It may be advisable to keep reserve supplies of all types in a single area. Adjustable, open shelves should be installed; they should not be so deep that all of the supplies placed in them are not easily visible. It may be necessary to store towels and paper items that are purchased in quantity in other areas or in some location

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<sup>1 2</sup>Howard, p. 59.



outside the clinic to keep the size of the storage room to a minimum.<sup>13</sup>

### Restrooms

If the dental office is not located in a building that supplies restroom facilities, they must be included within the confines of the clinic itself. Since plumbing is expensive, the restrooms should be installed near other areas that require plumbing facilities. If possible, they should also be located conveniently near the reception area.

### Miscellaneous

#### Communication System

Many offices do not have or need a communication system other than a telephone. In a large clinic, however, such a system can reduce foot traffic. Several types of communication systems are available, each with advantages and disadvantages. The system selected should be tailored to meet the needs of the individual office. Possible alternatives include a telephone intercom, a loudspeaker, colored signal lights, buzzers, and chimes. In most clinics the major use to which a system is put is

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<sup>13</sup>Howard, p. 60.

communication among staff members in various parts of the office. If private discussions between individuals are occasionally necessary, some of the choices above may be eliminated. The most effective system for a large office may be a combination of systems. Chimes may be used, for example, to signal a telephone call, and each staff member may have a separate colored light, accompanied by a buzzer, to indicate that he should answer the telephone intercom; the panel of lights and intercoms should be accessible while the staff's work continues. The communication system to be used in the clinic should be planned to meet the needs of efficiency.

### Lighting

Good lighting is obligatory in a dental clinic, especially in the operatory area. Some dentists prefer natural light from a northern exposure in the operatories, but this is no longer an essential requirement since excellent lighting is provided by today's advanced color-corrected fluorescent lamps. The most important considerations are that the illumination be free of shadows and that a brightness ratio be maintained with the operating light, which is used to aid the dentist during treatment. This light may be mounted in the ceiling on a track above

the chair (Figure 21), post-mounted to the ceiling (Figure 22), or mounted to the dental chair or unit. Balanced fluorescent lighting around the room eliminates annoying glare for the patient. A good plan for lighting requires sufficient flexibility to permit office changes and expansion with a minimum of difficulty.

### Music

Many people find soothing music to be pleasant in a dental clinic, and it can be helpful as it assists patients to relax. Music that is free and romantic rather than agitating is most suitable; it may be used to cover noises from the street and sounds from the operatory that would otherwise intrude on patients in the waiting room.

### Acoustics

The importance of permitting only pleasant sounds in the reception area and muffling the cries of displeased or unhappy children in the operatory constitutes a neglected aspect of pedodontic clinic design. The use of carpeting, acoustical ceiling and wall coverings, and upholstered furniture may aid in the effort to foster a peaceful atmosphere. Even in some sound-conditioned offices noise from the operatory travels through air conditioning or heat

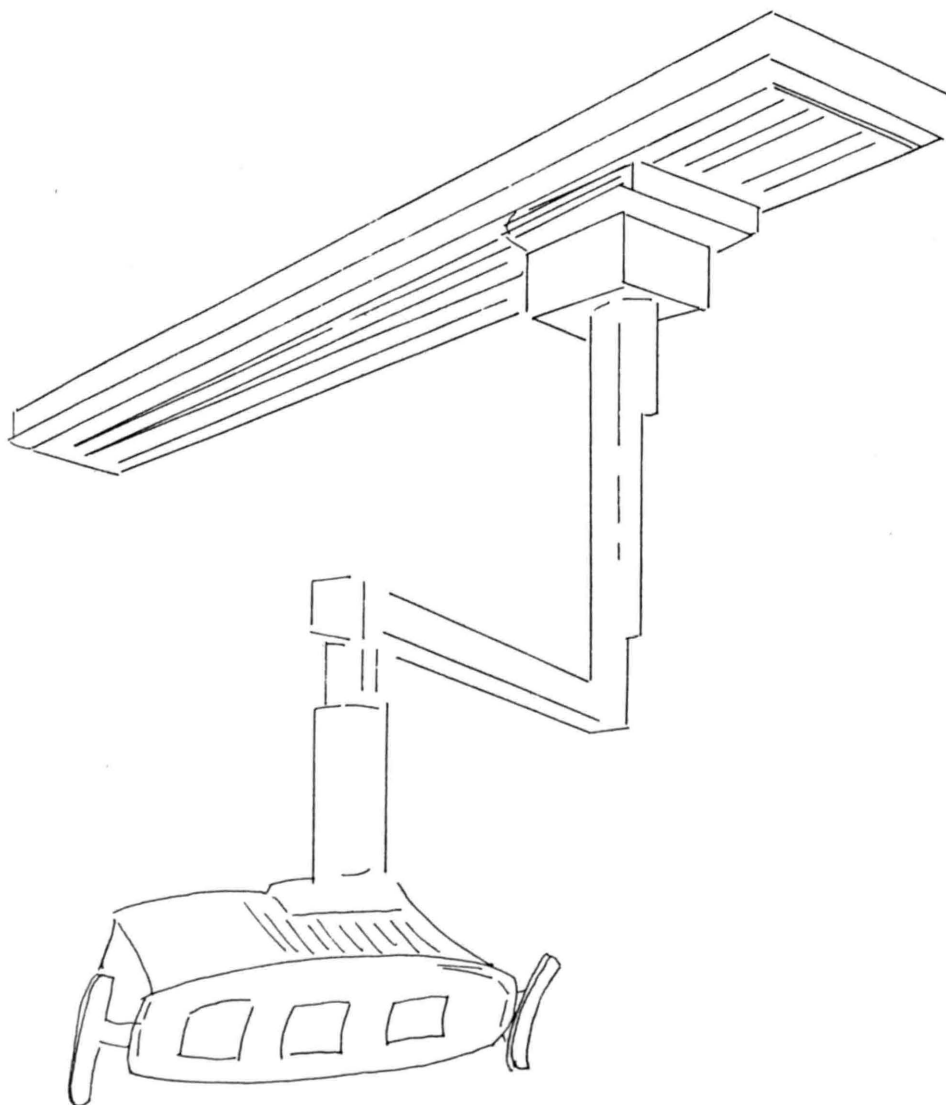


Fig. 21. Ceiling Track-Mounted Operating Light

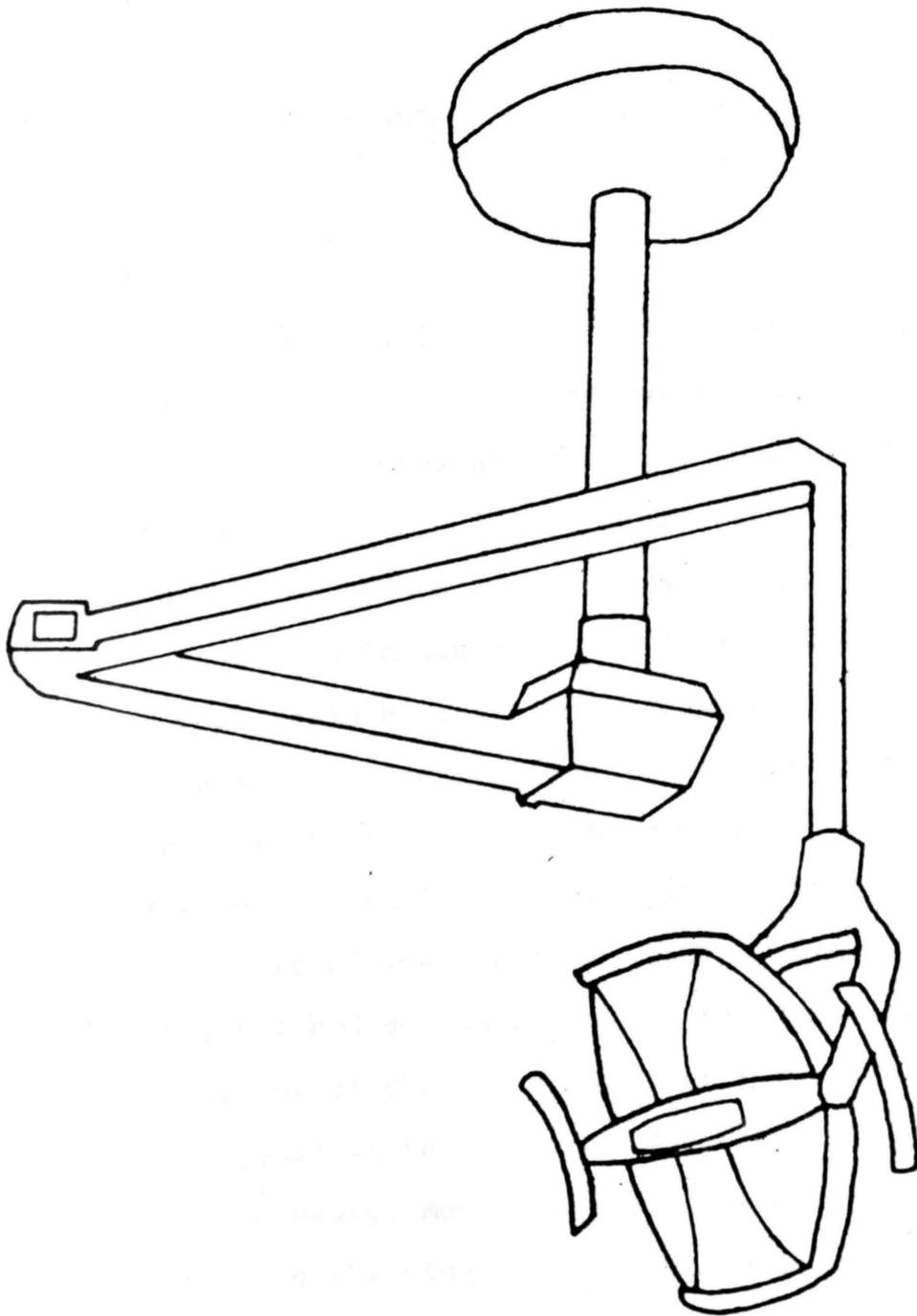


Fig. 22. Ceiling Post-Mounted Operating Light

ducts, but this problem can be solved by placing baffles in the system.

### Attire

The staff should of course be well-groomed. The dress of the dentist and staff members should be neat and clean but should not stand out as a "uniform." A very casual style of attire is now being used in an increasingly large number of pedodontic clinics. Since the appearance of the staff should appeal to children, clinic personnel should wear unalarming clothing to which children can easily relate. In touring different clinics the writer found a variety of attire. The members of some clinic staffs wore colored Izod or polo shirts that matched the décor of their office and blue jeans or blue jean skirts; other clinics had set no standards for dress other than neat, everyday clothing. The writer found no one wearing the traditional white uniform. Since dental work can sometimes be messy, most staff members wore casual attire. One dentist of the nine visited wore a white shirt and tie with dark slacks; most wore pullover or open-collared shirts with dress pants. All the dental personnel interviewed agreed that the attire they wore was chosen to

enhance beneficial psychological effects upon the children who came to the clinic and to help them to view the staff as their friends.

### Office Cleanliness

"Immaculate" is the term that should describe the dental office. The materials chosen for the clinic's facilities, equipment, furnishings, and accessories should help to achieve this goal by being as easy to clean and maintain as possible.

In summary, in planning each space to be used in the dental clinic the functional aspect should always be uppermost in the designer's mind.<sup>14</sup>

### Interior Finishes and Furniture

#### Interior Finishes

When planning a clinic one must take time in choosing commercial grades of materials to furnish the office. Many clinics are designed to residential standards with materials that are not intended to withstand the abuse resulting from high-volume daily use and traffic. The

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<sup>14</sup>William R. Cinotti, Arthur Grieder, and H. Kark Springbob, Applied Psychology in Dentistry (St. Louis: The C. V. Mosby Company, 1972), pp. 150-153; Howard, p. 60; Malkin, pp. 234-235.

non-professional designer is likely to select materials and furnishings by appearance and personal preference only, whereas some architects tend to select materials that are functional and proper in terms of wearability and maintenance but dull and lacking in appeal. It is the designer's job to combine the factors of attractiveness and utility by becoming familiar with the practical values of the materials in question and at the same time cultivating the sensitivity, taste, and aesthetic judgment to select the most appropriate materials for the facility.

If the design budget permits, a commercial grade of vinyl covering should be installed on all walls. Gypsum board walls, provided that they are not too highly textured, may be employed in the clinic, and thicker gypsum boards may also help to alleviate acoustical problems. A light texture applied to the gypsum board is desirable if one intends to paint it. Heavily textured wall treatments should be avoided if maintenance is a concern; surfaces such as stucco are hard to keep dust-free and to clean. Numerous types of wall treatments may be used to achieve the "look" that the individual dentist wants for his clinic.

Of the various ceiling treatments available an acoustical tile ceiling is most suitable for several



reasons. A suspended ceiling gives ready access to the electrical wiring and mechanical systems located above it; it is easier to clean or replace than a fixed, solid ceiling; and, if mobility is important, the tiles are very flexible in adjusting to changes.

The flooring materials that may be chosen for the clinic include carpeting, vinyl, ceramic tile, vinyl asbestos tile, and sheet vinyl. Of these, asbestos tile is the most desirable and the least expensive; it does not require waxing and it is very durable. Sheet vinyl may be preferred in wet areas such as restrooms if the budget does not allow the purchase of ceramic tile. In recent times, it has become more common for carpeting to be installed throughout the dental facility. If selected properly, it can be easy to maintain, add warmth to the appearance of the office, and enhance the clinic's acoustics. It can also help to prevent injuries that may occur if children fall. Density, fiber, pile height, and numerous other factors must be considered when choosing carpeting. The third- and fourth-generation nylons have become increasingly popular in medical facilities. Commercial grades of carpeting are usually installed directly

over the slab with no pad; this glue-down installation method usually gives commercial carpeting a longer life.<sup>15</sup>

### Furniture

The style of furniture selected for the dental clinic will depend on the character of the office. All the furnishings chosen should be functional, comfortable, durable, and of appropriate character and scale for the particular situation in which they are to be used. Since human beings vary in size and shape, it is difficult to find a chair that is comfortable for everyone, but it is important to choose the type of furniture that will best meet the needs of the people who will use the space. Observing the clientele of other similar clinics should aid in furniture selection. Durability, of course, is a major consideration in purchasing furniture for a public building, especially an office that serves children. The designer

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<sup>15</sup>Phyllis Sloan Allen, Beginning of Interior Environment, rev. ed. (Provo, Utah: Brigham Young University Press, 1977), pp. 137, 171-217; Terence Conran, The House Book (New York: Crown Publishers, Inc., 1974), pp. 390-400, 414-425; Arnold Friedman, John F. Pile, and Forrest Wilson, Interior Design: An Introduction to Architectural Interiors, 2nd ed. (New York: Elsevier North Holland, Inc., 1979), pp. 220-226; Malkin, pp. 267-268; Dennis Grant Murphy, The Materials of Interior Design (Burbank, Cal.: Stratford House Publishing Company, 1978), pp. 72-81, 83-98; Lila Shoshkes, Contract Carpeting (New York: Watson-Guptill Publications, 1974), pp. 98-105.

must have a sense of what materials and finishes are most appropriate for the clinic. Some styles of furniture may be attractive in and of themselves, but if the finish or materials used do not match or if the furnishings are not sufficiently durable, they will not be satisfactory for the dentist, his staff, or his patients. Comfort, scale, character, and sensitivity to materials and finishes are the factors that should determine how each item of furniture will fit into the particular situation of the clinic. The actual pieces of furniture to be selected will depend on the dentist's philosophy and the overall concepts of the office. If the clinic is located in a region where inclement weather is common, an area should be provided near the entrance for removing boots, coats, and other winter apparel. An umbrella caddy, shoe rack, and coat hooks--some low enough for children--should be provided. This area should be visible to waiting patients.

The range of furniture that might be used in the waiting room/reception area is great. The main criterion is ample seating; some chairs with arms should be provided for the elderly, and some armless chairs or benches should be provided for mothers with small children. A requirement for all chairs is that they not be so low, hard, or soft that individuals experience difficulty in

rising from them. Tables or flat surfaces should be provided for mothers using infant carriers. It is important to furnish a space especially for the children visiting the clinic. It should include a small table or counter to be used for coloring, reading, or playing games. Storage bins for toys will help keep the floor space clear, and creative play units may be designed to occupy the children's time. Magazine racks should be incorporated in all waiting areas to eliminate the clutter of loose magazines on tables and chairs. A wall-hung unit for this purpose is very functional. No matter what style of furniture is chosen, it should meet the needs of the space for which it is intended.<sup>16</sup>

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<sup>16</sup>Friedman, Pile, and Wilson, pp. 204-215; Jack Lenor Larsen and Jeanne Weeks, Fabrics for Interiors: A Guide for Architects, Designers, and Consumers (New York: Van Nostrand Reinhold Company, 1975), pp. 28-36; Malkin, pp. 268-269; Murphy, pp. 154, 159; Sherrill Whiton, Interior Design and Decoration, 4th ed. (New York: J. B. Lippincott Company, 1974), pp. 400-408, 644-660.

## CHAPTER V

### CIRCULATION PATTERNS WITHIN THE OFFICE

The circulation patterns within a pedodontist's office have an extremely important influence on those who use it. The circulation patterns within the office are generally of two types, movement within the various spaces in the clinic and movement within the individual spaces.

#### Traffic Flow between Office Spaces

In planning a clinic one should observe the routine of each staff member and locate the areas in which they work according to the priority of their duties. The patients' routine circulation pattern begins as they enter the waiting room/reception area. The first move the patient makes is to the education/hygienist area; then he travels to the operatory. At the end of the treatment the child is transported to the consultation area, where he and his parent discuss the visit with a staff member. After this discussion the patient and parent move to the reception/business area to schedule a future appointment, if required, and pay for the services rendered (Figure 23). At this point it should be mentioned that some offices

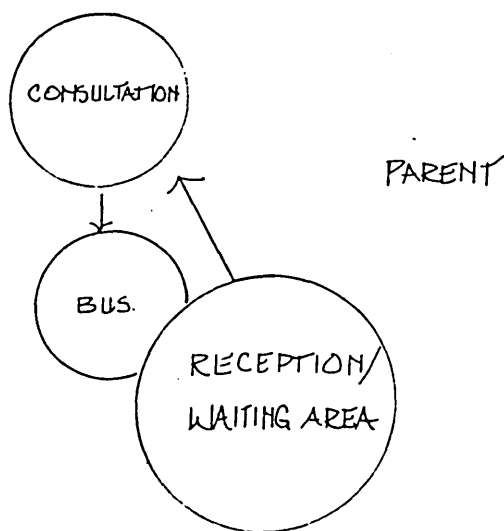
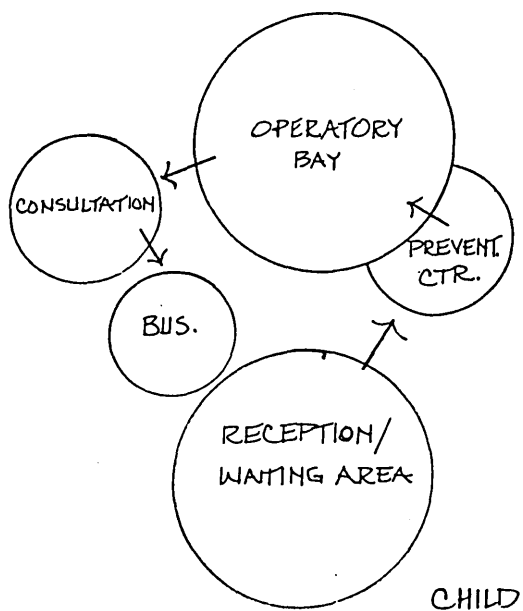


Fig. 23. Clinic Circulation Patterns for Child and Parent

provide a separate exit for departing patients. Depending on the dentist's philosophy, the child and parent may exit by returning through the waiting area or may leave the clinic through another door.

The dentist's circulation pattern generally begins in the private office and then moves to the operator and the consultation area. The dentist should be able to enter the operator bay without having to walk around the chairs or through the assistant's work area, wash his hands, and be seated at the patient's right--or left, if he is left-handed (Figure 24).

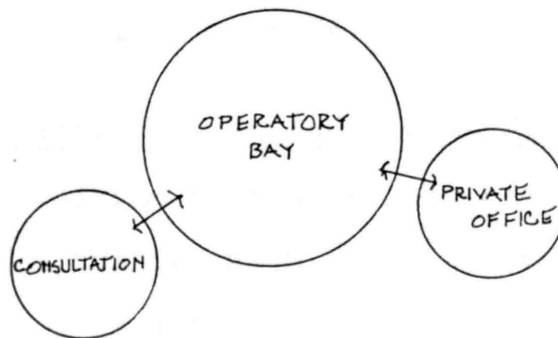


Fig. 24. Clinic Circulation Pattern for Dentist

The dental assistant's path moves from the sterilizing area to the operatories, darkroom, and lab (Figure 25).

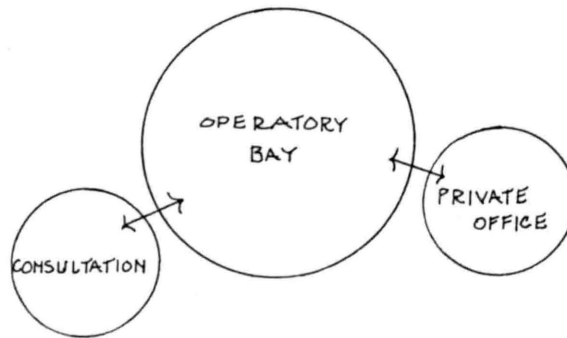


Fig. 25. Clinic Circulation Pattern for Dental Assistant

The business office clearly requires a central location that is readily accessible to the operatory, laboratory, X-ray processing and sterilizing area, and waiting room/reception area (Figure 26).

#### Traffic Flow in Individual Spaces

##### Waiting Room/Reception Area

The major traffic path from the front entrance to the business office and to the lavatory and coat rack should be planned to create an undisturbed area that is free of traffic (Figure 27).

##### Business Office

A counter should separate the main flow of traffic from the business area. The secretary should be able to



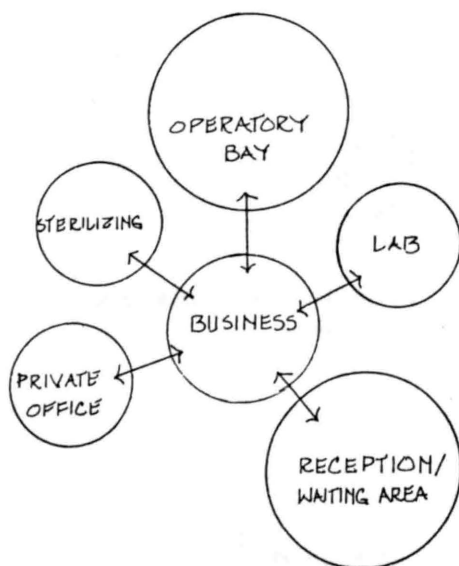
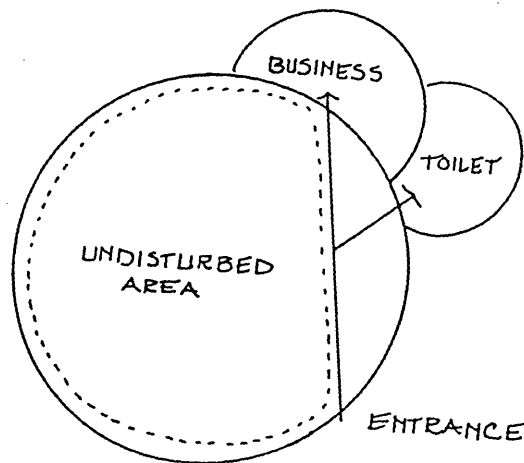
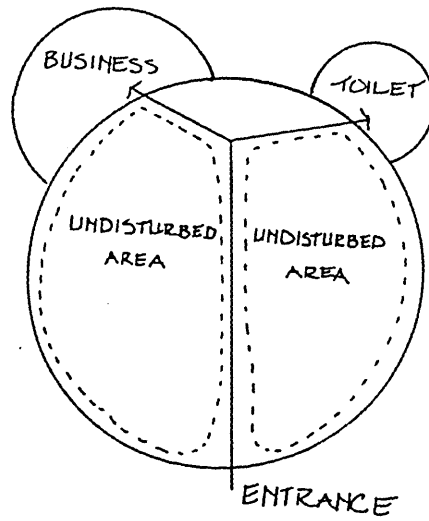


Fig. 26. Clinic Circulation Paths Facilitated by Central Location of Business Office

reach the telephone and the typewriter from a sitting position without too much turning from side to side. Active files should be conveniently located, with inactive files directly behind or to one side of the desk for easy access when necessary (Figure 28).

#### Laboratory

The work area in the laboratory should facilitate efficient work. Most important, benches should be arranged



Area Fig. 27. Traffic Path for Waiting Room/Reception

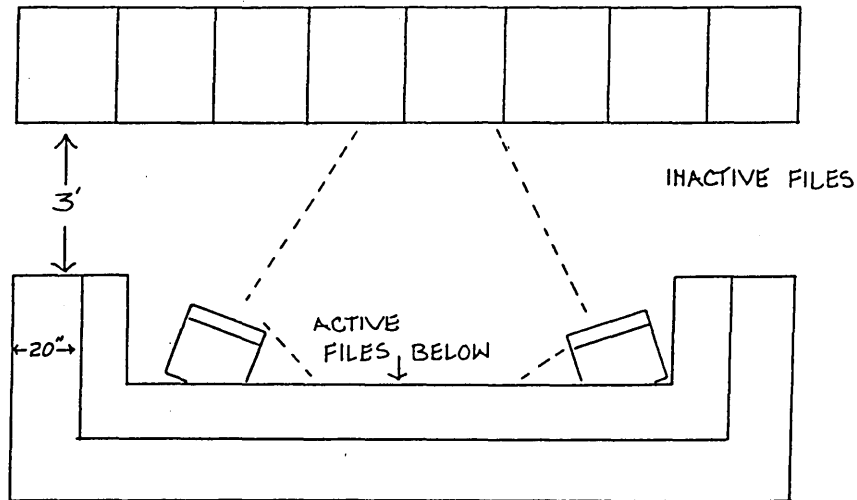


Fig. 28. Suggested Design for Business Office Counter and Files

so that workers do not disturb each other, and overhead cabinets should be within easy reach<sup>1</sup> (Figure 29).

### Comprehensive Clinic Plans

The floor plans presented on the following pages represent an effective summary of all the design and planning principles that have been discussed in this paper. Each one is unique because of the philosophy of the dentist and staff reflected in it and the manner in which that

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<sup>1</sup>Julius Panero, Anatomy for Interior Designers, 3rd. ed. (New York: Whitney Library of Design, 1962), pp. 78-87, 102-117; Julius Panero and Martin Zelnik, Human Dimension and Interior Space: A Source Book of Design Reference Standards (New York: Watson-Guptill Publications, 1979), pp. 169-190.

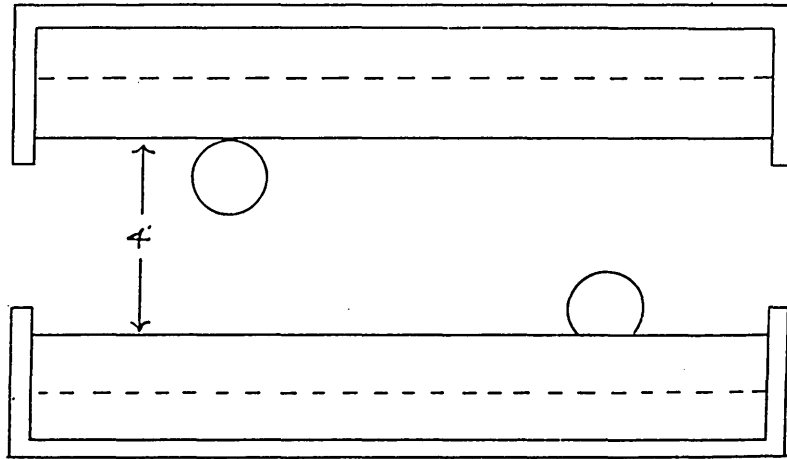


Fig. 29. Suggested Design for Laboratory Work Area

philosophy was interpreted by the designer. Figures 30, 31, and 32 are plans for a one-doctor operation; Figure 33 is a plan for a partnership.

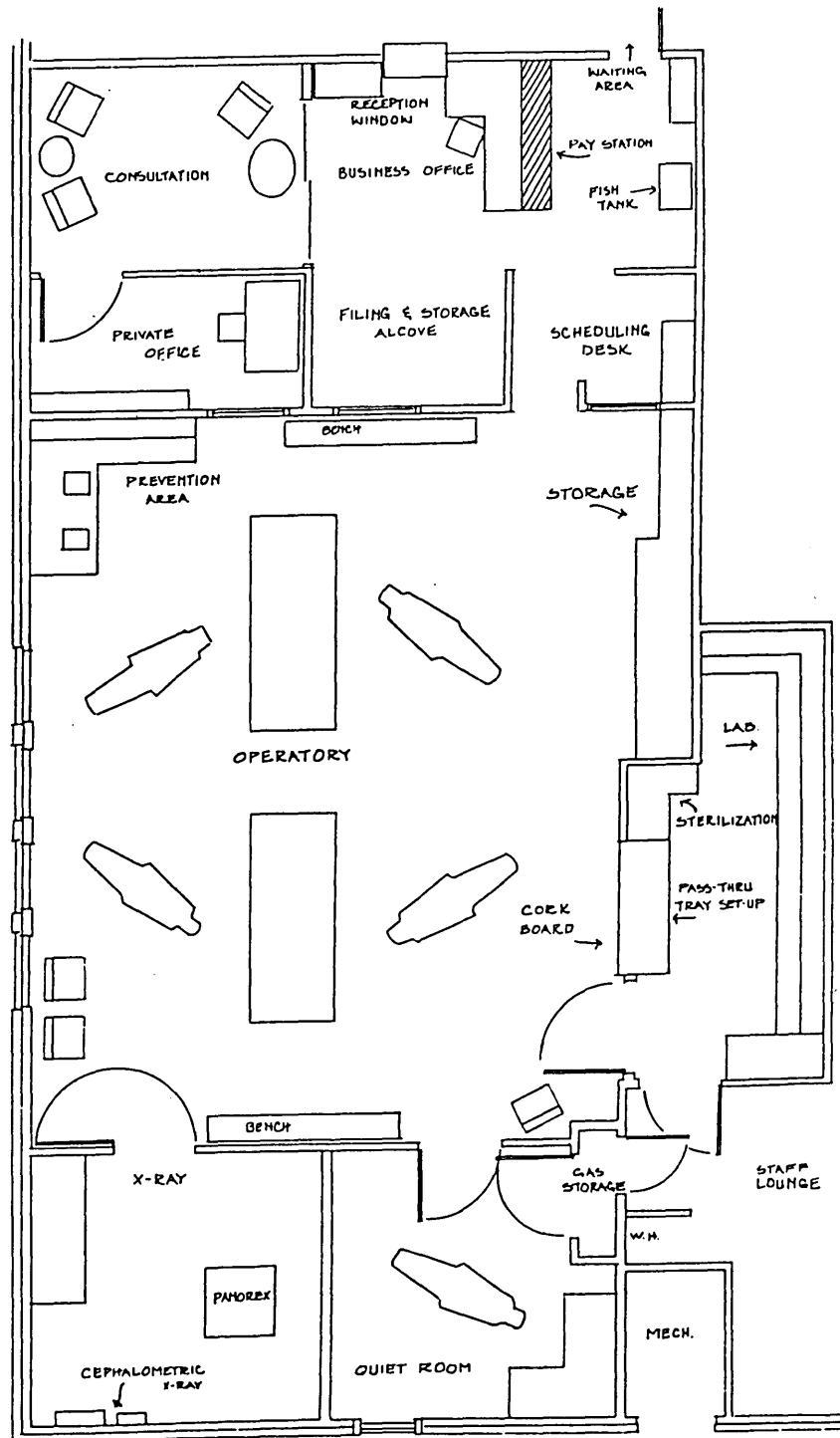


Fig. 30. Dental Clinic Floor Plan: One-Doctor Operation

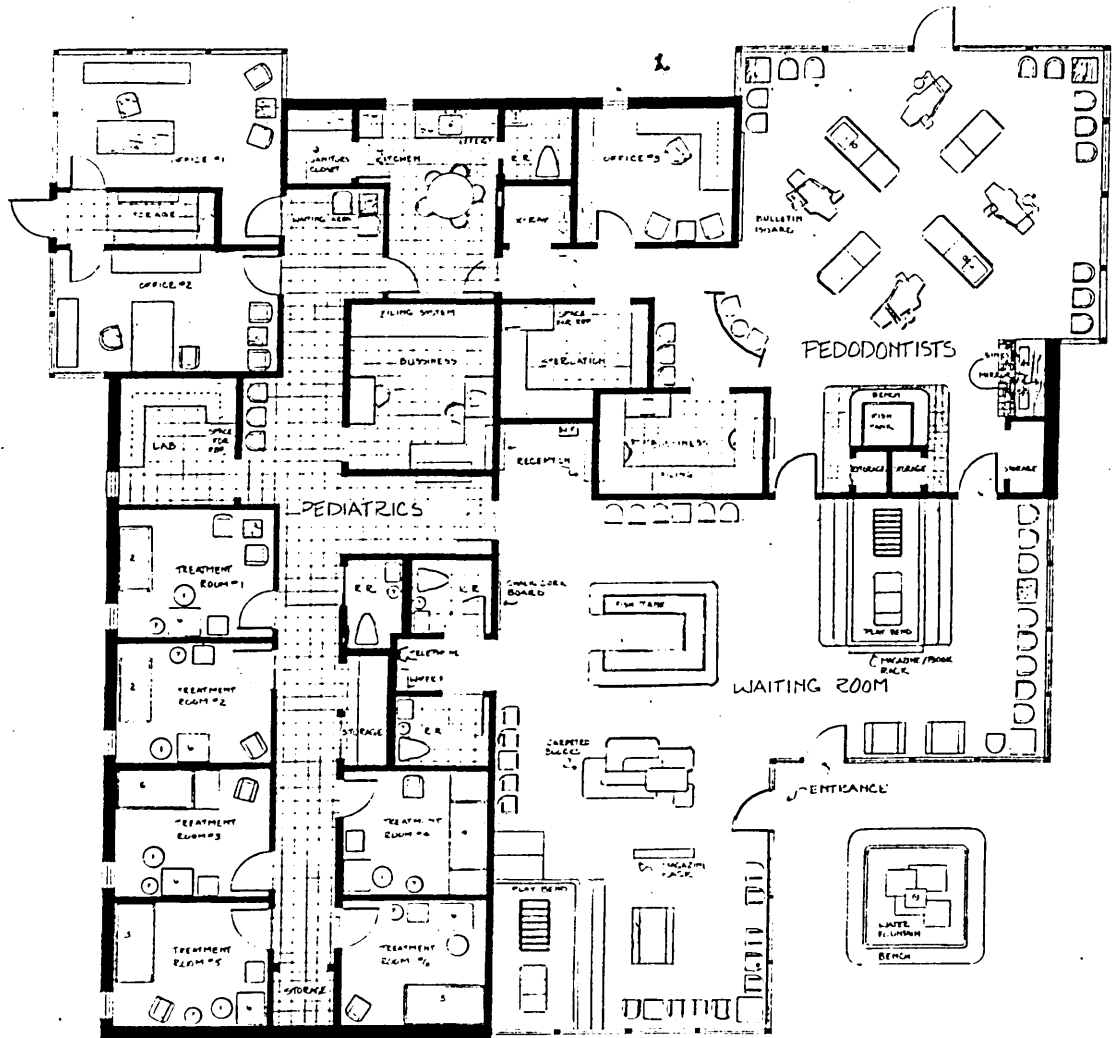


Fig. 31. Dental Clinic Floor Plan: One-Doctor Operation

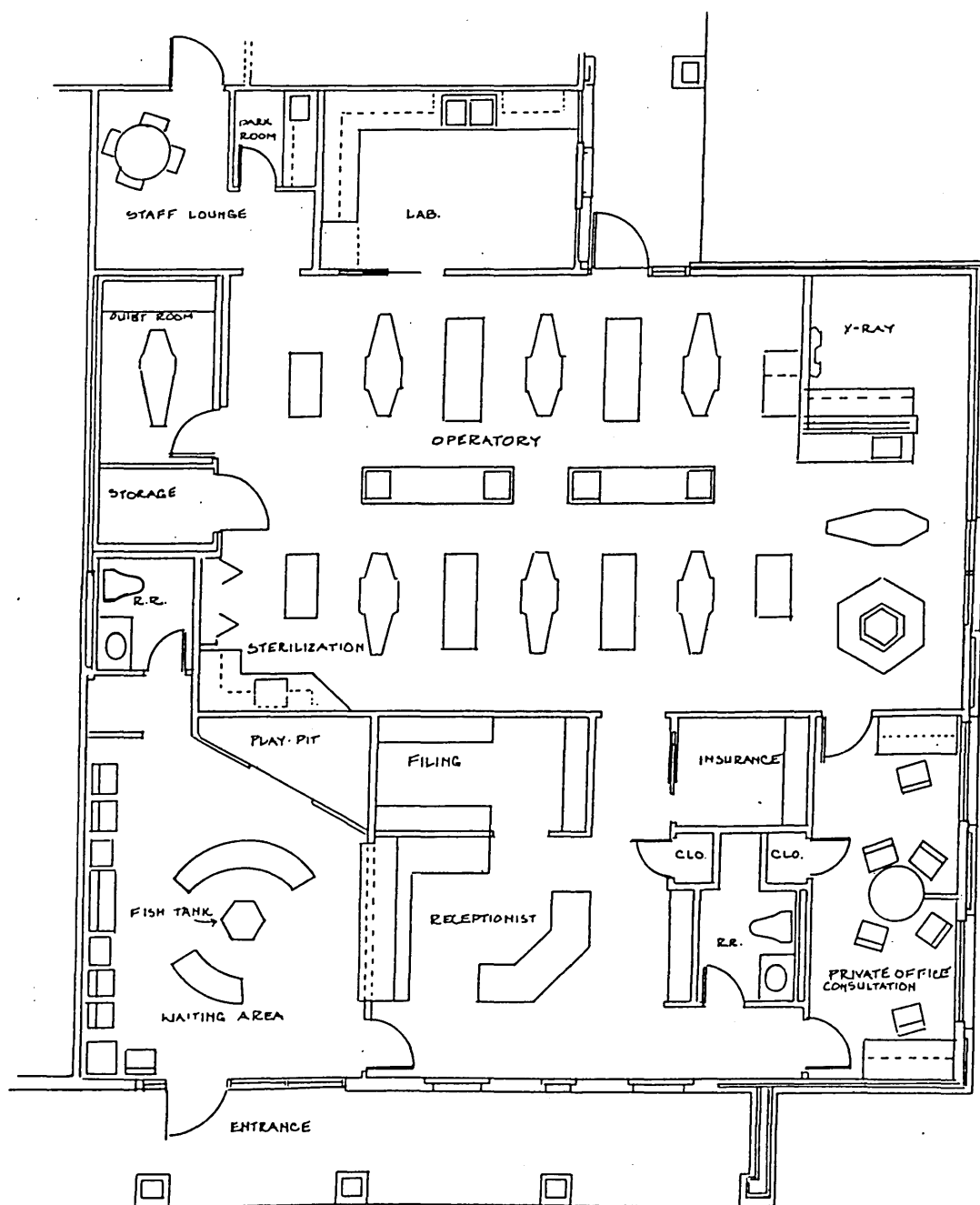


Fig. 32. Dental Clinic Floor Plan: One-Doctor Operation

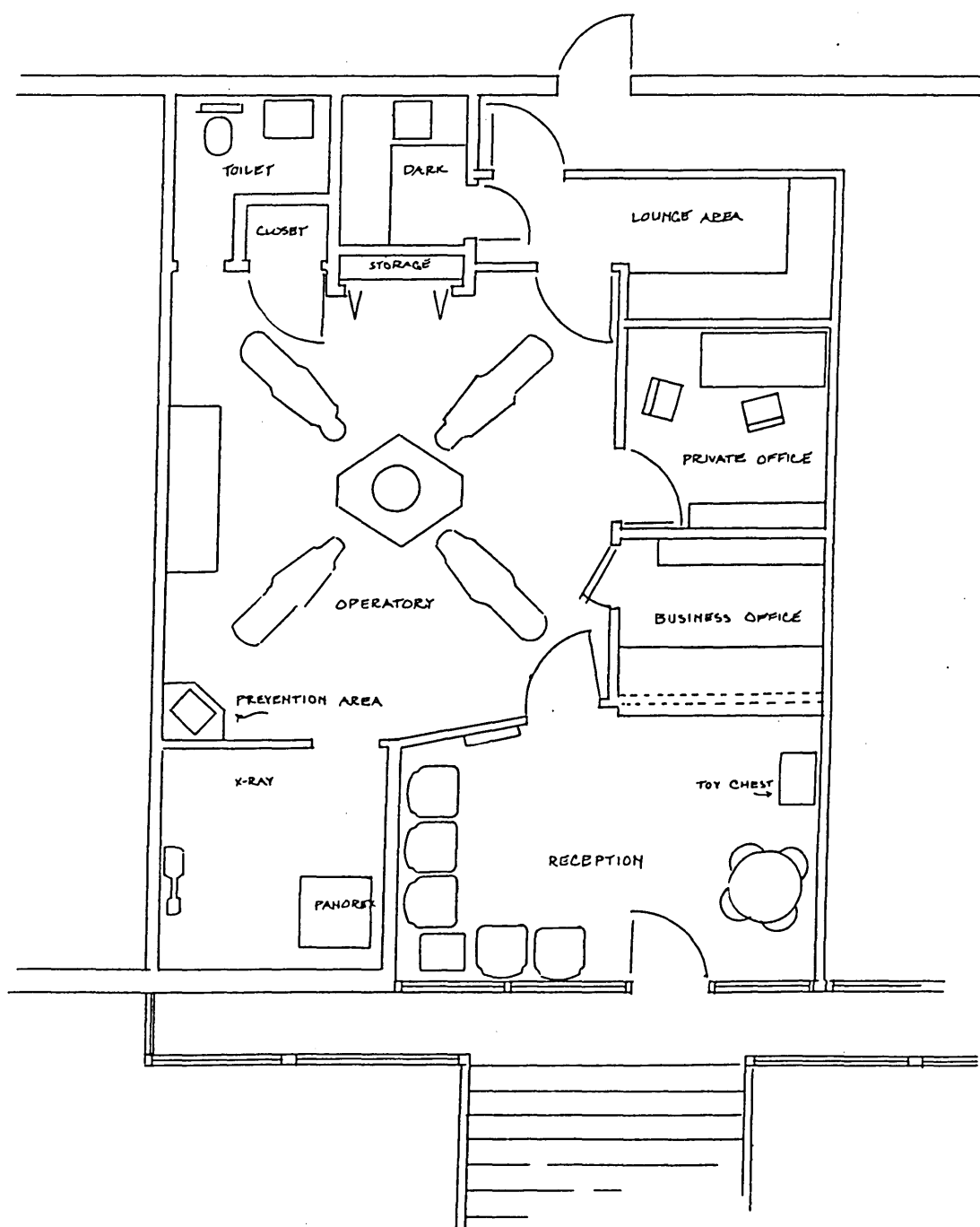


Fig. 33. Dental Clinic Floor Plan: Partnership



## CHAPTER VI

### CONCLUSION

Although function and productivity are essential in design for a dental office, other factors of the clinic's interior surroundings must also be considered. The goal of the writer was to produce a collection of design proposals to meet the psychological and functional needs of both patients and staff. The information presented will aid designers and dentists in planning effective, efficient, and pleasant clinics.

The information on the psychological effects of a child's first visit to the dentist may help designers to empathize with the fears and anxieties that children are likely to experience at the dentist's office and to make this awareness a consideration in planning a pedodontic clinic. The discussions of each area of the clinic comprise a technical view of design. The successful mixture of the two major design factors--functional and psychological/aesthetic--was stressed in the discussion and presentation of circulation patterns and comprehensive clinic floor plans.

Each comprehensive plan illustrates the innovations that may result when two professionals work together. The designer strives to make every square inch functional with no wasted space and to create a setting that patients and staff will find pleasing and that will relate well to the surrounding environment; the dentist's role is to elucidate his philosophy and work habits so that the designer can create a plan that meets all of his needs. All office plans share some elements in common, but the philosophy of the staff, the views of the designer, and the location of the facility make each pedodontic clinic unique.

## APPENDIX A

### GLOSSARY

Adjacent--Not distant; having a common border; immediately preceding or following.

Aesthetic--Pertaining to beauty, taste, or the fine arts; artistic; appreciating or loving the beautiful.

Balance--A principle of design which presents an impression of equal distribution of weight in design.

Bubble diagrams--Arrangements of loosely drawn circles or free-form shapes that roughly outline different space uses, formulated by the designer after the discussion of the overall program as the first graphic stage of planning; in their proportion to each other the circles show the relative size and importance of each area. Bubble diagrams also establish relationships between various spaces. They may be reworked many times, with considerable adjustment of spaces, zones, and relationships. After these initial decisions have been made, the process of organizing space within more precise two-dimensional drawings begins.

Central vacuum system--A system in which the power unit is permanently located in the basement, garage, or mechanical room and inlets in which the vacuum hose is connected or installed are placed in all major rooms so that every corner can be reached.

Cephalometric X-ray unit--An X-ray unit which takes a film of the entire head and jaw.

Concept--Something conceived in the mind; an abstract or generic idea generalized from particular instances.

Cuspidor--A receptacle for spitting.

Custom-made--Made to individual specifications.

Dental assistant--A member of the dentist's staff who is skilled in the science of health and whose numerous duties include cleanup of operatories; seating of patients in dental chairs; preparing tray setups; taking X-rays; sterilizing instruments; loading anesthetic syringes; pouring impressions; mixing amalgams; charting and numbering teeth; handling suction, air, and water syringes; and assisting the

dentist in dozens of restorative and surgical procedures.

Design--An organization of elements directed by two aims, order and beauty.

Dimensional plan--A plan in which the process of dimensioning is used, i.e., recording the actual size of the facility and its interior spaces, structures, equipment, etc., on working drawings that are of necessity made to a much smaller scale.

Efficient--Productive without waste.

Endodontics--The branch of dentistry that deals with the diagnosis and treatment of diseases of the pulp and of the periapical tissues; it embraces methods of pulp conservation as well as tooth retention if the integrity of the pulp is threatened or has been breached.

Fiber--A material of natural or synthetic origin capable of forming a continuous filament such as yarn or thread.

Floor plan--The representation of the top view of a structure cut about halfway between the floor and the ceiling; it reveals the location of doorways, windows, stairs, cabinets, and many other items within the structure. These items are located and their sizes are indicated by means of dimensioning the floor plan. Notes describe the direction of floor joists and, occasionally, the type of material covering the floor.

Fluorescent lighting--Artificial lighting that results when electrical current activates a gaseous mixture of mercury and argon within a sealed glass tube to create invisible radiation, which is then absorbed by the tube's interior surface coating of fluorescent material to yield visible luminiscence.

Functional planning--a process that begins with an analysis of the activities to be carried out within the facility and then moves toward an accommodation of space needs to those activities; not only physical

requirements but also psychological demands for space must be anticipated.

Gypsum board--Also known as wallboard or plaster board, an interior wall surfacing consisting of thin panels of a plasterlike material; because the boards are not decorative, they must be painted, wallpapered, or covered with some other material.

Hygienist--One who is skilled in the science of health; a dental health educator permitted by law to administer dental prophylaxis and other preventive treatment.

Interior designer--A professional who plans, designs, and furnishes interiors; confers with clients to make decisions on construction, equipment to be installed, and other factors which affect interior environments; plans the design to be practical, aesthetic, and appropriate for the purposes of the facility (e.g., selling merchandise, improving the environment); advises clients on interior design factors such as space, planning, layout and use of furnishings and equipment, color schemes, and color coordination; displays design ideas in sample board drawings; estimates costs and presents plans to the client for approval; and selects, designs, and/or purchases furnishings, art works, and accessories.

Operatory bay--The area where hands-on dental care is delivered.

Panorex X-ray unit--An X-ray unit in which the patient stands or sits in a special chair and the X-ray head revolves around him, making a film of the entire mouth rather than the limited area filmed in a bite-wing X-ray.

Pedodontics--The branch of dentistry that specializes in the care of children; it is based upon a philosophy of prevention.

Pedodontist--A dentist who specializes in the care of children.

Philosophy--A search for a general understanding of values and reality by chiefly speculative rather than

observational means; an analysis of the grounds of and concepts expressing fundamental beliefs.

Pile height--The length of carpet pile measured from the surface of the back to the top of the pile.

Plan--The configuration of spaces, rooms, walls, and openings in an architectural structure; also, the graphic representation of such an arrangement.

Programming--The process of carefully identifying all requirements relevant to the design of the facility before the graphic stage of planning is begun; the elements of the program include analysis of the site, space requirements, special functional goals, equipment needed, description of the desired character of the space, and the allotted design and planning budget.

Proportion--A constant ratio between corresponding aspects of a space, of one part to another or of each part to the whole.

Prosthetics--The act of making and adjusting artificial parts; the restoration or change in the appearance of a facial part.

Scale--The size of the parts in relation to the whole object or a representation of an object to the object itself.

Space--A negative concept; the forms filling it are positive. The shape of a space within a facility is determined by the floor, the intersecting walls, and the ceiling.

Space planner--A professional who plans the use of space to meet the needs of the facility; evaluates circulation, lighting, location, and size; measures the facility to compute the square footage available for occupancy; computes the square footage available per staff member to determine minimum space limits; draws a design layout showing the location of furniture, equipment, doorways, electrical and telephone outlets, and other items; and may direct workers in moving furniture and equipment and other operations to prepare the facility for occupancy.

Space planning--The process of planning a space or area to meet the need or function for which it is intended.

Texture--Surface characteristics.

Tile--Stone, concrete, or ceramic pieces, flattened and/or curved, used for roofing and as wall and floor coverings.

Upholstery--A soft covering of fabric on seating units, sometimes but not necessarily installed over padding, stuffing, and possibly springs.

Vinyls--A versatile family of strong, lightweight plastics available in flexible and rigid, molded and film, and foam and cellular forms.



APPENDIX B

PLATES

Plate I. Model of Waiting Room/Reception Area



Plate II. Model of Waiting Room/Reception Area



Plate III. Model of Waiting Room/Reception Area



Plate IV. Model of Pedodontic Clinic



Plate V. Model of Pedodontic Clinic



Plate VI. Model of Pedodontic Clinic



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