MODEL FOR A TEACHING PRACTICE:

Development of a Prototype through Design Inquiry

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Abstract

This thesis examines the role of the architect in practice, specifically the architect's relationship with a health maintenance organization faced with the challenge of designing a model teaching practice. The primary goal of the project is to design a workplace that fosters communication and learning through interior architecture, work processes and organizational structure. In the study presented here, the architect becomes a researcher and explores a multiplicity of tools and techniques from various disciplines when engaging with participants of the professional community to learn about their space, work processes and organization. The participants are considered the experts of their workplace. Given this assumption, the architect listens to them, watches how they work, and interprets daily events in a personal log. In addition, the architect seeks for qualitative and quantitative data and prepares exercises that permit the participants to voice their ideas. The various forms of inquiry assist the designer in the reflective analysis and in the formulation of a conceptual framework for interior architecture, work processes, and organizational structure. Once completed, the designer creates a knowledge based design prototype that fosters the goals of the organization. This approach requires the architect to be multi-faceted. In addition to the traditional role as designer and consultant, the architect must act as a coach, analyst and synthesizer.

One of my thesis goals is to demonstrate the potential for enriching the architectural design process through the application of various inquiry techniques coupled with reflection and discussion. The inquiry methods I employ include participatory observation, informal interviews, participant generated drawings and workbooks, and communication mapping. Using these environmental-behavior research tools reveals the paradoxes and inherent contradictions that exist within the organization and within the workplace. Once the conflicts are identified, a language or conceptual framework is developed which presents solutions to the problems. Finally, a proposal for a prototype is presented.

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Thesis Title:	Model Teaching Practice: Development of a Prototype through Design Inquiry

Preface

This thesis documents a unique combination of non-traditional inquiry tools as an approach for making better design decisions when creating interior architecture.

To enable the reader to use this thesis most effectively, I am proposing a strategy for its review. To begin, the document is broken into two basic parts: the thesis and the research component or Appendix. I recommend that one review the ideas explored in the appendices prior to reading any chapters. I suggest this due to the fact that the data I present in the appendices is the origin for the inquiry and reflection that I present in Chapters 2 through 7.

Appendix 1 contains my daily logs. The logs record the research period from July 8, 1996 to August 16, 1996. They are broken into four distinct parts: empirical data in the form of text & sketches, interviews, and participant drawings. The written portion of the logs are divided into four parts: documentation of the day's event(s) (What is happening?), interpretation of the event(s), reflection of the event(s) and space. I recommend that the reader review two or three written excerpts, read one complete interview and glance at the variety of sketches documented to understand the level of inquiry that I explored prior to the formal inquiry documented in Chapters 2, 3 & 4.

Appendix 2 contains data compiled from a participatory workbook that I designed for this project. It is composed of photographs and text that are evaluated by a cross-sampling of participants. Reviewing the variety of responses in the data presented will help the reader understand how participants critique their workplace and how they envision changes or improvements.

Appendix 3 contains the results of a participatory communication mapping matrix that I designed for this project. The data presented attempts to chart communication patterns that exist within the organization. Due to the brevity of this exploration, I question the results; yet, reviewing this information will expose the reader to an alternative inquiry approach that could be considered when designing a workplace environment based on communication patterns.

I enclose the appendixes because I have revisited the data throughout this experience on numerous occasions as a reflective process. It was during these times that I was challenged to look deeper into the data and uncover how space, work process, and organization are linked. For me, this reflective process was a means of understanding the challenges embodied in the complex problem of unifying context and form.

Once the reader has viewed the appendices, one will understand how the thesis attempts to simplify the complex material into three basic categories: space, work process and organization.

Due to the confidential nature of this exploration all of the participant names have been changed.

Acknowledgements

My sincere gratitude

This page is much too small for me to thank enough everyone who has helped me with this thesis. From its conception to its completion, I was fortunate to have an abundance of support and advice to keep me moving forward.

To the innumerable individuals from the health maintenance organization who contributed information and knowledge to the research for this project. Without their collective cooperation, the project could not have been realized. Especially, to Angel Burgess, Elizabeth March, and Gordon Moore who gave me the opportunity to work within the organization. Especially, to Craig Samitt who spent time with me reviewing the organization, future goals and resident teaching program. Especially, to Jim Sherry who was always available for clarification on any issue that might arise.

To my co-advisor Turid Horgen, for her invitation to learn about environmental-behavior research techniques, continuous support of this thesis, and trust in my abilities throughout the experience as a researcher and designer.

To my co-advisor Bill Porter, for his insight concerning the inquiry process as it relates to workplace issues and language development.

To my reader Edith Ackerman, for her advice and criticism relating to inquiry & conceptual framework development, and for her excitement and dedication to this thesis.

To my reader Roy Strickland, for his ideas concerning the thesis as a whole and for his criticisms relating to the final spatial design proposal.

To Jake Wetzel, for his priceless technical assistance on communication networks and analysis.

To Tom Allen, for his advice and criticism on communication networks and work process analyzes.

To friends without whom the work would never have reached completion:
Suon Cheng for criticisms as I began this experience;
Mel King for tennis breaks;
Paul Keel & Charles Dalsass for assisting me with technical issues;
Sean Morgan for organizational advice;
Christine Kohlert for netgraphing advice.

To my mother, father, sister, and brother whose abundant love and encouragement have been my source of strength throughout this experience. My love and appreciation for them is immeasurable.

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"The argument is based on the idea that every design problem begins with an effort to achieve fitness between two entities: the form in question and its context. The form is the solution to the problem; the context defines the problem. In other words, when we speak of design, the real object of discussion is not the form alone, but the ensemble comprising the form and its context. Good fit is a desired property of this ensemble which relates to some particular division of the ensemble into form and context."[1]

"My model contains three sets of variables: those which are about the organization of work, those that concern the way people behave at work, and those to do with the physical disposition of the office environment - in short, job, worker and building. . . .The model is an overview of all the relations between organization, behavior and building form that come together to make the office building. It is a kind of aerial photograph of an important area of architectural concern. The patterns are the elements that fit together to make this photograph. They are the way that each isolateable relationship is made possible in physical terms. Patterns are building blocks, resolved problems, great and small, that may be fitted together in an infinite variety of ways to build the design of an office floor or an office building."[2]

[1]Christopher Alexander, *Notes on the Synthesis of Form* (Cambridge, MA: Harvard University Press, 1964), p. 15.

[2]Frank Duffy, *The Changing Workplace* (London: Phaidon Press Limited, 1992), pp. 39-42.

1. Introduction

This thesis documents an existing proposal for a model teaching practice in a health maintenance organization in Boston. The theoretical project stems from research work that is currently being pursued by MIT's Space Planning/ Organizational Research Group (SP/ORG). SP/ORG focuses on the interconnections between space, organization, and technology of the workplace, with design and work as collaborative activities, and with action research as a means of intervention and organizational learning.[1] Over the past year, some of the pre-design processes that they have used include: interviews, walkthroughs, charettes, programming sessions, design sessions, and participatory drawing exercises. Fortunately, I have been able to participate in some of these events, gain knowledge about their inquiry processes, and apply the information to this independent research project.

Personally, I have been able to contribute to the model teaching practice project by being a research assistant within the health maintenance organization (HMO). I worked for six weeks in the department of internal medicine. This department is one of the potential test sites and currently supports a teaching program. It was during this period that I was exposed to environmental-design research. I collected empirical data, interviewed, obtained participatory drawings and workbooks, and gathered communication network data. The methods I used were inspired by the work of SP/ORG and Gunter Henn. Both use inquiry as a basis for design; however, they use different methods in their pre-design processes. In this thesis, one of my goals was to demonstrate that a new combination of inquiry tools is possible when designing. Therefore, I have used some inquiry techniques from SP/ORG and and others from Henn. The new combination of tools is the basis for an alternative approach for inquiry in architectural design. From SP/ORG, I have used interviews, observation, reflection, participatory drawings, and participatory workbooks in the inquiry process.[2] From Henn, I have used communication mapping and the theoretical framework of Christopher Alexander as inquiry tools.[3,4] The combined systematic approach attempts to offer connections between the participants, the work processes, the organization, and the architect as can be seen in the Inquiry section of this document. The investigative and reflective work found in the Inquiry section of the document draws from the data in the appendices and generates the ideas that will be further articulated in the interpretative conceptual framework. The conceptual framework attempts to outline possible invarients for the prototype design and is based on Alexander's, *Pattern Language.*[5] The final proposal for the design of the space, work process and organizational structure is based on my research and attempts to achieve a fit between the form and context. Due to the fact that this is a personal investigation based on empirical data, one should be aware of its biased nature.

A prototype HMO resident training program is the vehicle for exploring the issues raised above. The primary goal of the project is to design a workplace that fosters communication and issues which impact it: learning, work processes and organizational structure. The workplace that I investigated is located within the department of internal medicine. This is where residents are currently trained to be

[1]William L. Porter, *MIT Department of Architecture: Design Inquiry Notes,* March 11, 1996.

[2]Donald A. Schon, William L. Porter, Michael Joroff, and Turid Horgen, *Towards Process Architecture: A Study of Workplace Making* (in press).

[3]Gunter Henn, *HENN Architekten Ingenieure* (Munich, Germany: Henn Architekten Ingenieure, 1994), p. 4-19.

[4]Christopher Alexander, *Notes on the Synthesis of Form*, p. 15-27.

[5]Christopher Alexander, Sara Ishikawa, and Murray Silverstein, *A Pattern Language: Townes Buildings Construction* (New York: Oxford University Press, 1977), p. ix-xvii.

primary care physicians. And this is where I will propose my spatial scheme for the model teaching practice prototype. The program prototype will be developed through inquiry and reflection as documented in this project.

The site is located just southwest of Boston's Kenmore Square on Brookline Avenue. The district is a mixed-use neighborhood which uses include residential, retail, commercial, recreational, educational, industrial and institutional. The building where this exploration will occur was originally an industrial building. Now, the building has changed through time.[1] The present use is healthcare. As a facility, the structure one of the largest health centers for a leading health maintenance organization.

[1]Stewart Brand, *How Buildings Learn: What Happens after They're Built* (New York: Viking Penguin, 1994), p. 2-11.

Precedent Analysis

Two Precedents were studied at different levels to investigate how forms of inquiry influence the design process. In both cases, site analysis and participatory techniques were used to generate the conceptual framework which informed the organizational and architectural design. Specific processes are unique to each precedent. For example, SP/ORG used Walk throughs, Evaluations and Idealized Drawings as participatory inquiry processes.[1] Henn used Programming and Communication Mapping or Netgraphs as participatory inquiry processes.[2]

Inquiry Site: In the urban realm, a site analysis shows the presence of a building on a site and how it is related to the adjacent context.

Inquiry Architecture: Where is the circulation located? How do professional workspaces relate to the building shell? How does the location of specific organizational teams or departments affect communication? How does the architecture reflect organization and process?

Inquiry Ideal Drawings: Participatory Process. These are user drawings which allow participants to visualize their ultimate workplaces or organizations without constraints. Interpretations of these personal worlds as a reflective process can inform a designer of unexplored alternatives.

Inquiry Card Wall: Participatory Process. These are user generated qualified diagrams which bring together problems and solutions.

Inquiry Communication Mapping: Participatory Process. Communication mapping data is obtained through questionnaires distributed to a specific population for a specified length of time. Through analysis of data one is able to create a communication matrix or netgraph that illustrates communication among participants.

Inquiry Organizational Structure and Process: What is the spatial dimension of an organization? How can the pre-design processes of inquiry.

Design Analysis: Personal exploration of spatial characteristics of realized designs.

[1] Suon Kuo Cheng, *Prototype for Innovation Nodes Networked with Associated Laboratories: An approach to Programming and Master Planning for Joseph C. Wilson Center for REsearch and Technology* (Master of Science in Architectural Studies Thesis, MIT, 1996), p. 34.

[2] Gunter Henn, *Innovation Management, Organization Design and Space Structure: New Ways of Thinking about Organizations and Architecture* (Munich, Germany: Henn Architekten Ingenieure, 1994), p. 3-11.

Fig. 1.1 Existing built form analysis and site location.

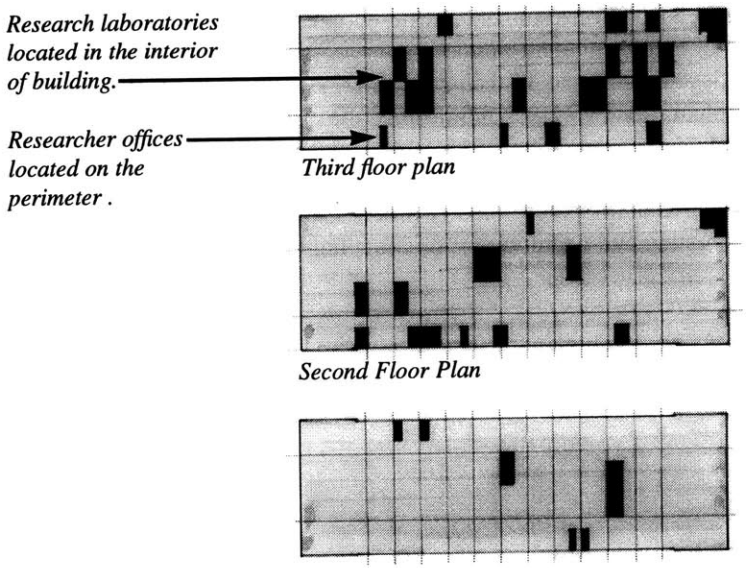


Fig. 1.2 a-c Floor Plans. The floor plans express incentive based space arrangements and show an individual's status. By looking at the perimeter edges, where the offices are located, this pattern is clearly revealed.

The Laboratory for Remote Collaboration (LARC) is located in Webster New York. The laboratory was designed by MIT's Space Planning/Organizational Research Group (SP/ORG) in 1994.[1] The project was a pilot experiment that applied inquiry techniques as a methodology for design. Utilizing this methodology, a experimental full-scale working test bed for new technology was built. The core of the investigation focused on how spatial arrangements and technological improvements affect productivity in innovation. The design challenge was to reduce the "time to market" of new marking technology. Some of the insights and research questions that were defined by the LARC Team included:

1. What kind of work can be remote, and what kind of work must be face to face.
2. What kinds of communication takes place in the different work settings inhabited by the activity under study.
3. What is the role of communication devices in concept formation especially by groups and implications for alternative architectural environments.

[1] Suon Kuo Cheng, *Prototype for Innovation Nodes Networked with Associated Laboratories: An approach to Programming and Master Planning for Joseph C. Wilson Center for REsearch and Technology* (Master of Science in Architectural Studies Thesis, MIT, 1996), p. 6.

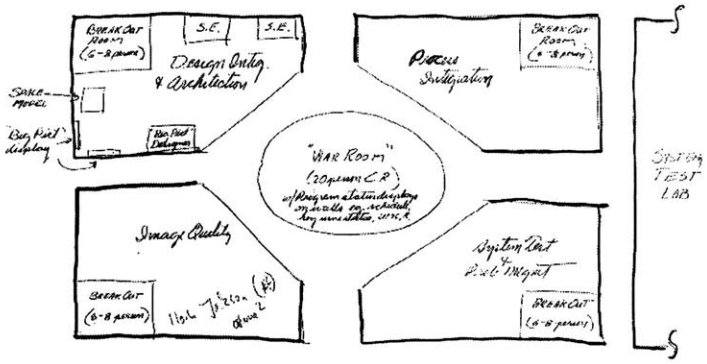


Fig. 1.3 Ideal Drawing. A technician's war-room ideal drawing influenced the future design of the LX Lab. The most important ideas that I see in the drawing include widening of the corridor, and creating a public space for instant team communication & problem solving.

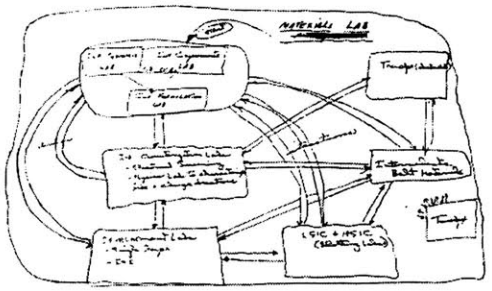


Fig. 1.4 Freeflow communication. A scientist's ideal drawing illustrates potential communication flows. This can be seen in the arrows which are used to show interaction between members of the materials laboratory.

Tools and Instruments that were used by the LARC Team during a series of workshops and structured events included:[1]

1. Walk Throughs.
2. "Ideal World" scenarios and drawings of personal work environments.
3. Pre and post occupancy evaluations.
4. Tracing paper exercises, photographic work books.

The two challenges of Process Architecture that were faced during this pilot project included:[2]

1. The challenge of creating a dynamically coherent workplace.
2. The challenge of active, collaborative design inquiry.

The following list articulates properties of the realized architectural design.[3]

1. Incompleteness.
2. Blurred territorial boundaries
3. Flexibility
4. Reciprocal Visibility
5. Transparency
6. Departure from conventional stereotypes of the workplace
7. Significant spatial proximity
8. Space has a built in capacity for change.

[1]Donald A. Schon, William l. Porter, Michael Joroff, and Turid Horgen, *Towards Process Architecture* (in press).
[2]Ibid.
[3]Ibid.

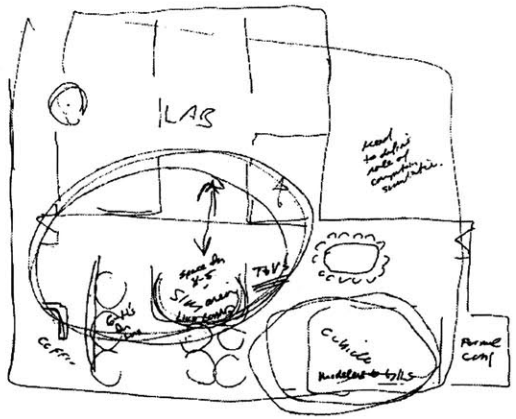


Fig. 1.5 Interpretation of ideal world drawings led one SP/ORG designer to generate this spatial diagram using inquiry as a reflective process.

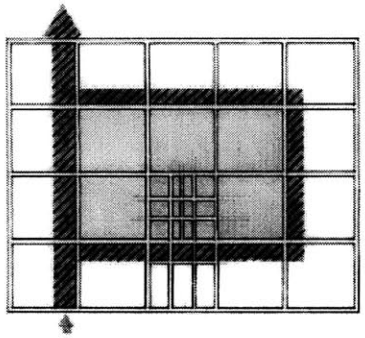


Fig. 1.6 Before: The traditional layout of buildings. Laboratories are located in the center of the building with offices on the perimeter.

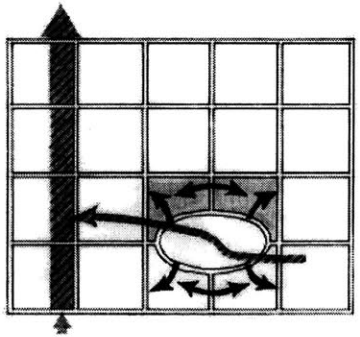


Fig. 1.7 After: A Center for the Research Group. The research is located in an "innovation node" which is networked with related laboratories in other buildings The corridor is transformed into a "common" - an interactive workplace and news center for "reducing differences."

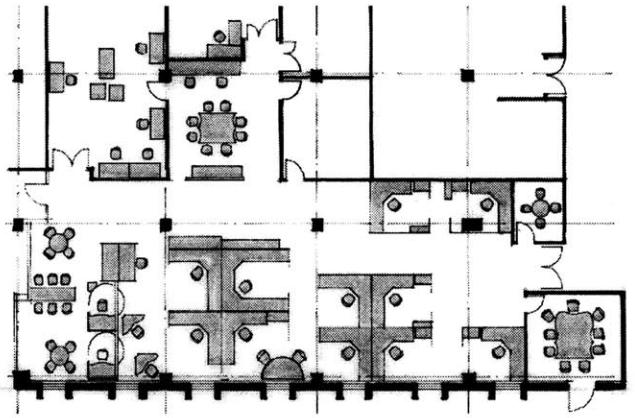


Fig. 1.8 Floor plan of design proposal. This was constructed in the Laboratory for Remote Collaboration, a subgroup of the LX lab.

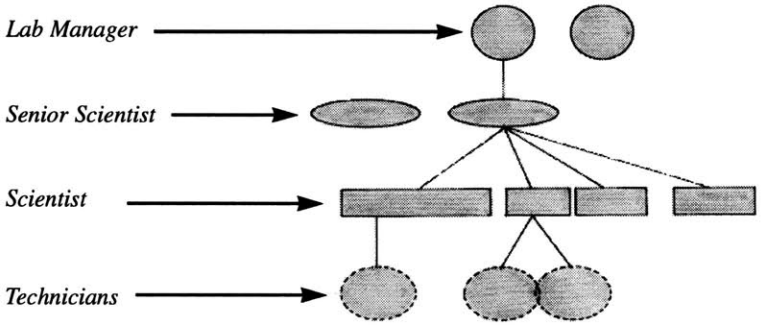


Fig. 1.9 Behavioral hierarchy showing a subgroup of the LX lab.

Precedent Analysis

The following diagrams explore the spatial characteristics of the realized design.

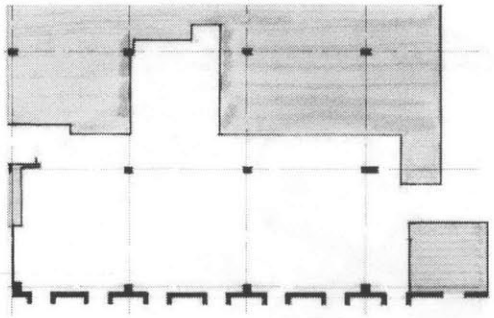


Fig. 1.10 Figure ground of interior shows the irregularly shaped space that comprises the LA Laboratory.

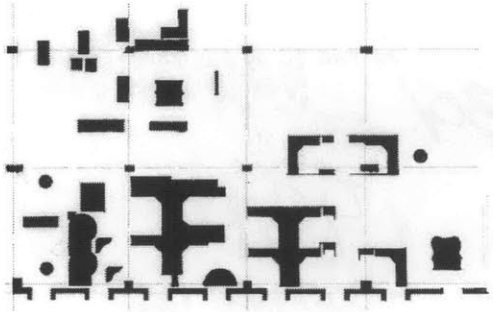


Fig. 1.11 Furniture analysis used to look at workspace configurations. Analysis reveals that standardization is not embodied in the plan. It varies throughout the space.

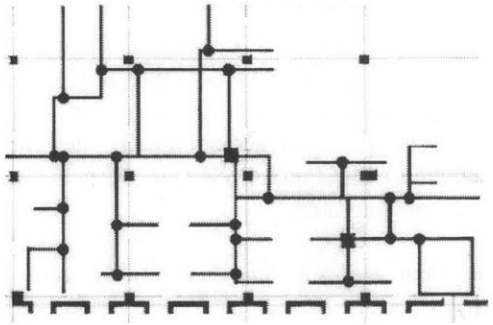


Fig. 1.12 Way Line Analysis shows circulation patterns within the designed space. The three-way intersections are indicated with circles. The four-way intersections are indicated with squares.

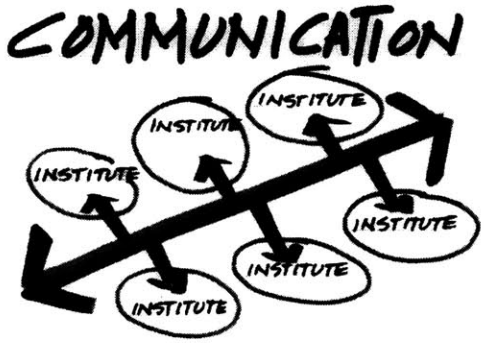


Fig. 1.13 Card Wall example that illustrates communication as a self-organizing principle in architecture.

Fig. 1.14 Card Wall example that illustrates how innovation increases through communication.

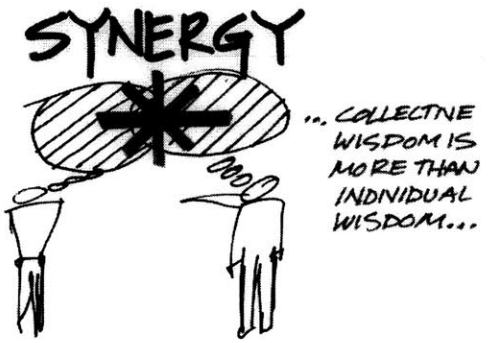


Fig. 1.15 Card Wall example that illustrates communication as a vehicle for learning.

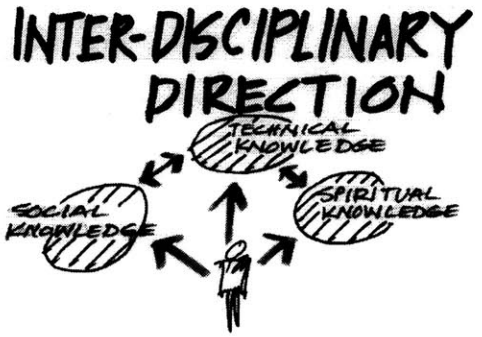


Fig. 1.16 Card Wall example that illustrates social, technical and spiritual knowledge increases one's overall learning experience.

The Technical University is located in Munich, Germany. The University was designed by the office of Gunter Henn. in 1994.[1] The project was conceived by applying two specific participatory inquiry techniques as a methodology for design. The two processes applied were "The Problem Seeking Method," and "Communication mapping or Netgraphs."

[1]Gunter Henn, *HENN Architekten Ingenieure : Innovation Management* (Munich, Germany: Henn Architekten Ingenieure, 1994), pp. 27-31.

The Problem Seeking Method is a programming technique that was conceived in the 1960's by Pena and Caudill. The technique is an organized or systematic method of inquiry. The process is a systematic five step approach. that is summarized below:

1. Establish Goals
2. Collect and analyze Facts
3. Uncover and test Concepts
4. Determine Needs
5. State the Problem.

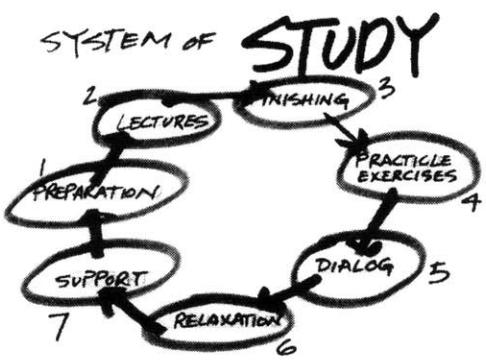


Fig. 1.17 Card Wall example showing a process diagram.

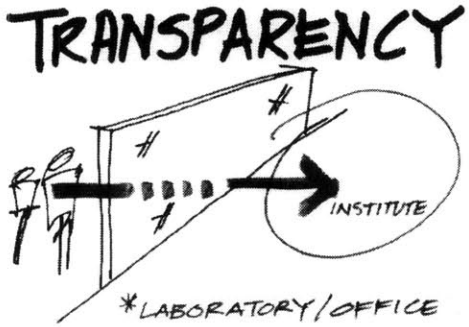


Fig. 1.18 Card Wall example showing a spatial characteristic that influences communication.

The systematized process is further subdivided into four major groups that include:[1]

1. Function
2. Form
3. Economy
4. Time

[1]William Pena, William Caudill, John Focke, *Problem Seeking* (Washington: AIA Press, 1987), pp. 24-33.

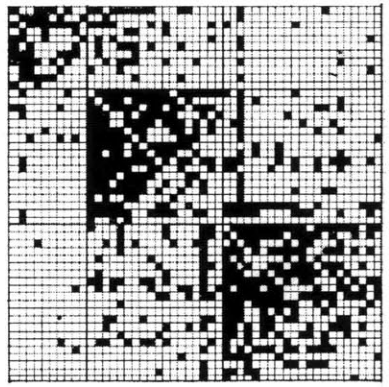


Fig. 1.19 Netgraph matrix used to plot communication patterns . This is an inquiry process.

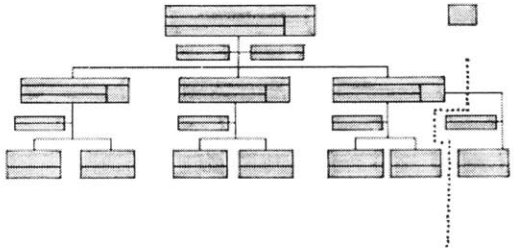


Fig. 1.20 Organizational structure of the seven institutes.

The office of Gunter Henn has adapted Pena & Caudill's participatory programming technique and refers to it as the Card Wall. Above are illustrated a few samples of cards generated during initial workshops for the Technical University in Munich.[2] This dynamic process is a method of recording graphically information intended to be displayed, discussed, discriminated, decided upon and sometimes discarded

[2]Gunter Henn, HENN *Architekten Ingenieure: Masterplan Technische Universitat, Munchen* (Munich, Germany: HENN, 1995), pp. 6-8.

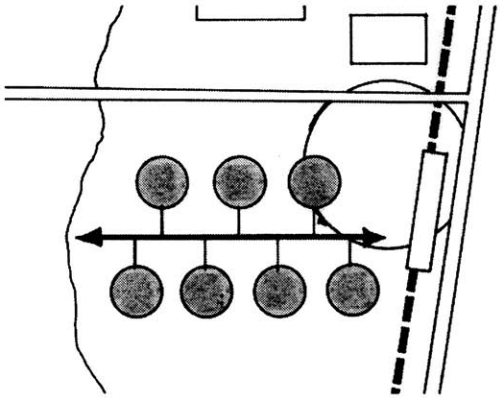


Fig. 1.21 Architectural Concept Diagram. Organizing the institutes along an avenue was one of the main spatial goals of the design.[1]

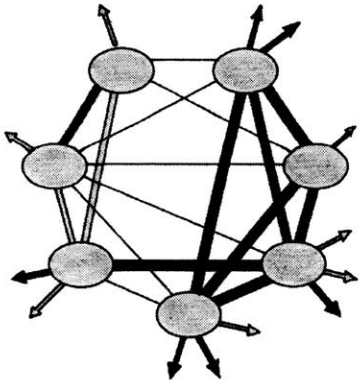


Fig. 1.22 Communication links within the university. The links are illustrated by three various lines connecting ovals. The ovals represent the seven institutes. The strength of importance is articulated by the width and value of lines .[2]

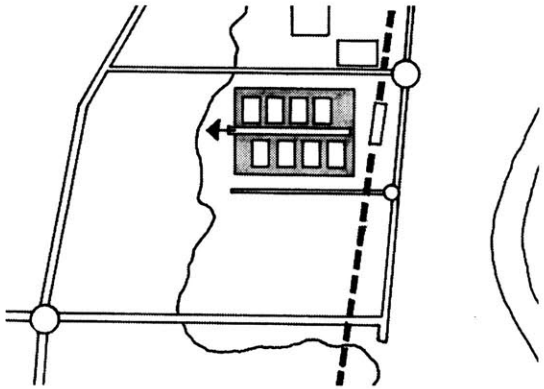


Fig. 1.23 Access Diagram. Locating the main entrance of the building adjacent to public transportation was another spatial goal.[3]

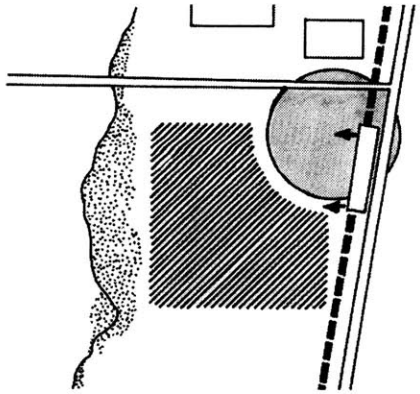


Fig. 1.24 Context Diagram. The grey circle denotes the urban center. How would the structure connect to this node?[4]

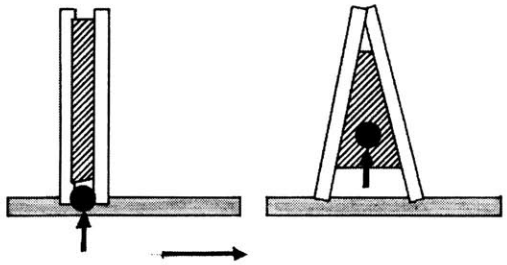


Fig. 1.25 Circulation Links Diagram. Two solutions for linking the institutes to the circulation corridor were explored.[5]

[1]Gunter Henn, HENN *Architekten Ingenieure: Masterplan Technische Universitat, Munchen* (Munich, Germany: HENN, 1995), p 30.
2Ibid., p.12.
3Ibid., p.29.
4Ibid., p. 29.
5Ibid., p. 30

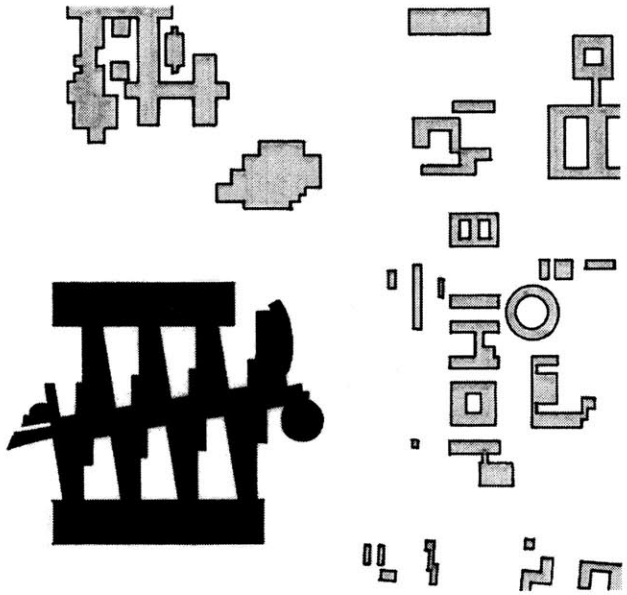


Fig. 1.26 Figure Ground Diagram of Proposed Building within site context.[2]

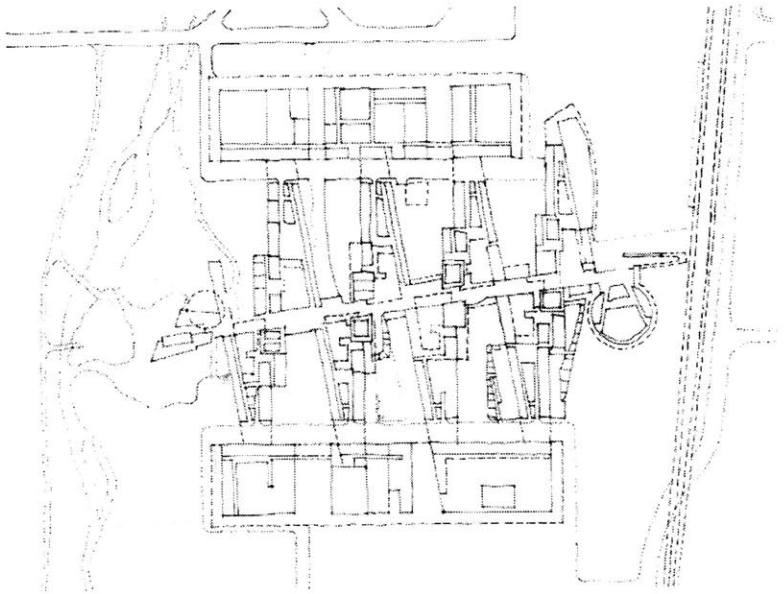


Fig. 1.27 Proposed Building Plan. the relationship to inquiry can be easily recognized. Card Wall ideas are reflected in architecture.[3]

during the programming phase of a project. The idea is to utilize the knowledge of the users within the company. One of the goals of this form of inquiry is to achieve effective, clear communication among all participants of an organization.

At the same time, Henn conducts a communication analysis. The goal of the analysis is to visually articulate the quantity and quality of communication inside a spatial context. The analysis is based on a technique developed by MIT professor Thomas Allen, called communication networks or Netgraphs.[1] Organizational and spatial structures are analyzed in terms of their specific communication characteristics.

The structures can be further defined as criteria for communication. For example, a Netgraph can analyze communication according to the criteria of formal organizational structure.

One of the primary goals of HENN's design inquiry process is to

[1]Thomas J. Allen, Managing *New Product Development: Organizational and Architectural Issues and Solutions* (New York: Oxford University Press) (in press).
[2]Gunter Henn, HENN *Architekten Ingenieure: Masterplan Technische Universitat, Munchen* (Munich, Germany: HENN, 1995), p. 37.
[3]Ibid., p. 37.

The following diagrams explore the spatial characteristics of the realized design at the Technical University in Munich.

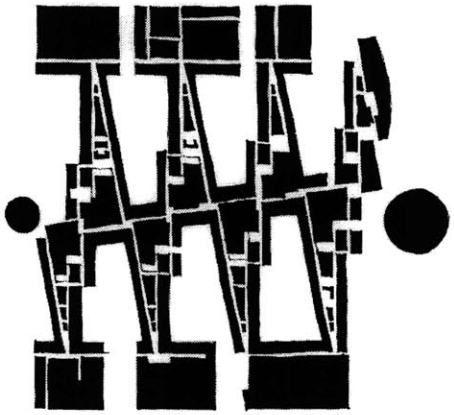


Fig. 1.29 Figure Ground Diagram of Proposed Building. The form is directly related to the concepts which were discovered during the inquiry process.

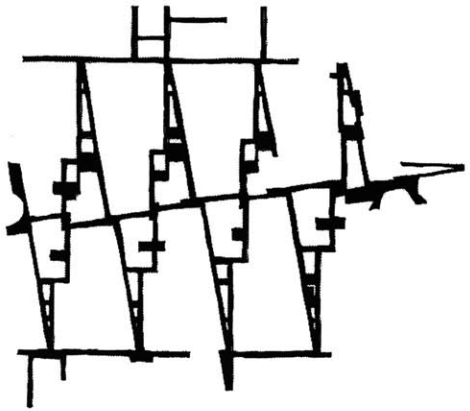


Fig. 1.28 Circulation Diagram. This diagram shows movement patterns in all directions.

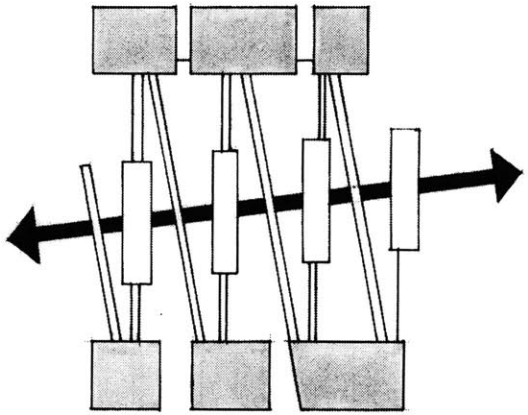


Fig. 1.30 Communication as a Self-Organizing Principle in Architecture.

Organizational structure is embodied in diagram. The seven institutes are indicated in grey. They are linked by circulation paths which will foster communications between disciplines.

achieve a fitness between context and form. This concept stems from the theoretical work of Christopher Alexander. Gunter Henn uses the phrase "Form follows Flow," and refers to his work as a "social fact." Consequently, issues typically addressed in Henn's work focus on the relationship between the social dimension and the spatial dimension or communication through space.

Inquiry Methods

There were six inquiry methods that I explored to obtain my environmental-behavior research data. Two collection methods were based on empirical information: written logs and spatial drawings. Four collection methods were based on participation. These participant inquiry methods included: interviews, drawings, workbooks and communication networks.

Logs

The empirical data, documented in appendix 1, that I generated over the summer was a diary of experiences I had, events I watched and conversations that transpired with staff members within the department of internal medicine. The format of the logs was consistent from day to day. I divided the entries into four categories as recommended by my advisor, Turid Horgen. The goal of this tool was to record empirical data for future use and to explore personal design inquiry. My daily log investigations were composed of four categories: What is happening?, Interpretation, Reflection and Space.

What I documented in the first category were events that caught my eye, informal discussions, and formal interviews that I recorded and transcribed. In the interpretation section, I attempted to review what happened by exploring why a person might behave in a certain manner or how a situation might be resolved differently. The interpretations were my personal thoughts that tried to clarify ideas or review issues. Some of my interpretations have evolved into thematic ideas for this project. One example of an interpretation that I wrote on August 5 states, *"The doctors rule."* This idea of power will appear throughout the analysis. The next category in the logs focuses on reflection. Why was something happening? How could a problem be solved differently? I tried to generate questions. One entry from a reflection on August 9 asked this question, *"Why do spaces get built when they are not appropriate for the job that one works at?"* This concept was developed in my analysis of examination room designs. The last written section documents spatial concepts. Some of the

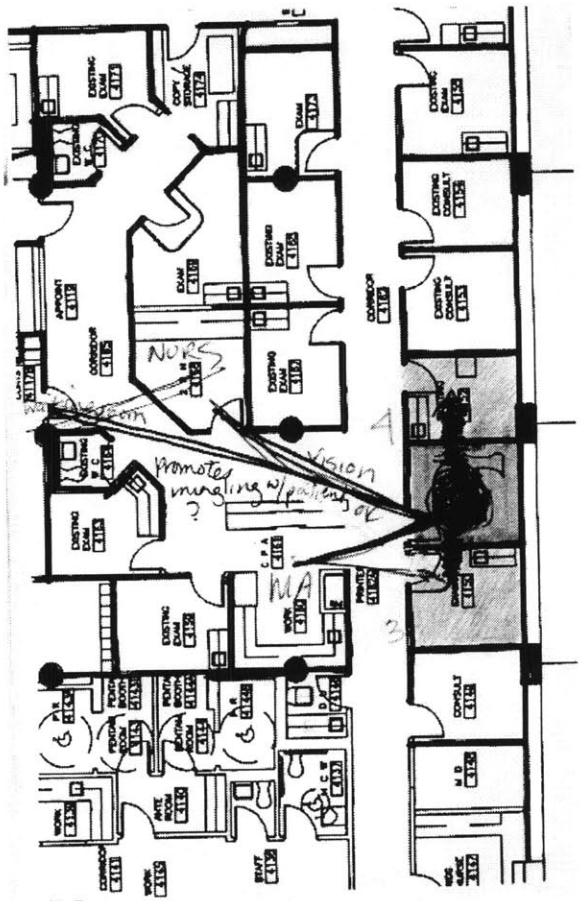


Fig. 1.31 Drawing of Dr. Jake Duffy's office and assigned examination rooms within the context of the workplace. His office is located between two exam rooms. This layout is preferred by most physicians. Drawing also illustrates site-lines obtainable from his office. During an interview with Dr. Duffy, he said, "I can see the up-medical assistants and nurses from my door. If I have a question, then I go to them and ask for help."

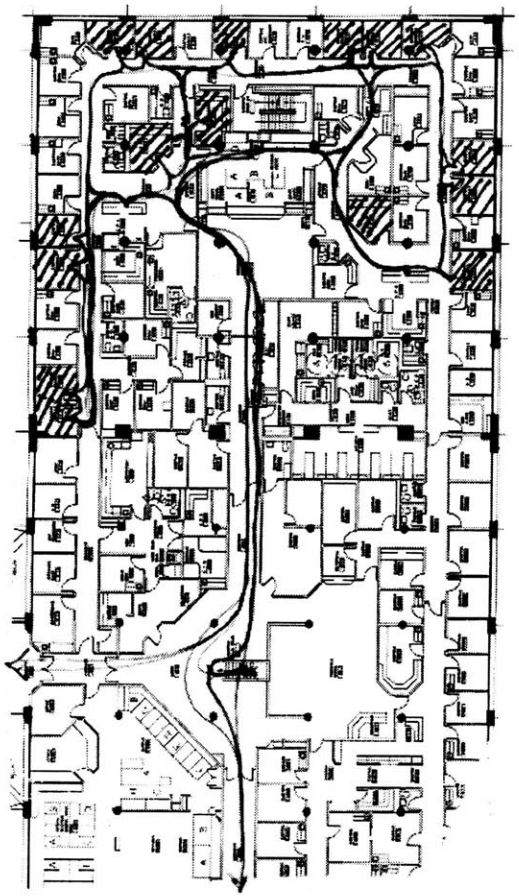


Fig. 1.32 Drawing of runner's circulation paths. Sketch shows the message carrier's clinical delivery and pick-up points. The spaces which are delineated with diagonal lines indicate doctors' and nurses' offices. This sketch is based on based on observation and participation.

most common observations address such issues as visibility, size and location. The depth of investigation is thin. The weakness is probably due to the fact that I was developing a series of spatial drawings to complement ideas that had been discussed during the interviews and to increase my understanding of the existing workplace design.

Drawings

The drawings, documented in appendix 1, that I illustrated of the floor plans were the second form of empirical data that I generated. My diagrams were composed in a sketchbook and focus on issues relevant to the existing workplace design. Some characteristics that can be observed in the series include: access, structure, light, visibility, organizational facility planning and furniture layout. The aim of this inquiry tool was to understand how spaces were designed to facilitate work processes, communication and personal work patterns. For example, when I drew Dr. Duffy's office location, I documented the sight lines which facilitate his communication with supporting staff members(Fig. 1.31). In the examination room studies, I compared the diverse number of layouts that exist within the department (Fig. 7.19-7.27) And, in my diagram of the runner's job, I noted the physical paths that were walked when performing the job (Fig. 1.32).

Interviews

The interviews, documented in appendix 1, that I had with clinical and non-clinical staff members were the first form of participatory inquiry that I investigated.[1] Two types of interviews were conducted: informal and formal. Because I was employed by the department of internal medicine for the summer, I had an abundance of spontaneous informal interviews with staff members. From these unplanned

[1]Turid Horgen introduced me to this participatory technique, during a Independent Study Seminar at MIT, Spring 1996.

discussions, I was exposed to many topics. Some of them included: privacy, hierarchy, job satisfaction, architecture, information technology, and work processes. The knowledge that I gained through the conversations helped me understand the roles of team players, the existing organizational structure and the current work processes within the department.

Also, I scheduled formal interviews. The formal interviews were one-on-one private discussions with nurses, coordinators, residents, doctors and managers. In some interviews, I tape-recorded the discussion and then transcribed it. During other interviews, I took notes in the meeting and reflected upon the conversation at home that night. The interviews were organized by this simple structure composed of four questions. These questions were:

Describe the typical patient relationship.
    How would you like the relationship to be?
    How is the relationship?
Describe the clinical and non-clinical relationship.
    How would you like the relationship to be?
    How is the relationship?

In asking these questions, my aim was to define what social issues were present and to connect these issues to the physical space. Some of the social issues that were discussed included: communication (face-to-face and telephone), privacy, status, power, scheduling, resident teaching and patient satisfaction. It is worth noting that I always welcomed the participant to discuss a topic he or she felt relevant. On one occasion, a participant revealed an interesting behavioral characteristic unexpectedly. This was a discovery. As a result, this topic, scheduling as a behavioral organizational structure, was developed.

To summarize, the interviews have been instrumental as a means of inquiry and for my analysis. This was because the various data obtained through conversations enabled me to develop organization and process diagrams of existing conditions and compare those conditions with the interior space.

Participant Drawing

The drawings that I obtained from employees were the second participatory inquiry tool that I employed.[1] Three types of participant drawings were obtained: work process, workplace and organization. The goal of the participant drawings was to learn from the users. So, after the participants had completed their drawings, I talked with them and listened to their ideas. My aim was to understand how they perceived their world and why they might proposed modifications in the organization of it. The information that the participants shared with me typically illustrated one or more of the major issues facing the organization.

During my first two weeks, I focused on understanding the work flow, fact-to-face communication patterns and telephone work process. To accomplish this, some of the staff sat with me and explained the flows. I drew diagrams of work processes and they drew diagrams of work processes. Through these explorations, I was able to generate work process interpretations and point to conflicts or bottlenecks I perceived to exist in the current systems.

The workplace sketches were drawn by a cross-sampling of staff members. Some sketches were obtained during my research period and others were obtained during workshops held by SP/ORG.[2] I

[1]Turid Horgen introduced me to this participatory technique, during a Independent Study Seminar at MIT, Spring 1996.

[2]Donald A. Schon, Michael Joroff and Turid Horgen, Design Workshops (Boston, MA November 13, 1995 & January 10, 1996).

asked the participant to individually draw his or her ideal workplace.[1] After the drawing was completed, we sat down together and discussed the issues that were most relevant in their image. As stated earlier, my goal was to listen to their ideas. I wanted to know why they would organize a space in a particular manner. After obtaining these hand drawn diagrams, I reflected on the participants' ideas, and generated interpretative diagrams illustrating the most significant qualities. These reflections are illustrated in the inquiry section of the thesis.

The final type of participant drawings that I obtained focused on existing and ideal organizational structure. The information I obtained through these drawing and concurrent conversations was instrumental in my ability to uncover potential relationships between organization and space.

Participant Workbooks

The workbook, see appendix 2, that I designed, distributed and collected was the third participatory tool that I employed.[2] The document was based on an inquiry technique that is used by SP/ORG when investigating how a group of users perceive their working environment. In particular, my workbook was based on a design created for researchers at the Laboratory for Remote Collaboration. The workbook has two major components: a photograph that is evaluated using color and questions to be answered. The photographs depict typical spaces within the existing workplace. Listed below are the color coding directions:

Look at the picture, the work environment and what people do here.
Color the things you like about this yellow.
Color what you do not like purple.
Color what you want to change red.
Color what you would keep for the future green.
(Participants are supplied with the necessary colored pencils to accomplish the exercise.)

Below the photograph, four questions are written. The questions state:
What do you like about the space?
What do you dislike about the space?
Do you use this space?
How can it be improved?

My goal was to obtain participant's ideas of their workplace and reflect on the patterns I discovered. One of the discoveries that I made when analyzing the data was how clearly conflicts concerning workplace emerged; especially, when reviewing the photographs. A common conflict that I discovered was natural light. The staff that are located in artificially lit environments typically noted this in the workbook by either drawing a window that they would like in their particular environment or by identifying that quality in another space.

I discovered that the workbooks could be used as an evaluative tool and a design tool. This is because time is taken into consideration. As a result, I have used the tool to summarize my interpretations of the current workplace and to assist in the formulation of a pattern language. The interpretations of the data can be found in the participant inquiry section of this thesis. The resulting problems I discovered have been addressed and presented as solutions in the pattern language.

[1]Turid Horgen introduced me to this participatory technique, during a Independent Study Seminar at MIT, Spring 1996.

[2]Ibid.

Netgraphs or Communication Networks

The communication network, see appendix 3, was the final inquiry tool that I employed.[1] The goal of this participatory tool was to document existing communication patterns within the department using computational analysis. Tom Allen describes Netgraphs (communication networks) as a tool for inquiring into the structure of the communication networks that exist within an organization.[2] Through his research, Allen has concluded a large percentage of innovative ideas result from communication and can affect learning within an organization. Due to this connection between communication and learning, I wanted to explore this inquiry tool as an attempt to describe the communication breakdowns that I observed within the department of internal medicine.

The process of inquiry has three basic steps. First, one must design a questionnaire. I prepared a simple questionnaire with the help of Christine Kohlert and Tom Allen based on a format used by the office of Gunter Henn.[3] The questionnaire asked people to indicate with an "X" other people within the department that one communicated with face-to-face on that day. Figure 1.33 illustrates a sample. I explained to each staff member how to fill out the questionnaire separately. At the same time, I compiled criteria about the study group. In my study, the relevant criteria included: job position and team.

The second step required in the communication analysis was to enter

Please indicate with a "X" other people you communicated with face to face today. Also, note where this communication took place.

Please give questionnaire to Dagmar Eglitis at the end of the day.

Thank you for your help. Arlene

Name	Office/Exam Rm	Corridor	Coffee	Other
Jake Duffy				
Jnae Carroll				
Roxanne Atkin				
Douglas Caulley				
Leonard Yin				
George Wasser				
Eva Jones		X		
James Diaz				
Henry Bennett		X		
Bernard Walker	X			
Patricia Rawson		X		
Russell Ruga				
Christopher Sadler		X		
Mary Swain		X		
Eliza Carter	X			
Priscilla Stead	X			
Diana Lochner	X			
Denise Miller				
Randy Jacobs				
Bonnie Riera				
Janet Cook	X			
Marin Wolcott-Colson	X			
Vanessa Jansen		X		
Moira Furness	X			
Jackie Moinan				
Roberta Anderson				
Carol Markkula				
Michael Carlin				
Morgan Campi				
Maryanne Lyons				
Dionne Davis				
Jan Sudman				
Marshall Oscar				
Yolanda Lee	X			
Rebecca Bailey		X		
Dalia Strauss		X		
Inga Boruch				
Katie Markus		X		
Margaret Becker				
Anne Bishop				
Cathy McClintock	X			
Martin Kidder		X		
Donna Eckstein	X			
Sally Cole				

Fig. 1.33 Completed Communication questionnaire. This format was distributed to all members of the Department of Internal Medicine.

[1]Thomas J. Allen, *Managing New Product Development: Organizational and Architectural Issues and Solutions* (in press).

[2]Ibid.

[3]Gunter Henn, I*nnovation Management, Organization Design and Space Structure: New Ways of Thinking about Organization and Architecture* (Munich: Germany: Henn Architekten Ingenieure, 1994) p. 10.

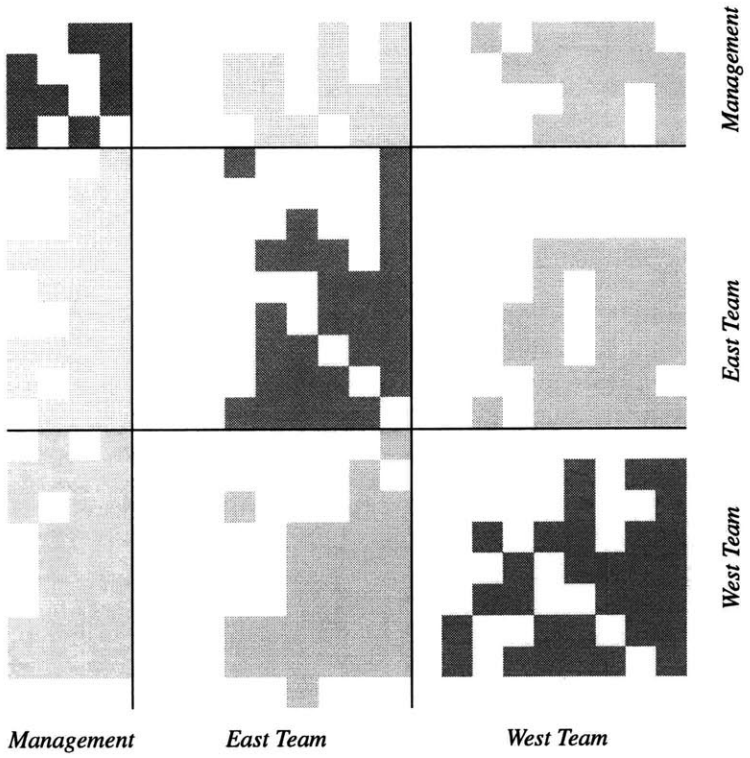


Fig. 1.34 This netgraph illustrates a matrix (communication network) drawn for a single collection date, October 18, 1996. The netgraph is sorted according to teams in order to visualize communication between members of management, the east team, and the west team. The internal communication within each group is shown in the matrix along the diagonal. Communication between teams and between a teams and management is shown in the matrixes that lie off the diagonal and that connect pairs of groups. [1]

all the collected data into a spreadsheet. This was done for each individual collection day. In the case of this inquiry, there were three collection dates, October 18, 21 & 25, 1996.

Finally, one imports the data into AGNI, the software package developed by Thomas Allen[2] which generated the matrices. With the guidance and training of Jake Wetzel, I was able to generate the communication matrices for this inquiry. Shown in Fig. 1.34 is one netgraph, the series can be viewed in appendix 3. The visual display provides an easy to survey overview of the recorded communication data, making it usable for practical purposes.[3] Questionnaire responses are arrayed in matrices, in which each individual is assigned a row and a corresponding column. In other words, each square symbolizes a conversation. The presence or absence of a reported communication is indicated in the cell or square connecting each row-column pair. The matrix can be used for analysis. In the case of the netgraph at left, one can see that there is a lot of communication going on. The matrix is pretty filled. In the aggregated Netgraphs the abundance of communication is very easy to see. The next question one might ask after viewing these netgraphs and seeing a lot of communication is, how does one evaluate whether the communication is good or bad within the organization?

[1]Thomas J. Allen, *Managing New Product Development: Organizational and Architectural Issues and Solutions* (in press).

[2]Ibid.

[3]Ibid.

Spatial Analysis

My architectural analysis occurred when I was working and researching within the department. The first diagrams I illustrated document site characteristics which enabled me to understand the urban context of the facility. The second series of diagrams I illustrated investigate spatial characteristics. Some of the issues that I explored include: space use, access, structure, and flow.

The main objective of the analysis was to identify spatial characteristics of the facility such as use, access, structure, and flow. Also, I described how the architecture illustrated organizational structures, influenced communication and was in conflict with existing work processes.

Briefly, I will summarize the issues and conflicts:

1. Natural light is limited to the perimeter. (See Fig. 2.3)

2. Hierarchical plan (See Fig. 2.7)

3. Maze-like circulation (See Fig. 2.3)

4. Concrete Structure is 110' x 470'. The column grid is 22' x 22'. (See Fig. 2.5)

Fig. 2.1 Figure Ground Drawing of Kenmore Square Area. Diagram illustrates the immense size of the facility that is owned by the health maintenance organization.

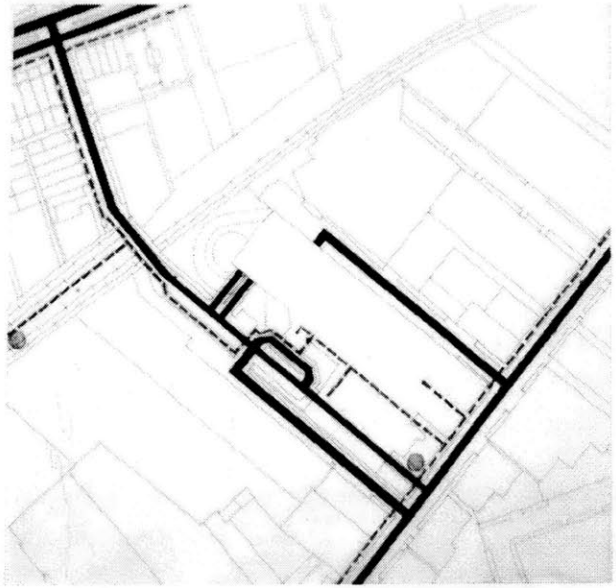


Fig. 2.2 Vehicular and Pedestrian Access Diagram. Dashed lines illustrate pedestrian paths. Solid lines illustrate vehicular paths. Circles illustrate public transportation access, bus and T-stop.

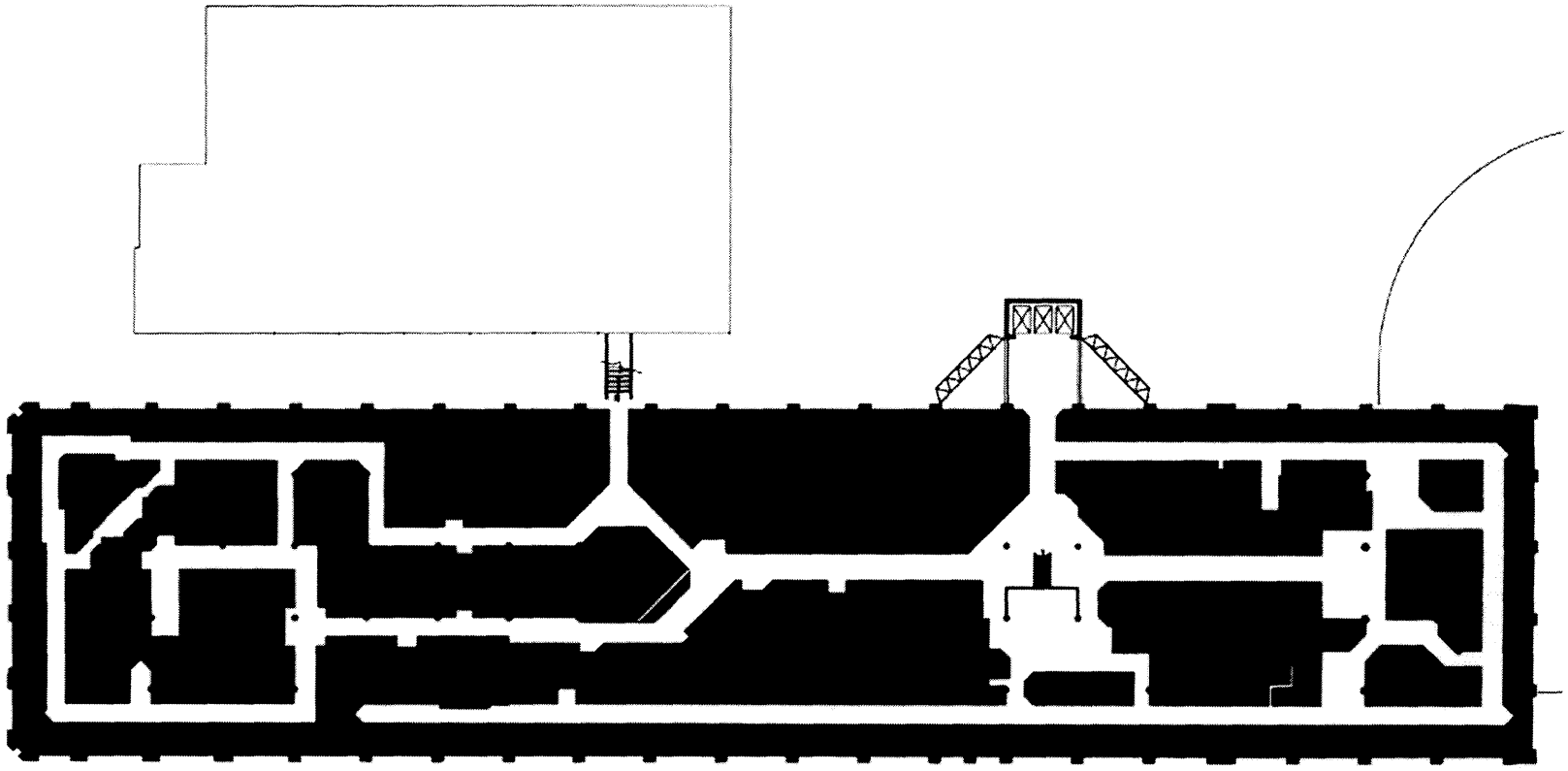


Fig. 2.3 Fourth Floor Plan Figure Ground Analysis. Some characteristics of this diagram include: floor plate area is 470' x 110', natural light is limited to the perimeter office area, and circulation is based on a corridor arrangement. Frank Duffy documented some of the disadvantages of this type of layout in 1966. He stated that corridor offices are difficult for communication, inflexible due to cost and have space limitations for specific groups of people.[1]

[1]Frank Duffy, *The Changing Workplace* (London: Phaidon Press Limited, 1992). p. 7-9.

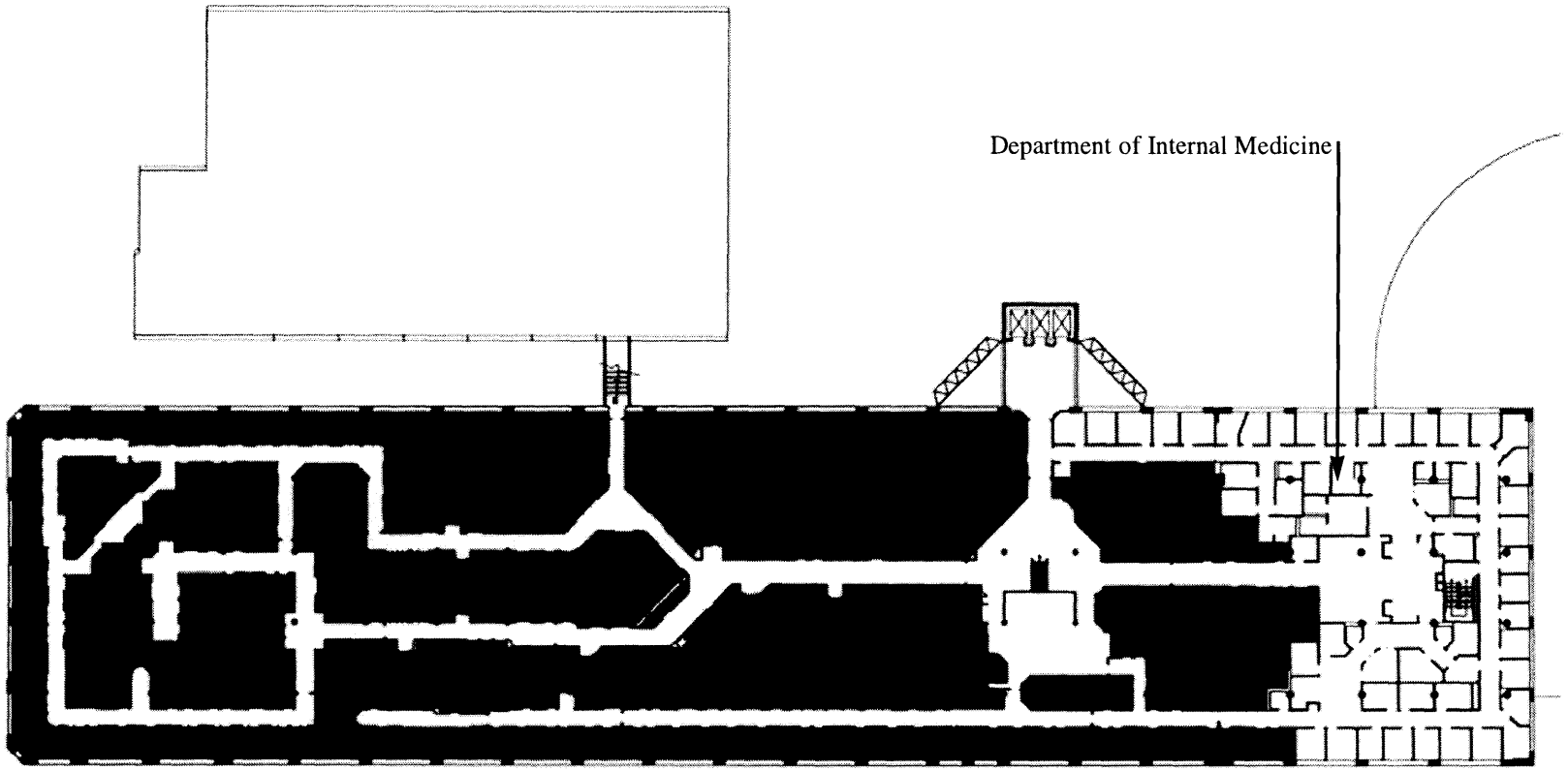


Fig. 2.4 Fourth Floor Plan: The Department of Internal Medicine. Diagram illustrates the site location for the inquiry study. All research was documented in this area. The remainder of the floor plate is planned with office spaces similar to the site area. The only difference between the out-patient clinical spaces is the focus of care. For example, dermatology, cardiology, and pediatrics are a few of the numerous specialities located on this floor. In addition, this floor has a small conference center & cafeteria for use by any department group or speciality.

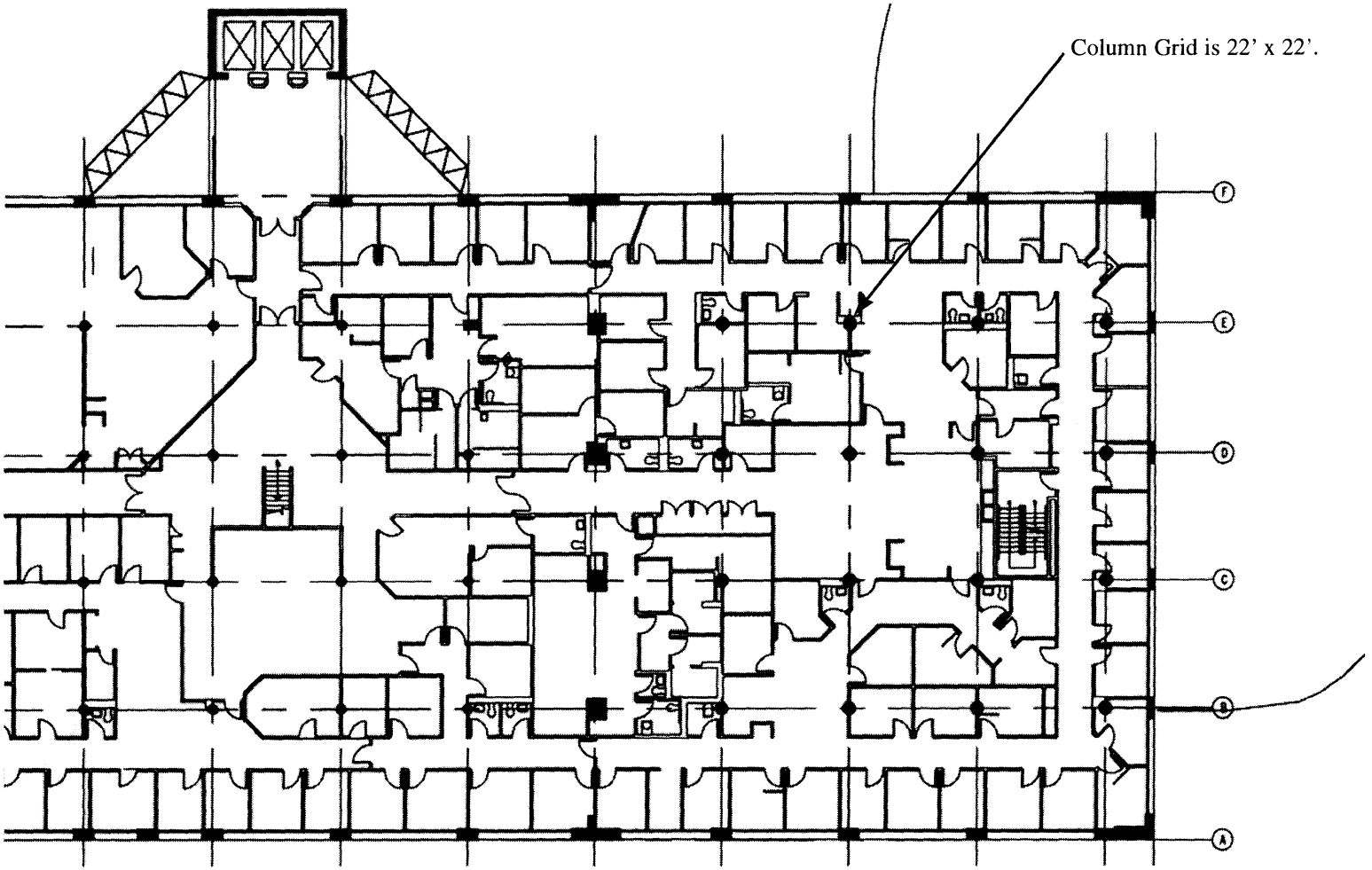


Fig. 2.5 Fourth Floor Detail Plan: The Department of Internal Medicine. This image illustrates the existing column condition within this poured concrete structure. The bays are 22' x 22' on center. The columns are approximately 24" in diameter and the floor to floor height is 11' - 6". The difficulty of getting natural light into the space exists given floor plate's size of 110' x 470'. Needless to say, the physical constraints that this floor plate presents are challenging.

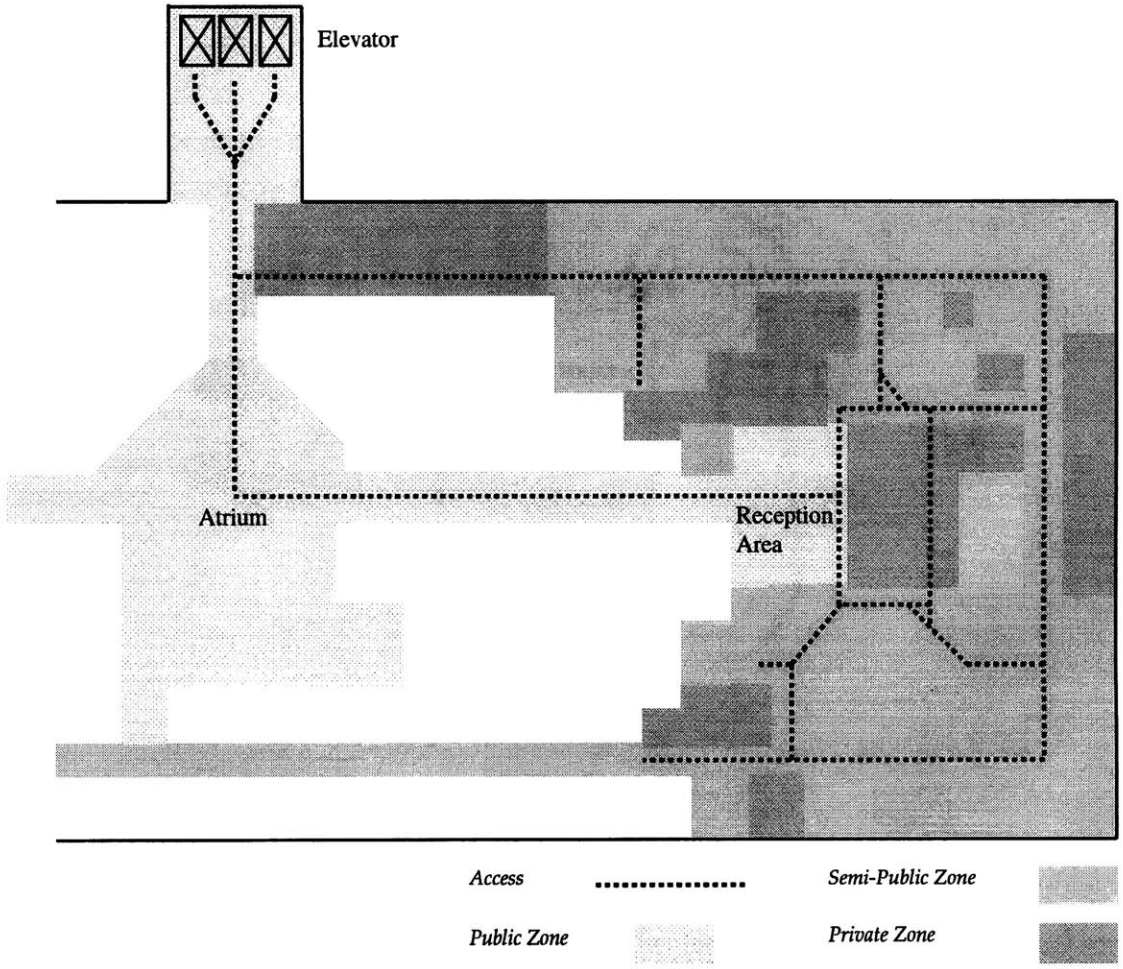


Fig. 2.6 Access, Public, Semi-Public & Private Space. Public circulation into the Department of Internal Medicine begins at the elevator, moves into the atrium, down a windowless corridor and into the reception area. The most public spaces on the floor are located at the center of the floor plate. The atrium space is a public space that has natural light. The space is well trafficked and lively. It is a spot where many spontaneous conversations occur. See Fig 7.30 for original sketch which led to this diagram.

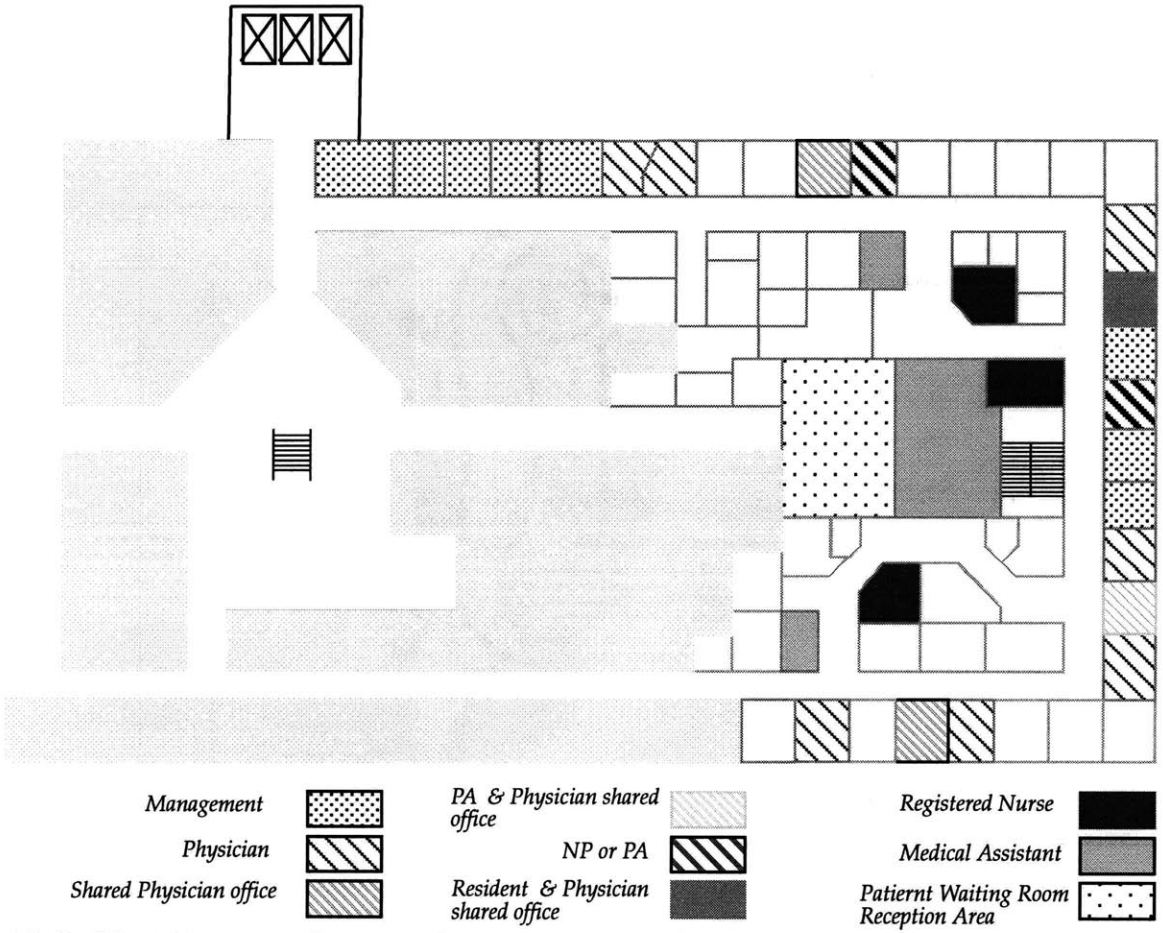


Fig. 2.7 Staff Spatial Locations. Physicians and management are located at the perimeter. All support staff and registered nurses are located inside this outer ring of private spaces. This spatial arrangement reflects a pyramidal organization and illustrates how the organization groups people by task. I was bothered by the lack of natural light as I worked and learned that others felt similar. On my first day in the office, the receptionist told me how the medical assistants call the weather station regularly to inquire about the conditions outside. One medical assistant commented, "It seems like everything is moving around us, like we are in a beehive. I love coming outside during lunch." Another comment, "I feel like a mole."

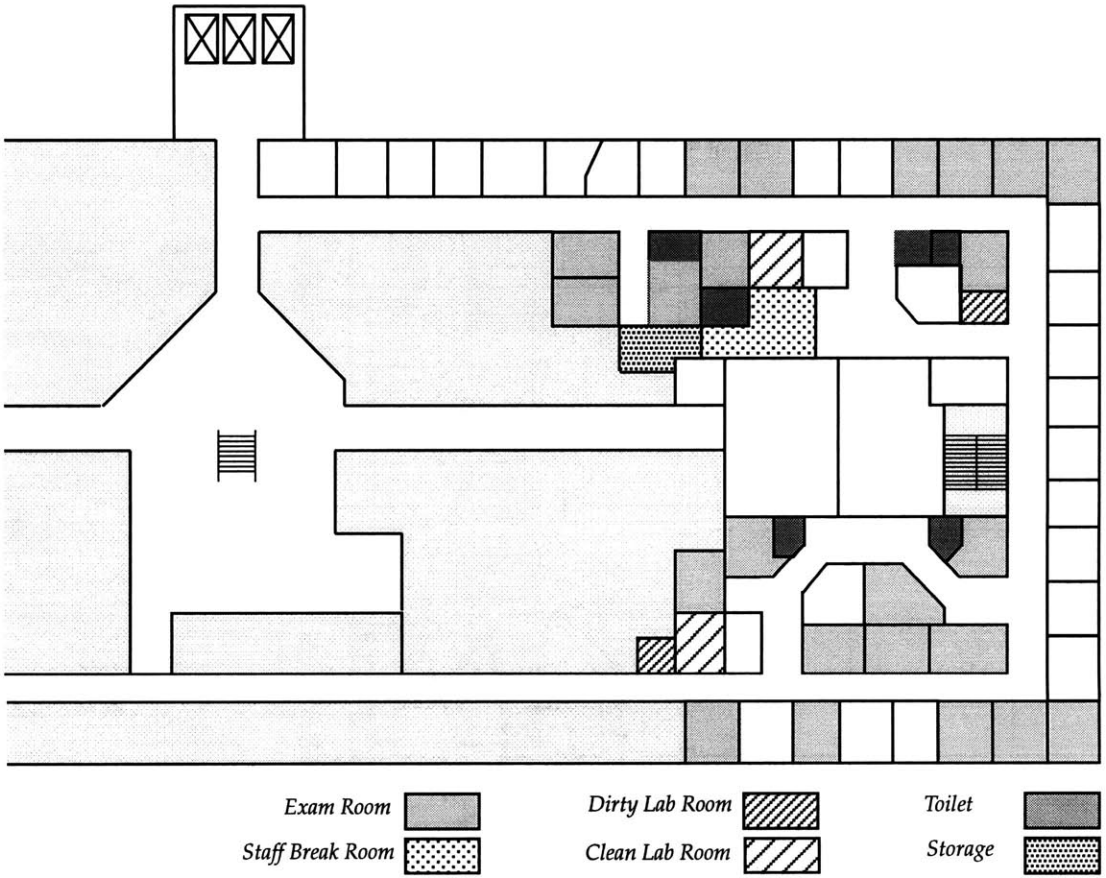


Fig. 2.8 Department Services Spatial Locations. This diagram shows that examination rooms occupy a large percentage of the perimeter space. From my fieldwork studies, this location is not required by physicians and in some cases is not the preferred. See logs for Wednesday July 31, 1996 and Figures 7.19 through 7.27 for spatial studies. In particular, look at Fig, 7.20 which illustrates the preferred exam room. In addition, these space are not used continuously throughout the workday. The problem that these exam rooms create is that the perimeter space is not available for staff members who spend their whole day at work without natural light.

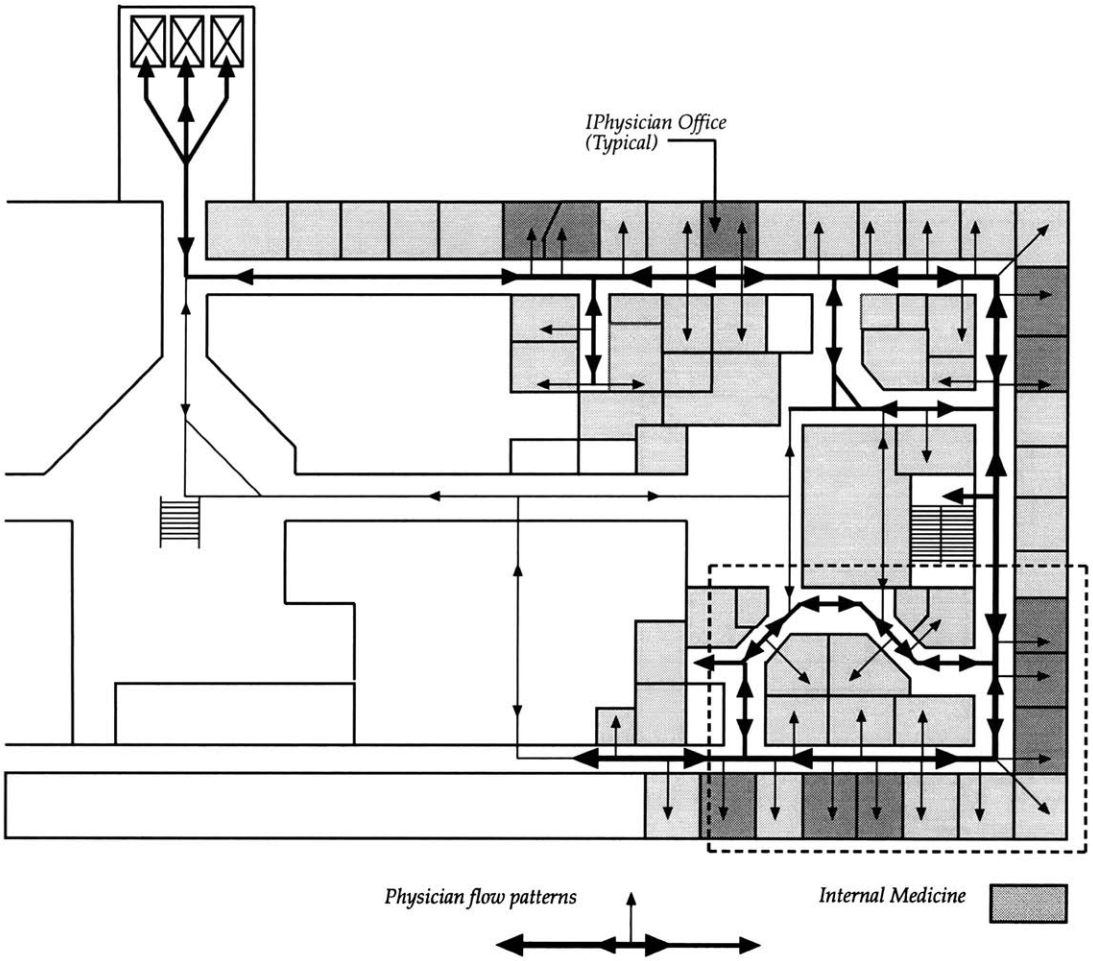


Fig. 2.9 Physician Flow Patterns. This diagram illustrates the flow patterns and architectural areas or zones that Physicians typically work. Primarily, the doctors spend their time along the circulation corridor which is adjacent to their offices and examination rooms. This spatial arrangement provides a barrier for the doctors from the patients.

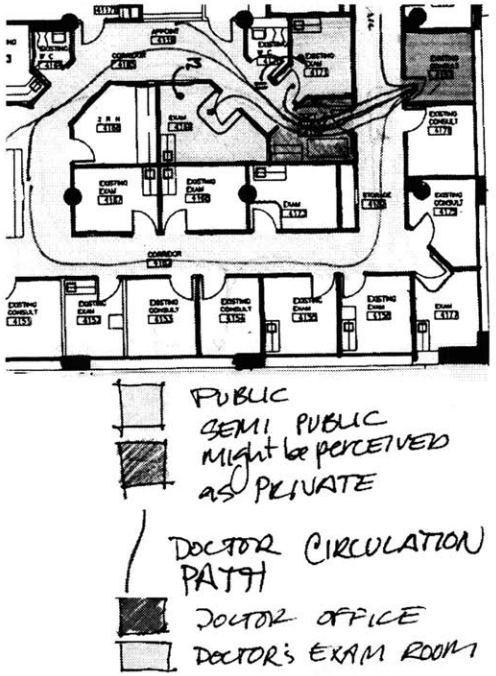


Fig. 2.10 Drawing of circulation paths typically made by one doctor based on observation.

"I think that the doctor should be able to see his support team. In the current plan this is not possible." physician

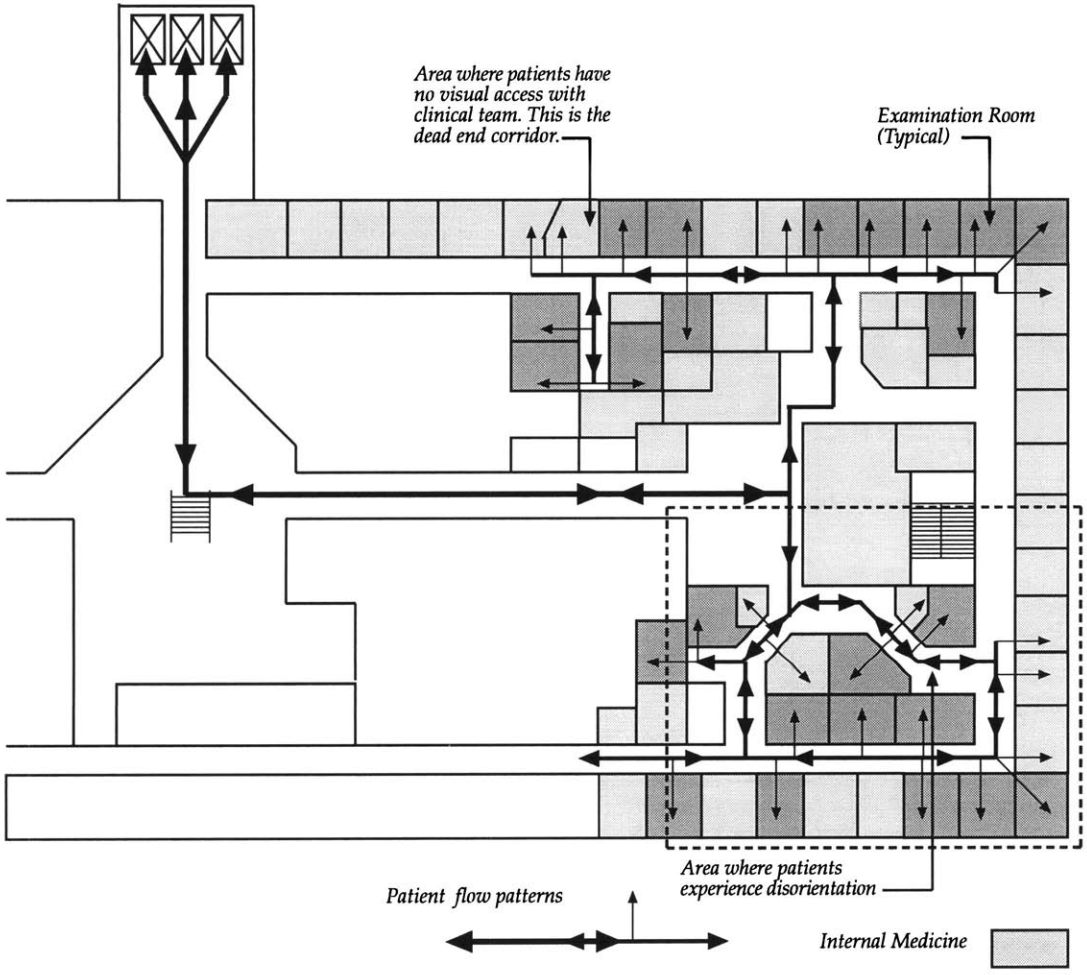


Fig. 2.11 Patient Flow Patterns. This diagram illustrates the flow patterns and architectural areas or zones that patients typically experience. The patients do experience many areas of the space; however, the reception area is located in the center of the space and lacks natural light, is large open and devoid of intimacy.

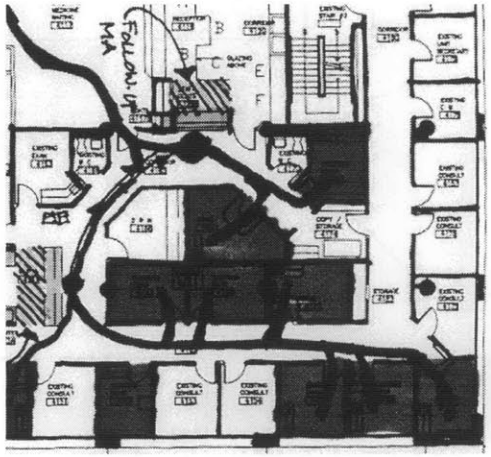


Fig. 2.12 Sketch illustrates two points of conflict for patients: the up desk and the follow-up desk. Patients get confused and do not know which desk to approach.

"Many times patients go to the up desk and not to the doctor's office. This is probably due to the type of space which leads to some doctors' offices. The passage area is a storage and printing room." registered nurse

"I think patients would feel less isolated if they were not down an empty hallway. I mean sometimes the patients get left on their own for a while, when a doctor is running behind." physician

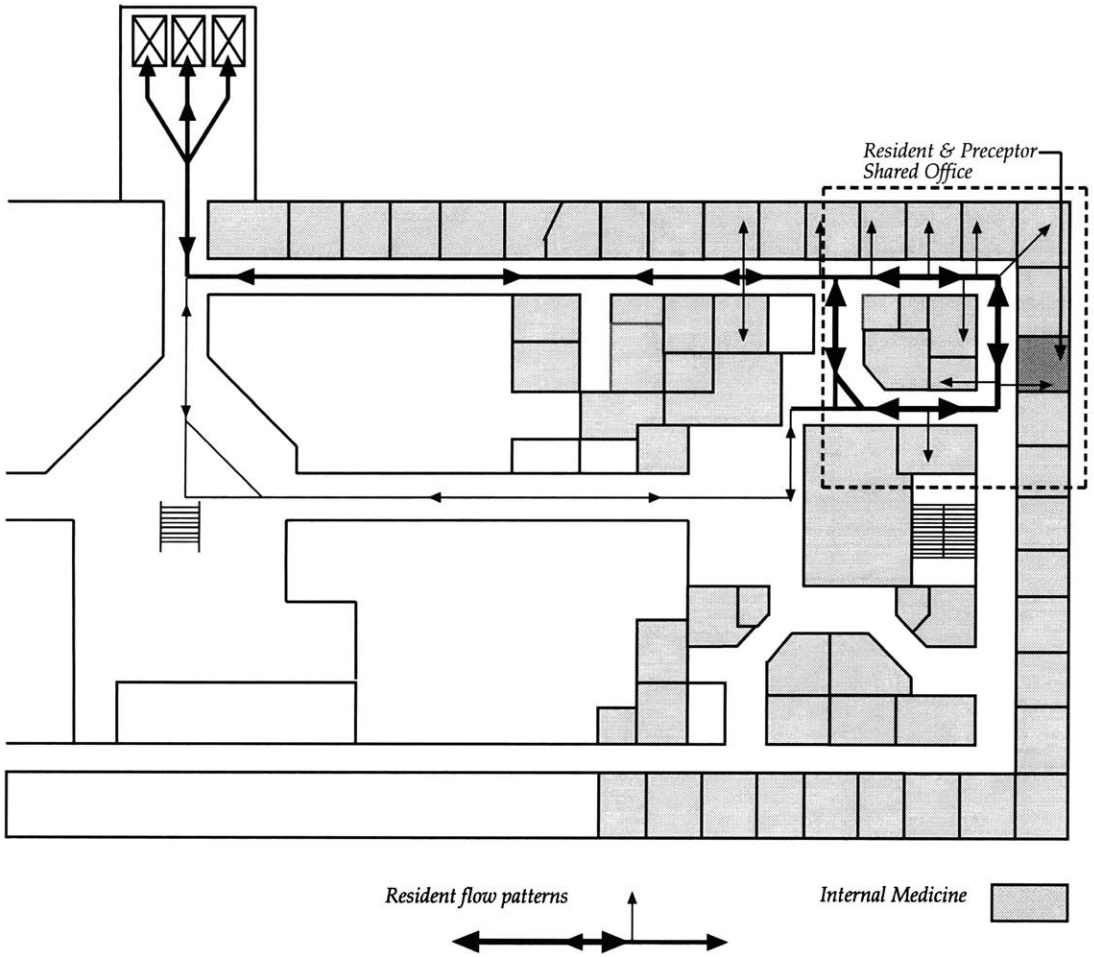


Fig. 2.13 Resident Flow Patterns. This diagram illustrates the architectural areas or zones that the resident typically works. What I noticed was how the architecture clearly separates him from spontaneous communication with support staff, and that some of the face-to-face learning occurs in this outer circulation corridor.

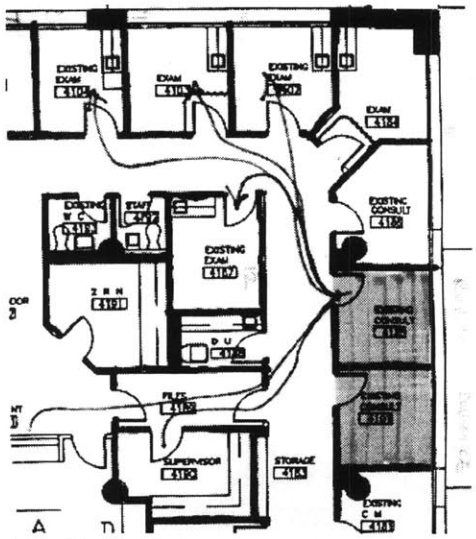


Fig. 2.14 Sketch showing circulation paths made by resident and preceptor.

"I found the preceptor in the hall by chance. The problem was solved." Bernard Walker, resident

"When the resident entered the office, she called another department for a telephone consult. She described the symptoms, conveyed data and took not of the advice." I observed this example of learning through technology. August 2, 1996

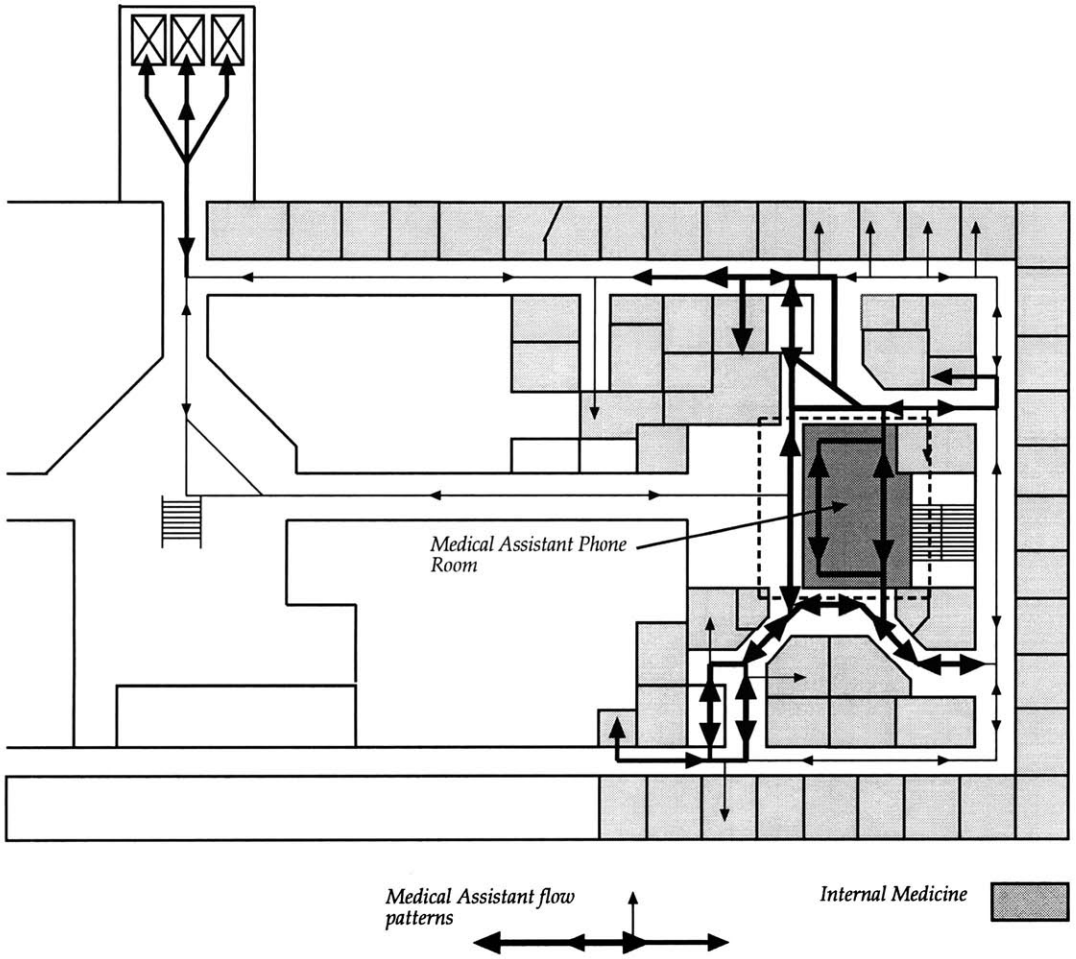


Fig. 2.15 Medical Assistant Flow Patterns. This diagram illustrates the flow patterns and architectural areas or zones that Medical Assistants typically work. Note how the architecture clearly separates them from spontaneous communication with physicians. In particular, the centralized location of the phone room shows this characteristic most clearly.

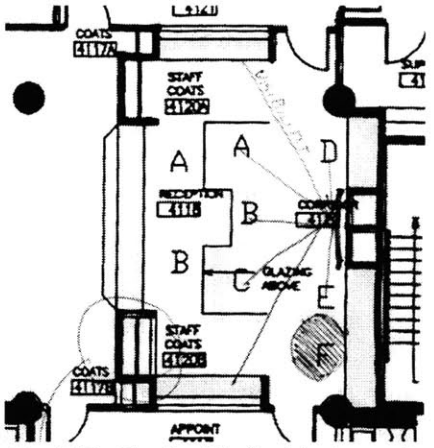


Fig. 2.16 Sketch of Medical Assistant phone room. This room is a circulation path that links two teams. It is a public room although it should be private for confidential conversations. This is a conflict.

"Most clinicians avoid the phone room unless they have a problem. The centralized phone room was a result of a design that focused on efficiency, I think that was all they were looking at." Supervisor

"I don't know the medical assistants who answer the phones for my patients. The medical assistants do not know my practice and the patients I see." physician

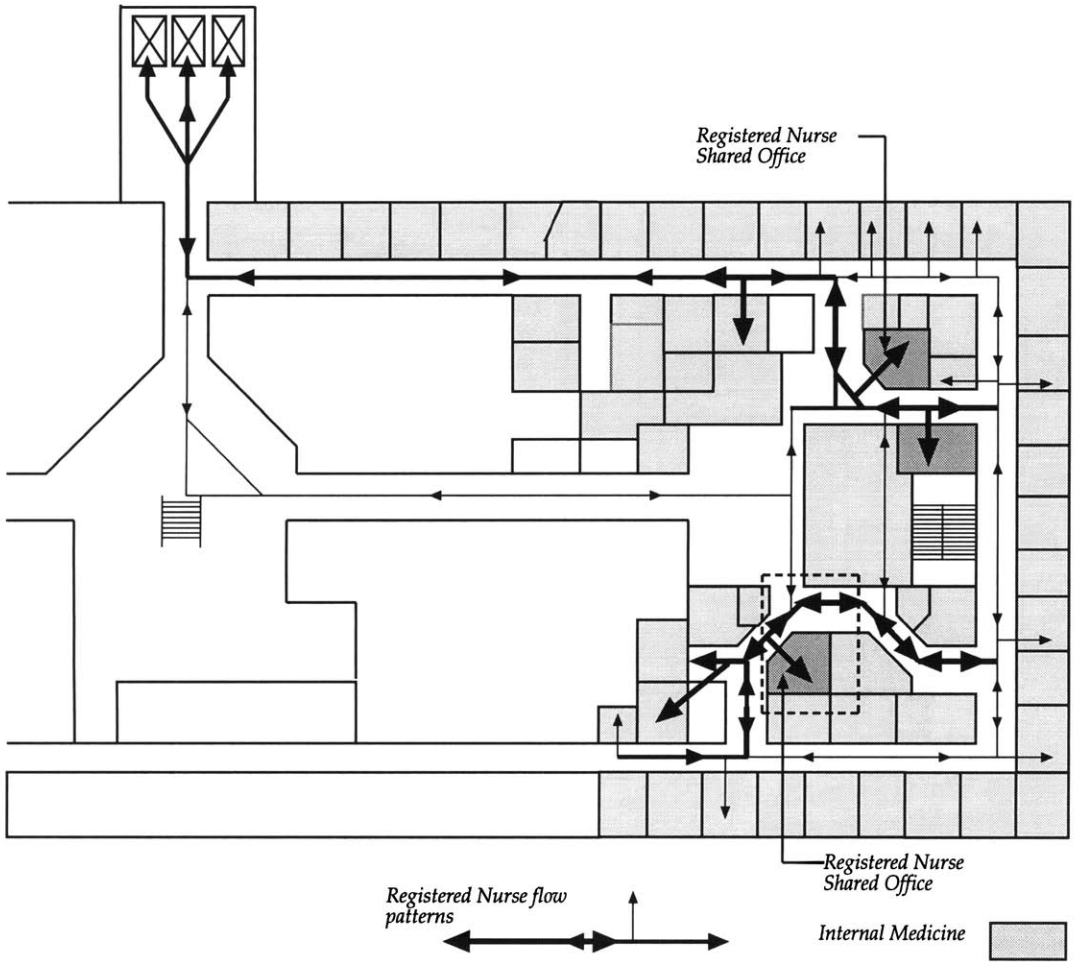


Fig. 2.17 Registered Nurse Flow Patterns. This diagram illustrates the flow patterns and architectural areas or zones that registered nurses typically work. The nurses are located between the public and private areas of the space, work in offices without natural light and are not visually linked to the doctors in most cases.

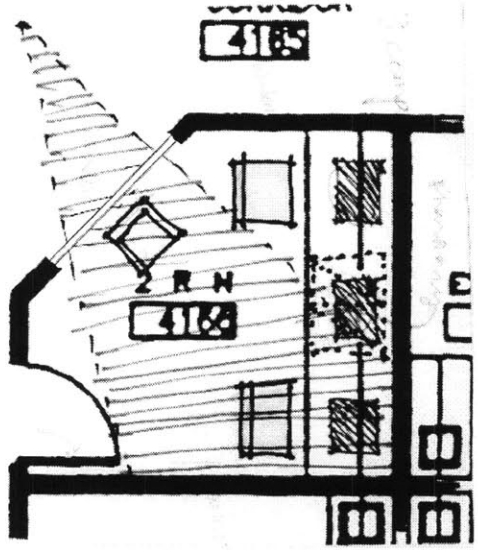


Fig. 2.18 Sketch of one of the nurse offices illustrating a interior window which permits visibility into space and worksurface dominated by three computer terminals.

"What I think works best is to separate the nurses and put them with the clinicians." Bonnie Riera, registered nurse

"Decentralize the nurses so that they can communicate easily with the physicians" Eva Jones, physician

Work Process Analysis

The systems approach analysis of the following three work processes began when I was researching within the department. The first work process I diagrammed was the face-to face-communication between a patient and service provider. The second work process I diagrammed was the telephone communication between a patient and the service provider. And, the third process I looked into was information technology. This is diagrammed to illustrate infrastructure. It is not diagramed as a work process.

The objective of my process flow diagram analysis was to identify the patient as the "input" and trace his potential route through two separate work processes as he or she was converted into an "output". The process flows I diagrammed were generated by identifying key team players as "service providers" and by identifying all the "steps" or "handoffs" between providers throughout the process.

What I found most helpful with these diagrams was my ability to verify previously perceived bottlenecks. In the two work processes diagrammed, the "handoffs" or "steps" determine the 'flow' of people and 'flow' information through the organization and facility. As a researcher, I participated in the bottlenecks when I worked as the runner or message carrier. The responsibility of the runner was to physically carry and pickup messages all day. Fig. 2.23 illustrates the runner as a white hexagon. By looking at the diagram, the bottleneck is visualized and can be quickly understood. Appendix 1 notes many of my experiences as a runner dealing with various work process issues.

The goal of this work process analysis is to articulate the inefficiencies and conflicts that exist within the current systems, and to show how these inefficiencies relate to my observations and participant comments. The resulting knowledge has been used in the development of two alternative work processes for the proposed prototype.

Briefly I will summarize the bottlenecks and inefficiencies I discovered:

1. The up-medical assistant who links the patient from the outside world to the inside world performs some tasks which are repeated by the physician or clinician. This inefficiency results in lost time for both team players. (See Fig. 2.21, Step 2)

2. The physician or clinician who performs consults within the examination room creates bottlenecks for the up-medical assistants who will clean the room prior to the next scheduled visit. (See Fig. 2.21, Step 4)

3. The runner message delivery system used for patient telephone communication is time-consuming, unreliable and the source of bottlenecks in the work process. (See Fig. 2.23, Steps 2,4 & 6)

4. The information technology systems are separate and do not capitalize on current networking opportunities. (See Fig. 2.25)

Face-to-Face Communication

There are five face-to-face "steps" or "handoffs" that a patient experiences when visiting the unit. These face-to-face handoffs determine the flow of patients through the organization and facility. If one reflects on the work process diagrammed (Fig. 2.21), basic inefficiencies in the system are revealed. The list below describe these "steps" or "handoffs" and introduce possible process inefficiencies.

Step 1: The Receptionist. This person is the gatekeeper for the organization and is responsible for checking-in patients. As a gatekeeper, she provides privacy for the clinicians who work two layers behind her.

Step 2: The Up-Medical Assistant. This person is the transition between the outside world and the inside world. The up-ma is the patient escort and assumes responsibility for breakdowns in the work process. One inefficiency I learned about was the bottleneck that occurs for members. Some patients will wait in an exam room for up to thirty minutes waiting for a physician. (See August 8, 1996)

Step 3: The Clinical Examination. This is where the physician and patient meet to investigate whatever problems might be present. It is here that the system has most of its bottlenecks. Why? (See appendix 1: Tuesday July 30, 1996)

Step 4: The Consult. The consult is the final interaction between the doctor and patient Some consults occur in the exam room. Some consults occur in the clinicians office. The office consults are the most efficient for maintaining the patient flow and reducing bottlenecks.

Step 5: The Follow-Up Appointment. This is the provider who schedules patients for future visits. On some occasions patients get lost or confused trying to find the follow-up medical assistant. This is a problem that results from the maze like environment. (See appendix 1: Monday July 15, 1996 scheduling inefficiencies in work process)

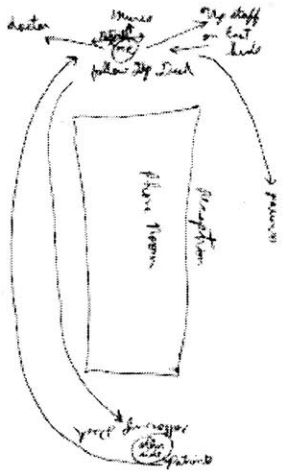


Fig. 2.19 Michael Carlin's sketch of physical communication within department. See July 15, 1996 logs for further comments.

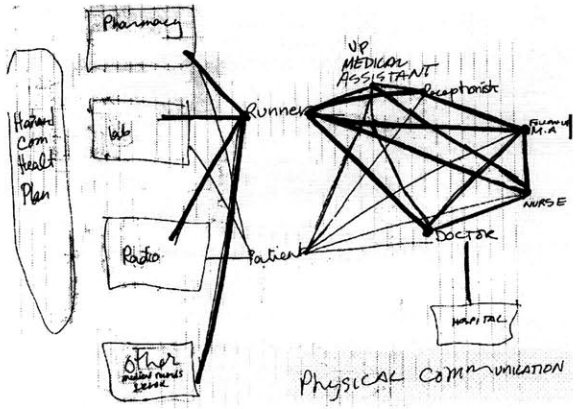


Fig. 2.20 My first sketch looking at physical communication patterns based on informal interviews with medical assistants.

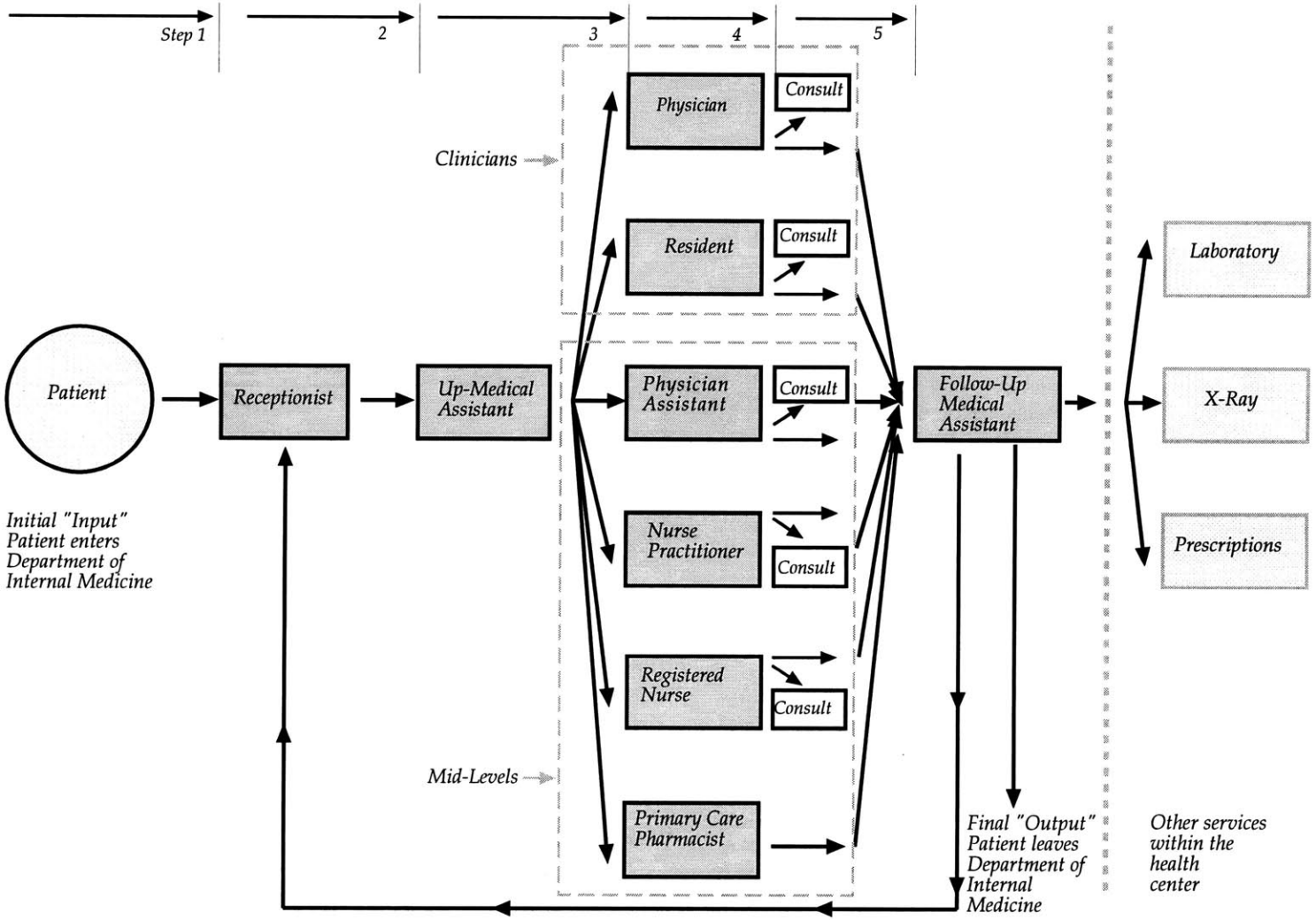


Fig. 2.21 Process Flow Diagram of Services rendered to a Patient Face-to-Face. The diagram represents my final reflection illustrating how the current work process operates. Step 2 and 4 represents the areas where I think most of the bottlenecks appear.

Telephone Communication

There are six "steps" or "handoffs" that a patient experiences when telephone calling into the unit. The patient telephone call "handoffs" determine the flow of information through the organization and facility. If one reflects on the work process diagrammed (Fig 2.23), basic inefficiencies in the system are revealed. The list below describes these "steps" or "handoffs" and introduce possible process inefficiencies.

Step 1: The Phone Room Medical Assistant. These staff members are the gatekeepers for the virtual organization and are responsible for answering all patient telephone calls. These players are centrally located and distribute all patient phone messages from this area. (See appendix 1: Tuesday July 9, 1996 & Wednesday July 10, 1996)
Step 2: The Runner Medical Assistant. This person will deliver the message to its appropriate destination. This is probably where the system is most inefficient. (See appendix 1: Wednesday July 31, 1996)
Step 3: The Triage Registered Nurse. This person will answer or respond to a patient's call if possible. If not, the message will be forwarded to the physician.
Step 4: The Runner Medical Assistant. The message carrier will again pick up the message and deliver it to its appropriate destination.
Step 5: The Doctor. The physician is the final destination. At this time, the physician will return a patient's phone call. Sometimes it takes over an hour for a message to reach this destination and sometimes this is too long for a patient to wait. (See appendix 1: Thursday August 15, 1996 for efficient work process)
Step 6: The Runner Medical Assistant. After the physician contacts a patient, the message is either filed in a central location or placed in a bin for its next stop. One example, is a patient prescription refill form. This form will be picked up by another message carrier within the facility. (See appendix 1: Friday July 26, 1996 for further description)

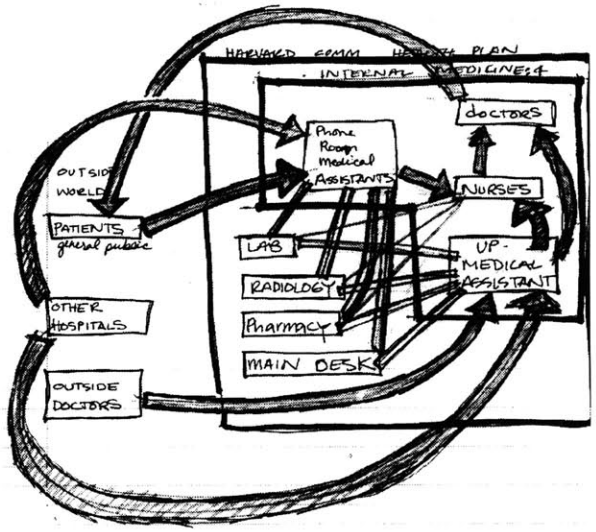


Fig. 2.22 My first sketch visualizing telephone communication patterns based on informal interviews with medical assistants.

"Patient access is the primary problem." physician

"Prescription refill process is too slow with current phone system." physician

"Phone calls are not returned as fast as patients would like." physician

"Phone messages get lost." physician

"There is no recognizable relationship between any one patient and any one phone room medical assistant. This is due to the centralized phone system." supervisor

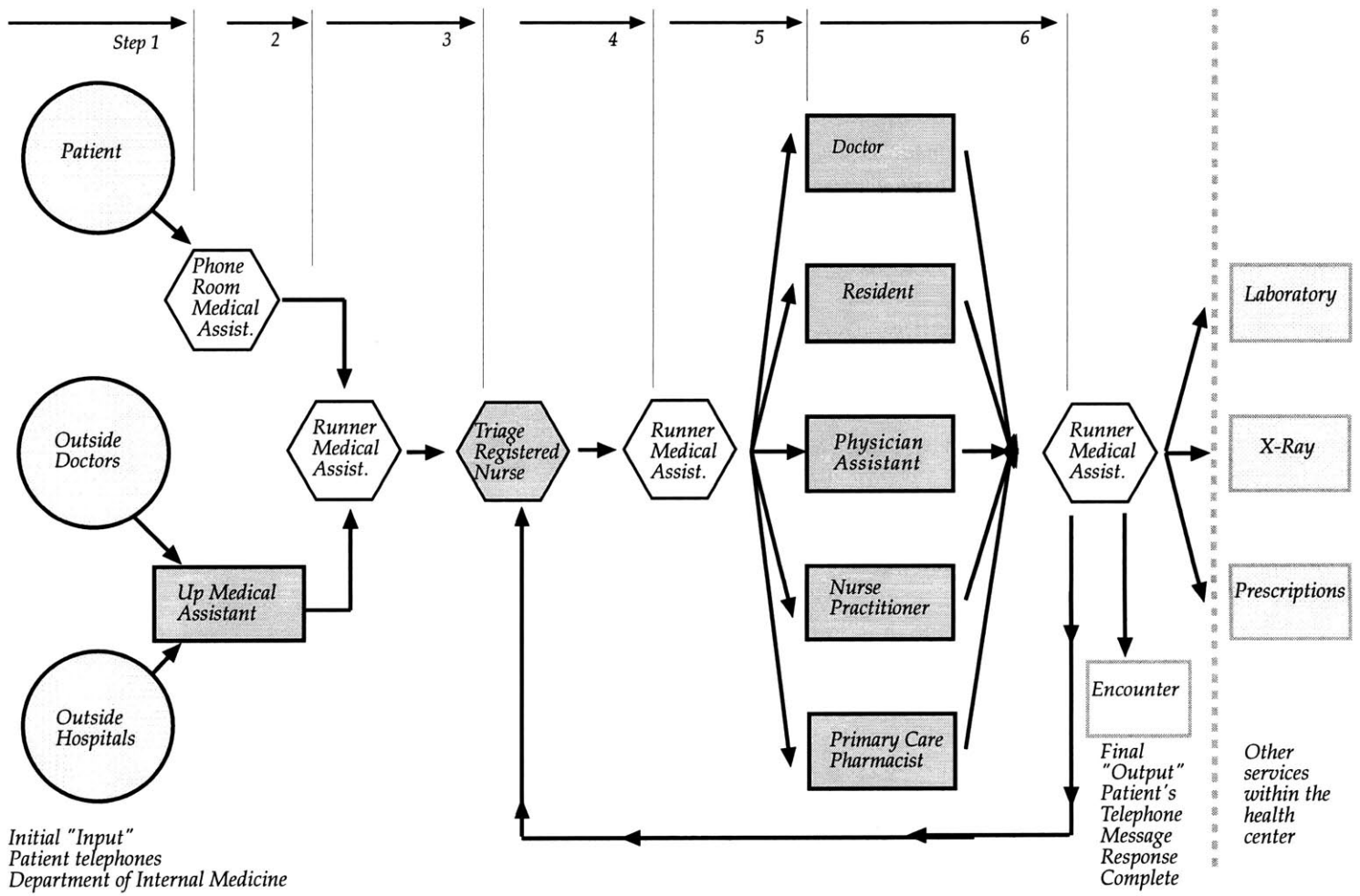


Fig. 2.23 Process Flow Diagram of Patient Telephone Communication within the Department of Internal Medicine. This diagram represents my final reflection illustrating how the current work process operates. Steps 2, 4 and 6 represent the areas where I think most of the bottlenecks appear.

Work process Analysis: Information technology

There are six independently running computer systems compose the information technology available. Fig. 2.25 documents the systems as I understand them. Due to the complexity of the issue, I have not documented any work process; however, I will present comments that were made by participants to illustrate ideas that reflect these systems.

"Dinosaur age technology. Difficult to change and improve. The advantage of the existing system is that it is easy to learn and use within a few hours. In contrast, a new system might potentially require thirty hours to acquire skell to place one in a beginner's position." *physician*

"No way to track where the inefficiencies lie in the system on a per doctor manner. I cannot compare my workload to another doctor because the system does not allow this to occur." *physician*

"The computer system is antiquated. It is user unfriendly. Dictations are not updated in a timely manner. For example, if a patient visits the doctor, he will make a dictation of the exam and treatment. Sometimes he will look into the computer file of the patient only to find that the dictation has not been completed after two weeks of time. This is problematic." *resident*

"Slow." *medical assistant*

"Crashes once a month for one hour to one and one half hour." *medical assistant.*

"The nicest aspect about the plan is it's computer. Since it was instituted in the seventies, it's kind of, a weird system. It doesn't make a lot of sense from some standpoints, but compared to the traditional charting methods, it's actually better. We will see a lot of systems similar to this; but more modernized." *resident*

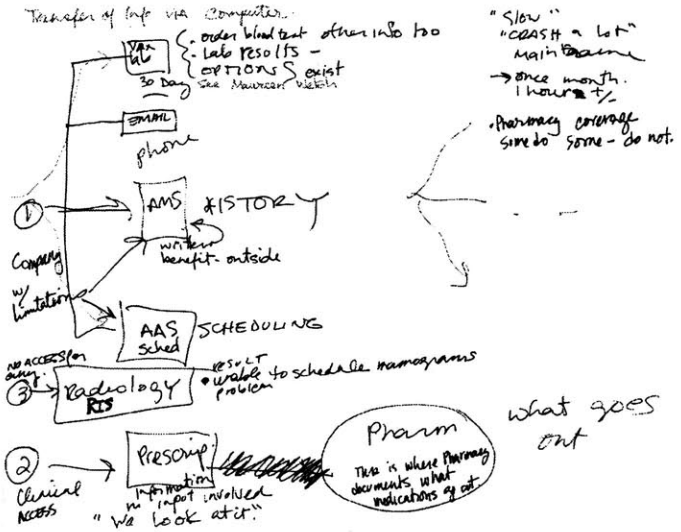


Fig. 2.24 Drawing of information technology systems currently in use, based on observation and informal interview with Jan Sudman.

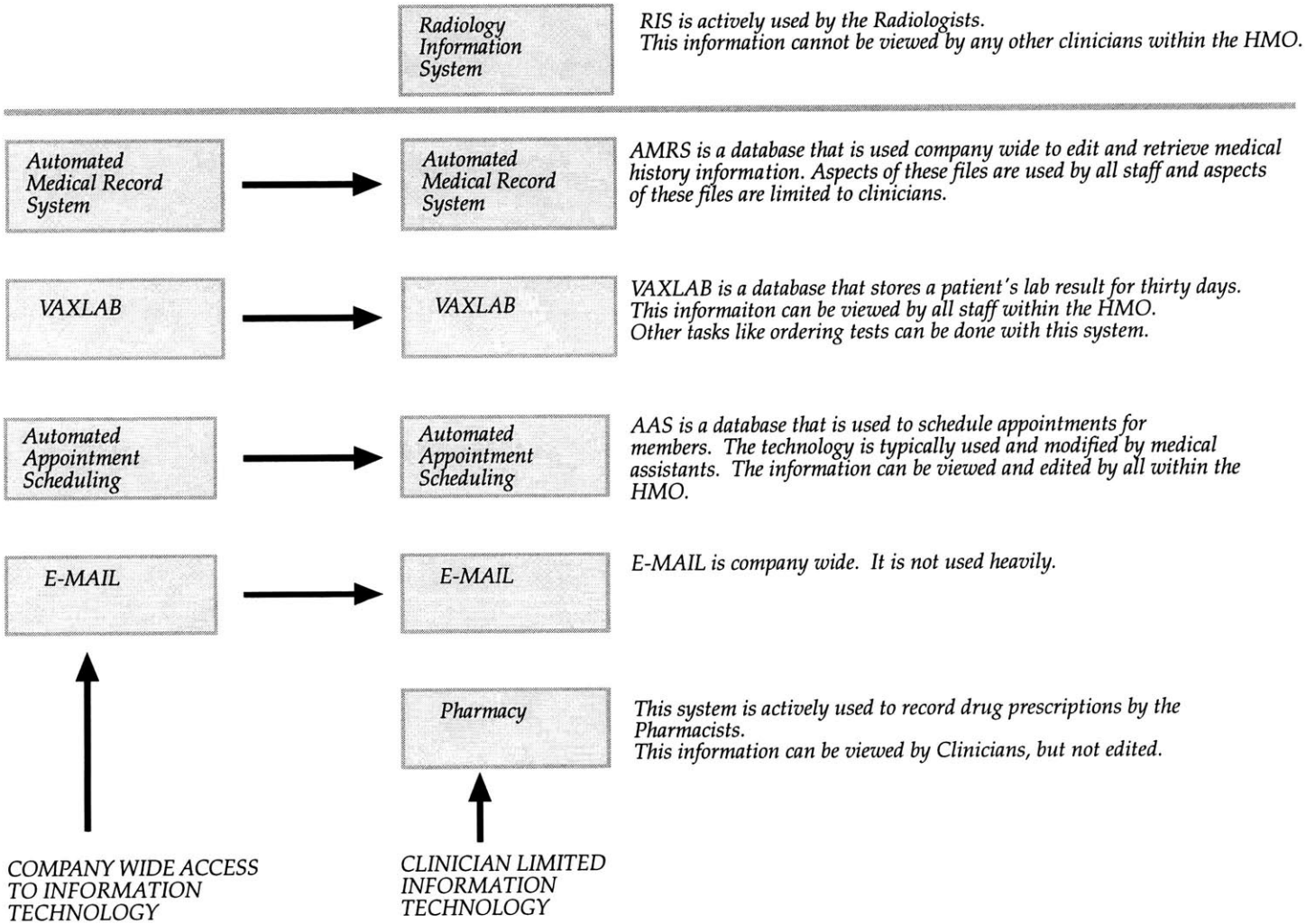


Fig. 2.25 Information Technology Diagram illustrating the basic mainframe structure. The left four rectangles describe information systems that are open to all members of the HMO. The six rectangles at right describe a higher level of access which is required or a totally separate computer system.

Organizational Structure Analysis

The four simple decision tree analyzes of the following organizational structures began as a reflective process that was formalized while participating in conversations with management students at MIT. The first tree I diagrammed illustrates the formal operating structure which reflects a hierarchical organization. The second and third decision tree diagrams illustrate informal behavioral structures that reflect Status & Power, and Scheduling. The fourth decision tree illustrates the size of one unit or team within the department of Internal Medicine.

The objective of these simple decision tree diagrams was to identify how decisions are made, where conflicts lie, and what constitutes a team. These diagrams were generated by identifying key team player 'tree' positions and moving the players on the 'tree' as I determined appropriate. Another aim of the decisions trees was to connect the diagrams to supporting data as a way of reinforcing ideas expressed.

What I found most helpful with these decision tree diagrams was my ability to clearly understand previously confusing organizational structures.

Briefly, I will summarize the issues and conflicts.

1. The hierarchical organization that operates the facility tends to work in independent groups: the doctors, the nurses, and the support staff. This creates communication problems and reduces the probability of successful team building and organizational learning. The architecture supports this type of organization. (See Fig. 2.27)

2. There is a split in the organization. Management is one one side of the field and the Physicians/Clinicians are on the other side. Until they come together with a shared vision, the goals of the organization are at risk. (See Fig. 2.27)

3. There are informal organizational structures which prevent the organization from operating efficiently. Until the behavioral patterns are modified and new policies are established, the organization will suffer. (See Fig. 2.28 & 2.29)

4. The organization is not the ideal scenario for resident training because it is not designed to optimize learning and because the residents do not get exposed to the variety of jobs necessary to operate within the organization.

5. The organization focuses on the physicians and not on the patients.

Formal Organizational Structure Analysis: Operations

The ideas presented here are my views of how the organization functions. Two dominant themes are lack of teamwork between clinicians and non-clinicians and gaps in communication. Below, I have isolated a few quotes and interpretations that I felt expressed these ideas. All of these quotes can be found in appendix 1.

1. Quote on the subject of the hierarchical organization and teams. *"I don't think the teams are functioning as teams yet. It is not because of space constraints even if you design the space with a different spatial layout. You would see no difference. I presume it is a change of behavior. It fits into larger and newer strategies. I think that the way you need to do it is you need to create incentives for a team to work as a team and have them realize why teamwork is effective. Systems and space are secondary. The team will therefore decide, based on why they feel teamwork is essential, the best spatial design for them." manager*

2. Quote on the subject of the hierarchical organization and teams. One medical assistant described how face-to-face communication patterns work. The MA said that a lot of time is spent pleasing the doctors. So I asked him how the communication might be improved with the clinical staff? The MA said, *"First a team has to be created and second cooperation among the team members must exist. At this time each of these elements are missing." medical assistant*

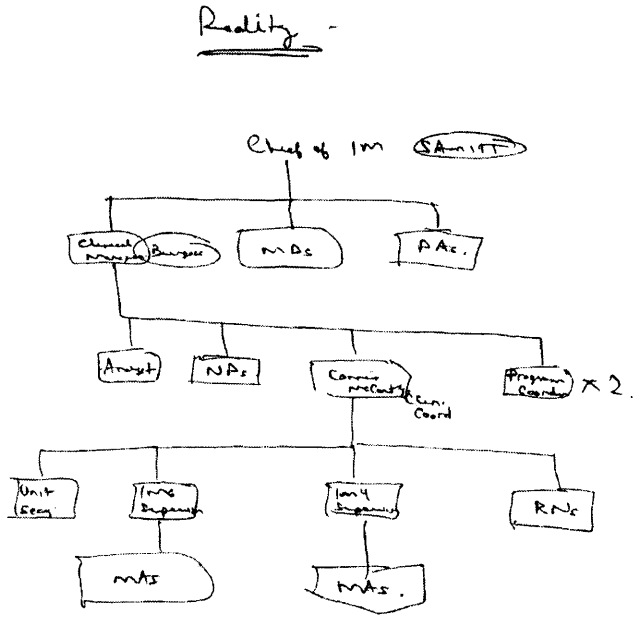


Fig. 2.26 Participant Drawing illustrating the existing formal operating structure for the department of internal medicine.[1]

3. Personal interpretations on the subject of the formal organizational operating structure.

"The doctors rule."

"The communication gap. When it happened, I was thinking, of course they will try to blame the MA. She is the lowest person on the team. But, what actually happened was that the doc got upset at the RN; and then, the RN blamed the MA. . . . .The MA's are servants to the doctors."

[1]Christopher Sadler, personal drawing, September 7, 1996.

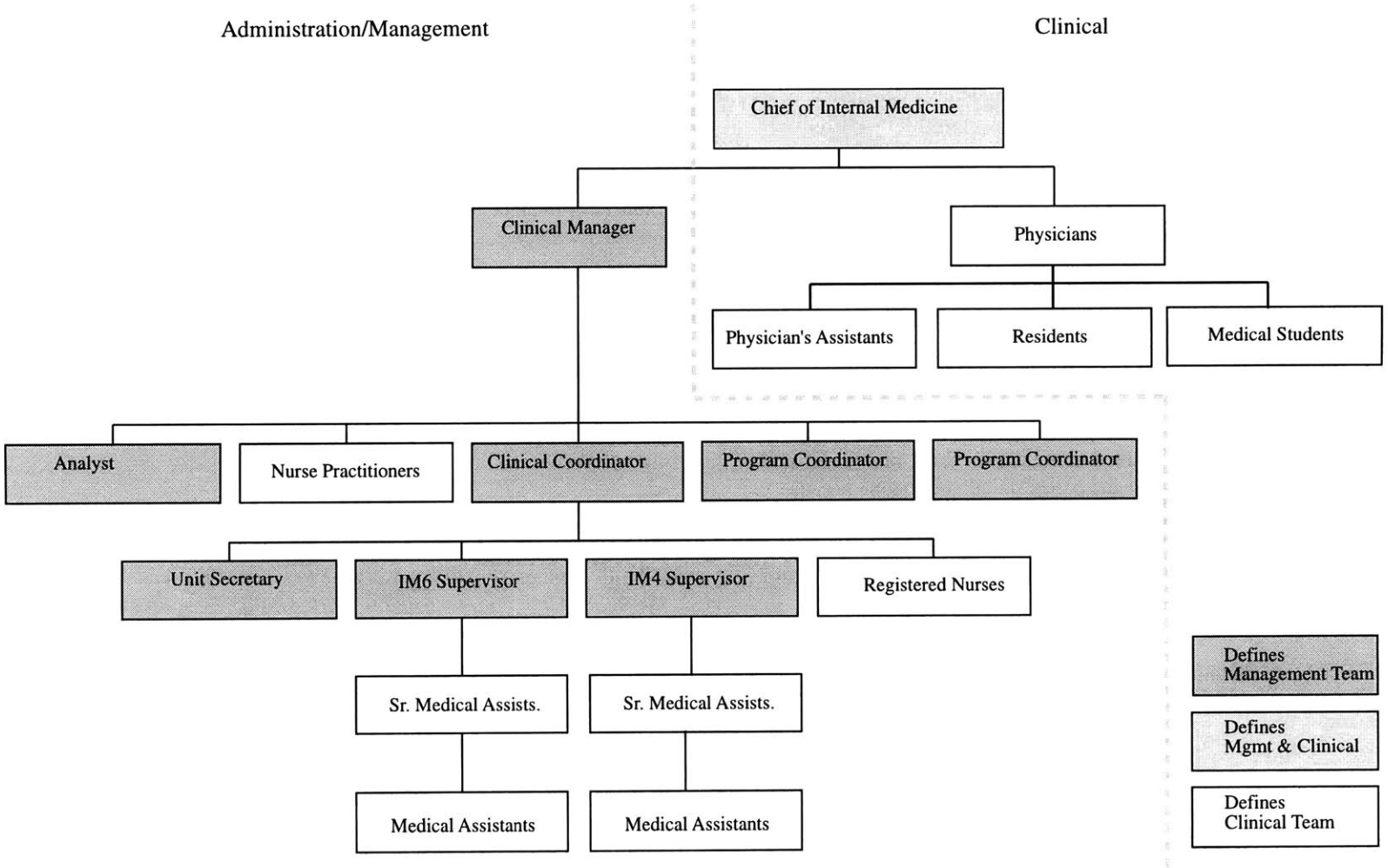


Fig. 2.27 Existing Formal Organizational Operating Structure. The dotted line separates Administration/Management and Clinical sides of the organization and illustrates where one communication gap lies in the department. The diagram also illustrates the conflict between medical assistants and physicians in terms of supervision. (See Fig. 2.28)

Informal Organizational Structure Analysis: Status & Power

The ideas presented here are my reflections of how status and power are used within the workplace. Common themes I learned about focused on unwarranted blame, power and status. Below, I have isolated a few quotes, observations and personal reflections that attempt to articulate how this informal organizational structure appears in the workplace. All of these ideas can be read in full in appendix 1.

1. Observation of "status" being expressed.
I observed one of the nurses enter the phone room for an 'emergency phone call.' Why would this happen? If a patient begins to describe chest pain or irregular heart beats to a phone room medical assistant, then the medical assistant must turn the phone over to a registered nurse or other clinician because medical assistants are not qualified to handle these critical emergencies. As I discussed, the emergency phone is answered by the medical assistant like this, *"Emergency line. Is this a life threatening emergency?"* I entered the room and I saw the nurse take the call. She talked to the patient for a minute and said that she would have to transfer the patient to another phone because she, the nurse, could not access the patients record while the medical assistant was logged in. In fact, the nurse could access the patient record by logging off the MA and logging herself onto the system in the phone room. The nurse chose to leave the bull-pen.

2. Personal Interpretation of "power" being exercised.
I was working as a runner....What happened today was a simple mistake. A nurse might have placed a message in her 'out' box, or maybe someone else put it there without a signature or post-it message. I, as the runner, noticed the lack of information and I said to the two nurses in the room something like this. *"Excuse me, there is no signature on the bottom of this message. Have you reviewed it because it was in the 'out' box?"* In what I considered a rather aggressive tone, one of the nurses responded, *"Well, put it in the 'in' box."* I said in response, *"I do not think you understand, the message was in the 'out' box and was not signed."* I think she looked at me without a smile and I said back clearly, *"The fact of the matter is that the message was in the 'out' box and I am trying to find out if someone has reviewed the message. I am trying to help out."* I put the note in her 'in' box and walked away annoyed thinking can't she admit that she might have made a mistake? Later, I reflected on how that incident might impact the other medical assistants who work as runners. I thought about how unfair that type of mental treatment is to other co-workers and about how this type of behavior impacts the daily operations within the department.

3. Personal Reflection on "blame".
I think that the doctors have the privilege of blaming others for their errors in this clinic. How do others really feel for taking the blame for the man who leads the team? Is that a good standard to set for the team? Accountability. How can it be checked?

4. Quote on the subject of "class system."
"We are really trying to get everyone to be team players. To recognize the support that they have and to work with it. To address the class system. The class system is alive & well here. One of the older clinicians, they come from a way of thinking, that is very hard to change. . . There is a resident here that I like very much, the resident started here and is in his third year now. A nice person that used to go out of his way to not only accommodate the patients, but to learn the best way to go about taking care of patients in terms of access, and treatment of the patient. Now it seems like through their (older clinicians) training, they (residents) are becoming more like: 'What do I need to know that for, that is your job. You do it. I do not care how you do it. Just get it done.' That mentality. So, I guess they are learning. And I am not sure it is the right thing."

Informal Organizational Structure Analysis: Status & Power

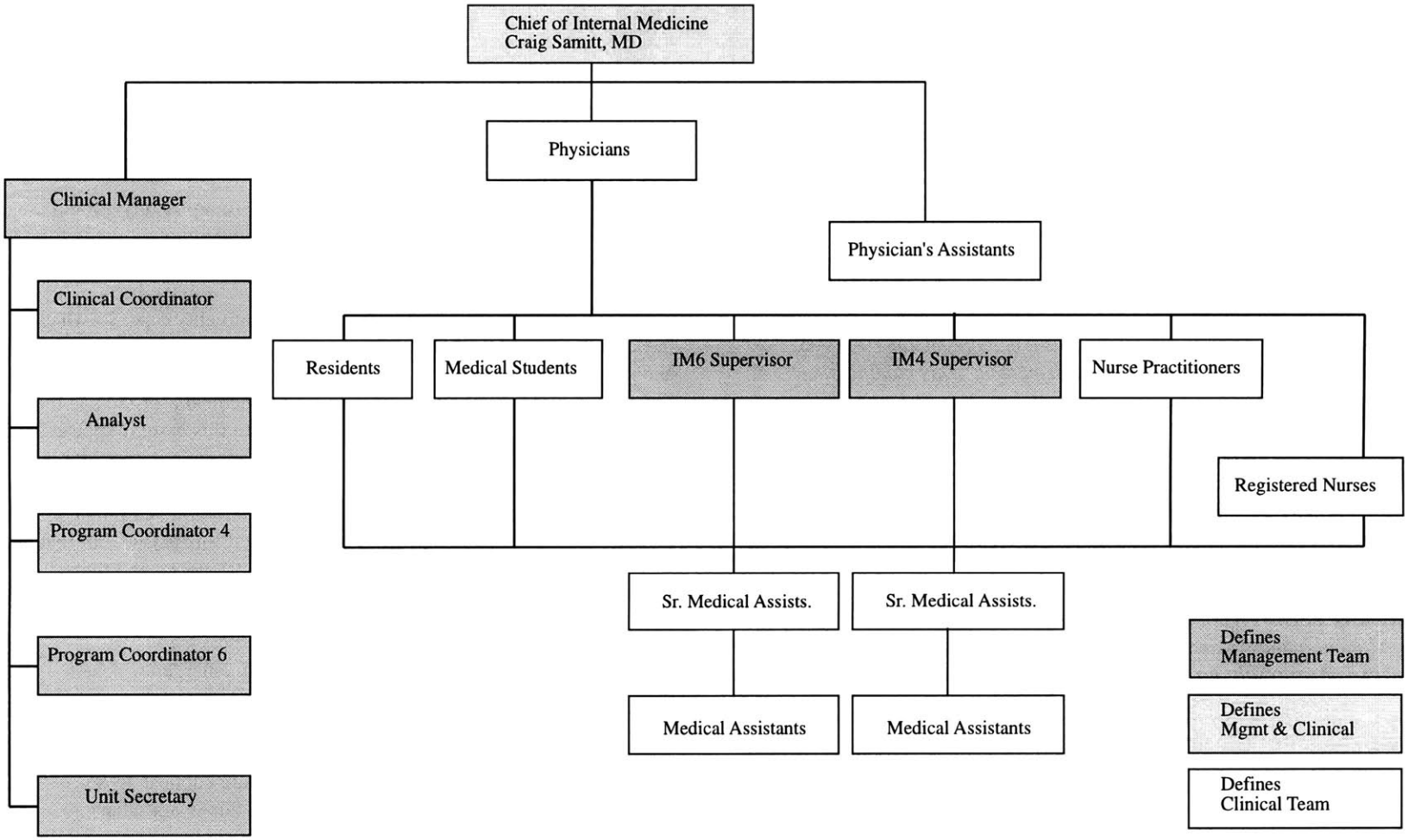


Fig. 2.28 Existing Informal Organizational Structure: Status & Power. The physicians at the top of this diagram in order to stress where the power resides. It is interesting to notice how the medical assistants have moved in this diagram when compared to Fig. 2.27. Medical Assistants are supervised by management and directed in many of their day to day tasks by physicians. This is a conflict.

Informal Organizational Structure Analysis: Scheduling

The ideas presented here are my reflections of how scheduling is used within the workplace. The common theme I learned about focused on how 'power' was used to circumvent 'policy.' Below, I have isolated a few quotes, interpretations and events which attempt to articulate how this informal organizational structure appears in the workplace and how it impacts the day to day operations within the department. All of these ideas can be found in appendix 1.

1. Quote on the subject of physicians and scheduling.
Scheduling patients for September is not possible. Where is the block? What is the barrier? The scheduling coordinators design the schedules specifically for the internal medicine department. *" The scheduling is difficult because there was a change on June 1, 1996. At that time, Extended hours were implemented. This modification completely changed the physicians' schedules. It stretches them out. It gives them more time off. There are no strict rules. So the coverage has been reduced. Summer vacation for doctors are suppose to be limited to three weeks in the summer because the coverage is so low. These are the strict rules that always get overridden by the doctors." Then when a doctor says to a scheduling coordinator that he/she wants a day off, the coordinator will say, "There are two people on your team that are off so you cannot have that day off. Then...the doctors will complain over the coordinator's head to Anne, the clinical manager and management will just give the day off to the doctor." As a result, no one might be working on a team."*

2. Quote on the subject of resident scheduling and coordination.
Scheduling through specialties is difficult for Jan, a senior medical assist, to do. He has to go through various contacts and some cooperate and others make life difficult. Jan commented on the problems, *"They ignore phone my calls, they don't really want to deal with residents. . . However, when Dr. Falkin contacts the specialties, the responses are different. For example, Dr. Falkin can call doctors directly. He can skip the supervisor, the normal path. The doctors are much too busy to deal with me, when I call. Some specialties are a problem and others are so easy, some give me a yes right away."*

3. Personal interpretation on the subject of follow-up appointments and scheduling.
Scheduling appointments is another problem. Today is July 15 and the phone room medical assistants cannot schedule appointments for September. One comment was, *"This is ridiculous."* The problem is that patients want to be scheduled for September or have been requested to be scheduled for a future two month checkup. So what has been happening is that the patients will stop by the follow-up desk and say that so and so said to schedule an appointment for mid-September. The unfortunate response by the medical assistants is that they cannot do it. Where is the link broken? In this case, it appears that the link is broken at the top. The doctors are suppose to submit their work schedules to a specific person in the office. Apparently, the office needs to have all the doctors schedules before the automated records system can be updated. I do not know if this is true, but that is what I heard. Who suffers? First, the patients and second the medical assistants who schedule appointments.

4. Event discussed concerning policy and daily emergency scheduling.
One medical assistant spoke about two current issues which exist in the phone room. A-TEST appointments and scheduling. The A-Test appointments are scheduled by the nurses and are suppose to be scheduled for the current work day. However, this is not what happens. If a patient calls and says she has pain in her "arm" and the pain has been chronic for two weeks. Sometimes the nurse will fill an A-TEST appointment for this individual two days in advance. This means that the appointment is not available for same-day visits which might be needed by the doctor.

Informal Organizational Structure Analysis: Scheduling

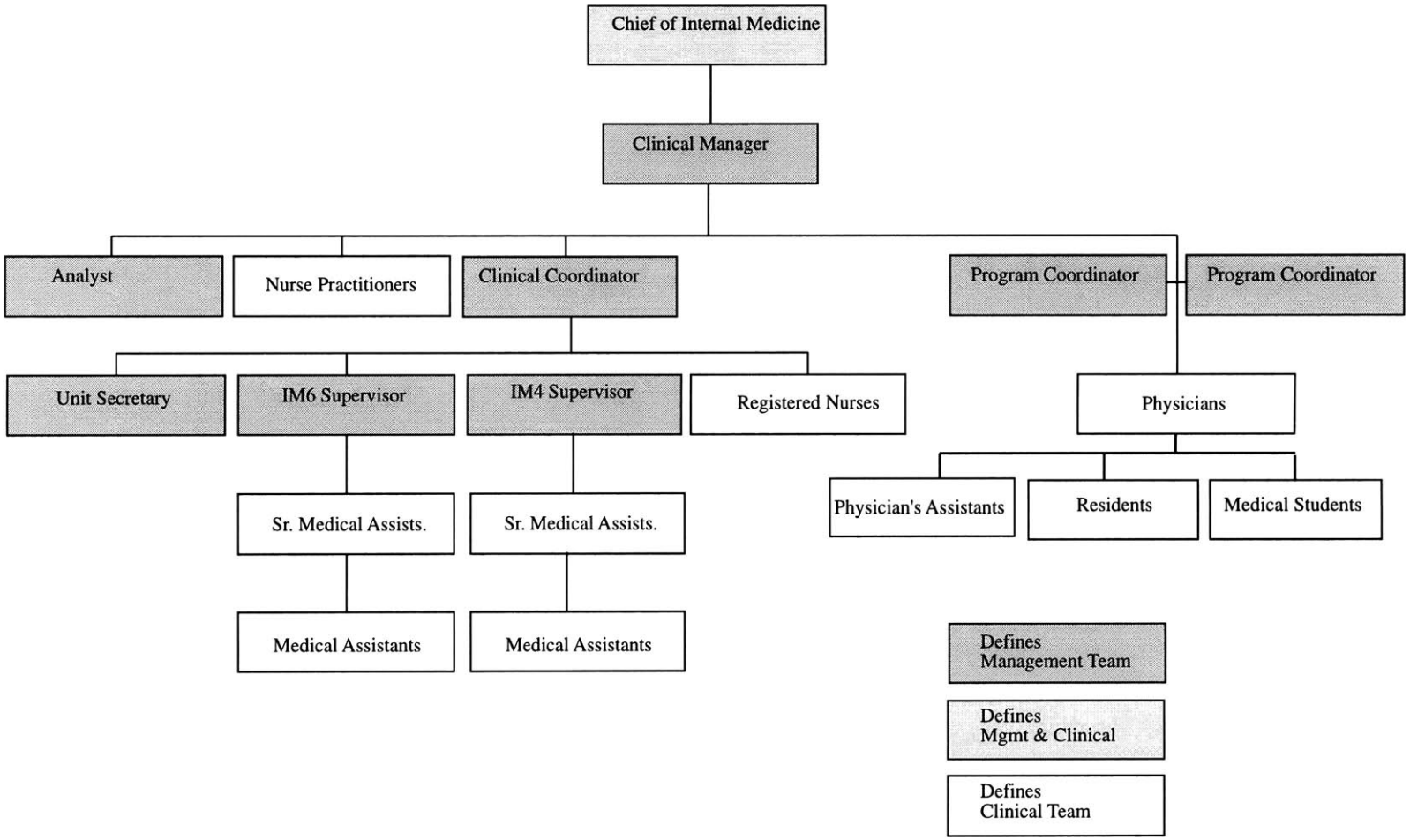


Fig. 2.29 Existing Informal Organizational Structure: Scheduling. The physicians have moved below the program coordinators in this diagram because program coordinators are responsible for maintaining schedules within the department. If physician a physician is not satisfied with his or her schedule, then the decision will be resolved by the clinical manager to accommodate the physicians desires. This is a conflict.

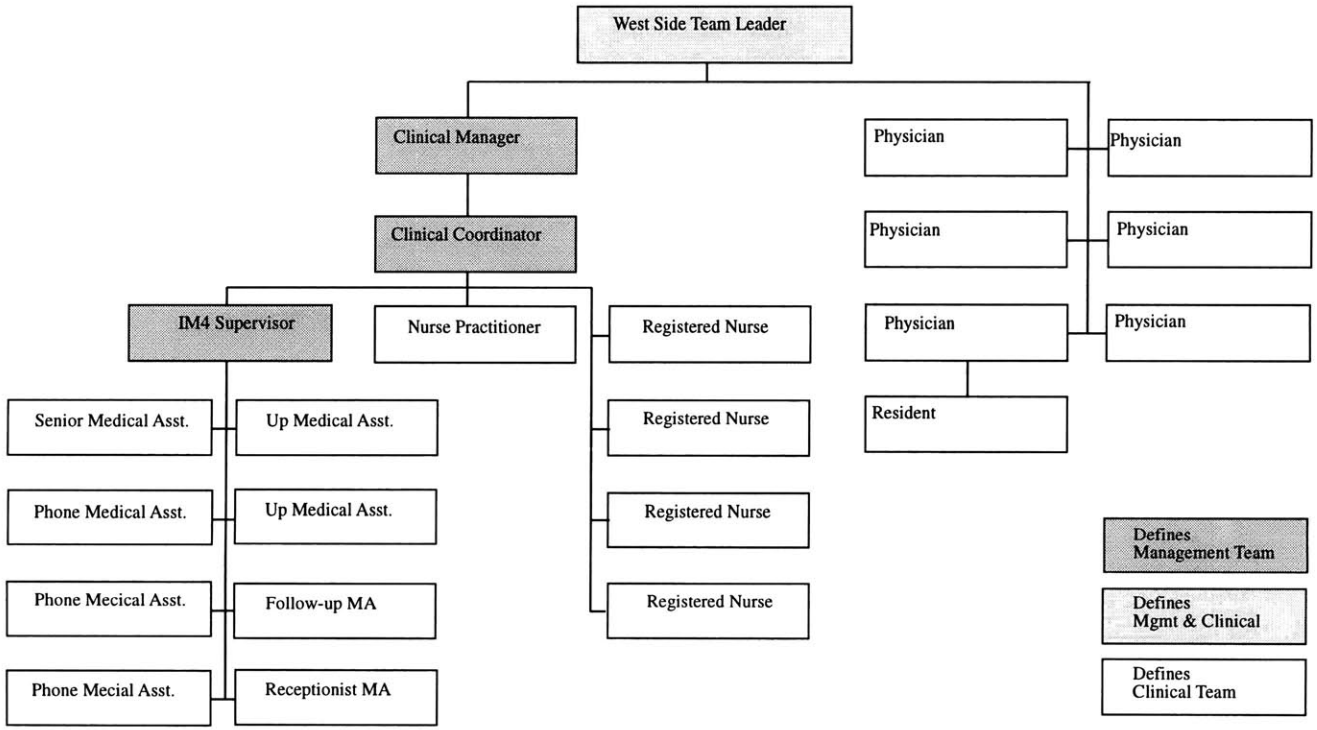


Fig 2.30 Existing Team Structure. In the current organization there are twenty-one clinical and clinical support team members. The white box defines these team players. Based on some of my interviews this unit is not the preferred size. A smaller team would be better. The team leader, located at the top, represents both management and clinical sides of the organization and is a the link between both worlds.

Participant Drawing: Triage Nurse

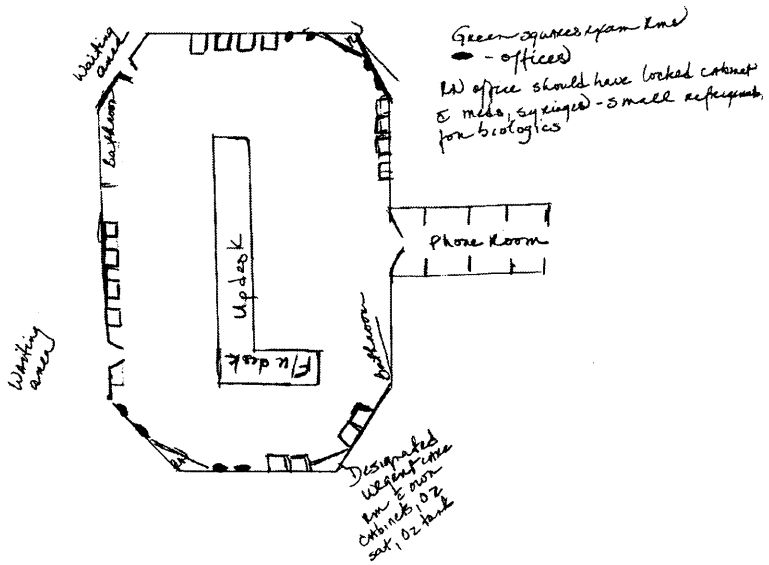


Fig. 3.1 Bonnie Riera's Ideal Drawing of Primary Care Unit.[1]

Appropriate quotes:
"In fact, I think the follow-up should be part of the up-desk. Why? I think it is because of patient access. It is again the issue of people coming out of the exam rooms and searching around for where they should set their appointment for their mammogram. . . I don't know if it is a line of sight problem, the way the space is currently set up or if it is they need a bigger sign, but people don't seem to be able to find that follow up desk."

"The one think I had a hard time with was the phone room. . . . I worry about patients who are waiting to schedule follow-up appointments if there is no door or some way to separate the phone room from people doing business in person."[2]

Interpretations concerning space, process, or organization articulated in the drawing:

1. The conflict that exists between the follow-up medical assistant and up-medical assistant is addressed in Belinda's drawing. She has combined the workplaces in a central location.

2. Although it is difficult to see in the drawing, the triage nurses are decentralized and located adjacent to the doctors with whom they work. This spatial change would foster better communication.

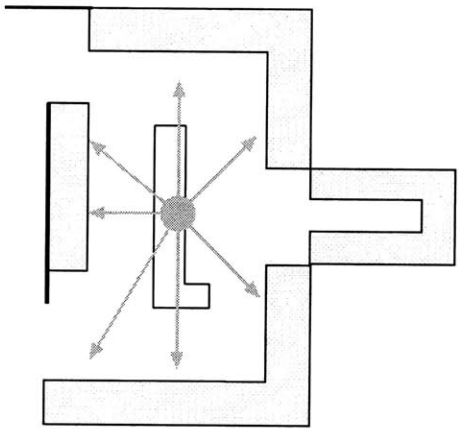
3. Visibility within the workspace is a spatial quality which addresses the current line of sight problem .

4. The phone room has been separated from the public spaces and placed in a private location. This spatial change provides the medical assistants with a confidential space to perform their work.

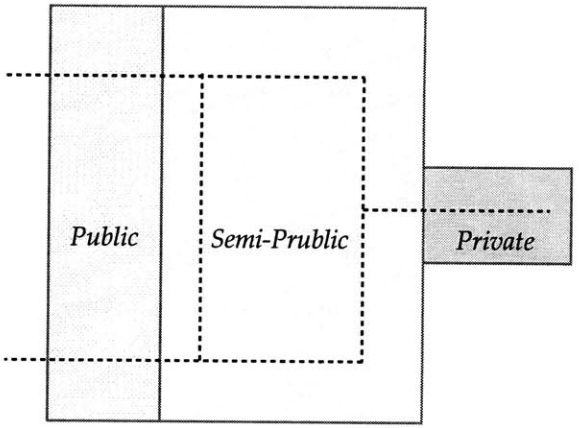
5. Organizationally, the physician is no longer separated from the other team members. The potential effect of this idea is greater communication and teamwork within the work environment and a flatter organizational structure.

[1]Bonnie Riera, personal drawing, August 12, 1996.

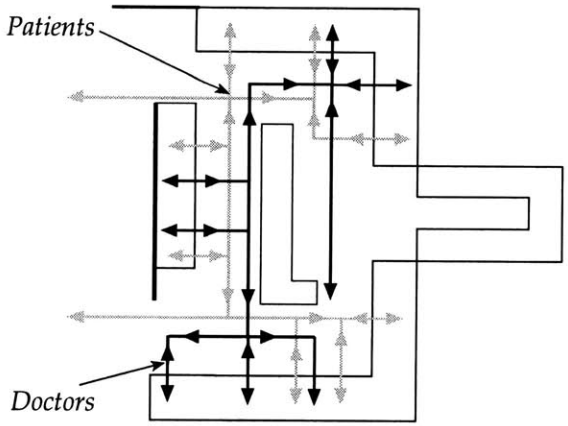
[2]Interview with Bonnie Riera, Arlene Kisiel, Boston MA, August 14, 1996.



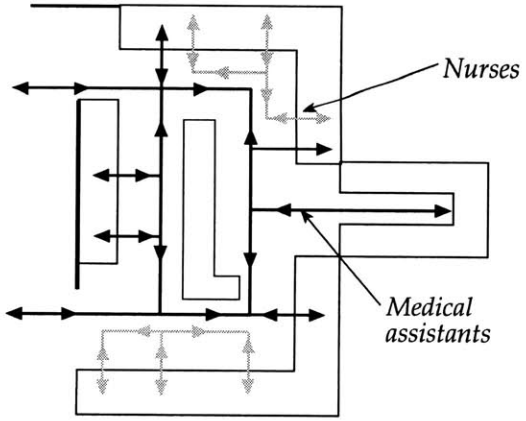
Symmetry and Visibility within the Workplace



Access and Public, Semi-Public & Private Zones



Doctor and Patient Flow Patterns



Nurse and Medical Assistant Flow Patterns

Fig. 3.4 a-d Interpretation of Bonnie Riera's ideal drawing illustrates reflective exercise focusing on spatial issues.

Participant Drawing: Clinical Manager

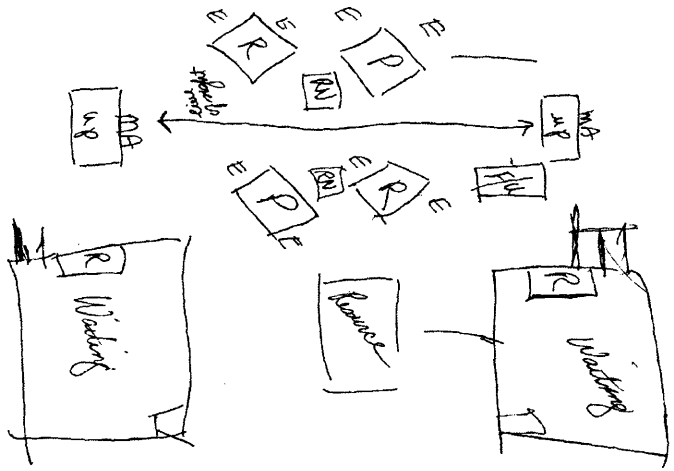


Fig. 3.3 Anne Bishop's Ideal Drawing of Primary Care Unit.[1]

Appropriate quotes:
"Certainly I'd change the geography of the clinical units. First of all we need to have a line of sight for the support up and down the corridor. . . Proximity of a preceptor and a resident. . . . Break down the reception area into two smaller cozier spaces for patients. One of the complaints we get from patients is that they feel the reception area is too big and too impersonal.""

"I would love to have a resource room for patient teaching. . . I would put interactive videos, all kinds of stuff. People learn in a variety of ways. I could also see this as something that the residents could use as they're learning their communication skills.."[2]

Interpretations concerning space, process, or organization articulated in the drawing:

1. Two smaller waiting rooms have been designed instead of one large space.

2. A resource room has been created for the patients and staff members.

3. The patient and clinical work area are divided into two worlds.

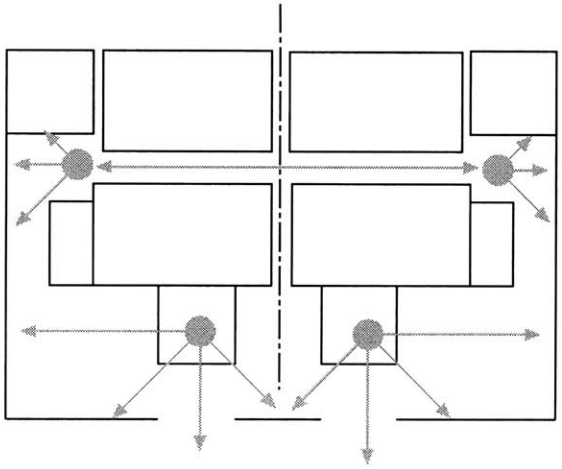
4. There is a conscious effort to place the preceptor and resident adjacent to one another spatially.

5. Organizationally, the resource room as a public space might be rejected by the clinicians. This is a communication space.

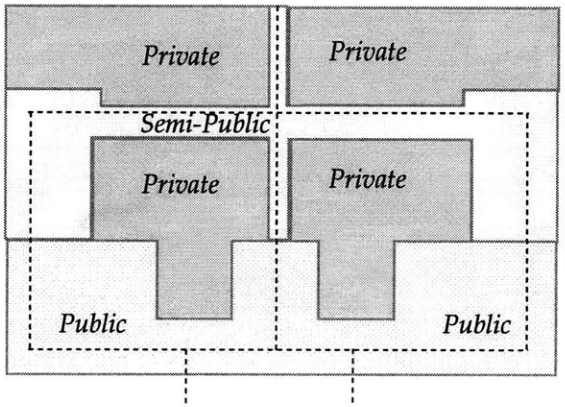
6. The drawing clearly organizes itself along a central spine which provides a line of site.

[1]Anne Bishop, personal drawing, January 10, 1996.

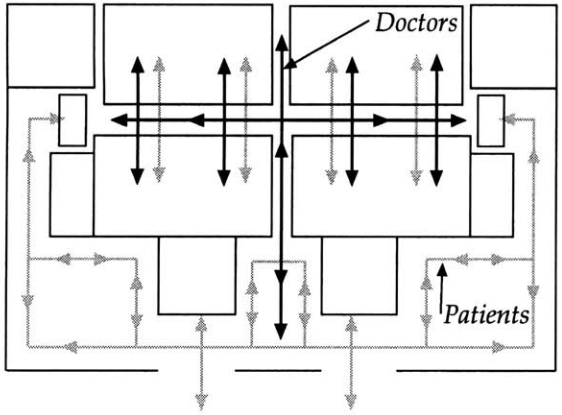
[2]Interview/Walkthrough with Anne Bishop, SP/ORG (Turid Horgen and Zack Rosenfield), Boston MA, January 10, 1996.



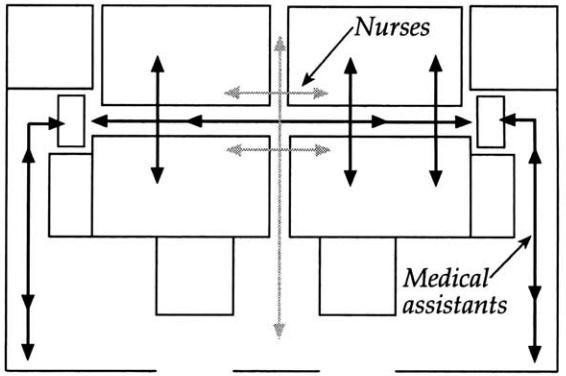
Symmetry and Visibility within the Workplace



Access and Public, Semi-Public & Private Zones



Doctor and Patient Flow Patterns



Nurse and Medical Assistant Flow Patterns

Fig. 3.4 a-d Interpretation of Anne Bishop's ideal drawing illustrates reflective exercise focusing on spatial issues.

Participant Drawing: Resident

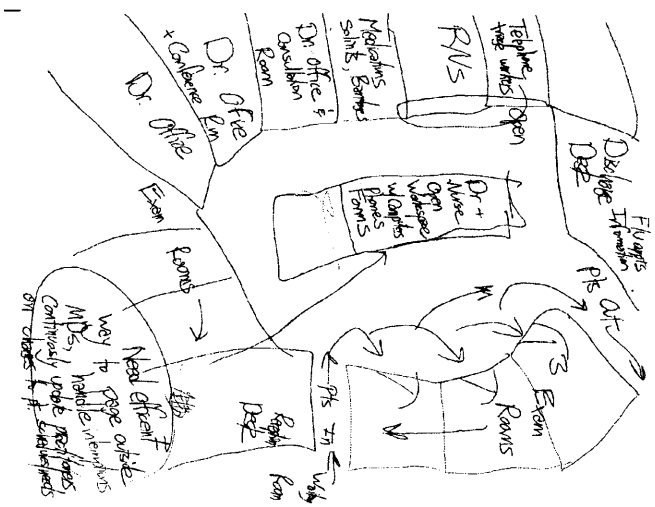


Fig. 3.5 Jason Hunter's Ideal Drawing of Primary Care Unit.[1]

Appropriate quotes:
"...I was thinking about the issue of privacy and actually protecting people from the patient except for the encounter that happens in the exam room so that you don't get interrupted as much. So, there's a clear flow of patients in our clinical area where the patients come into the space from one side and then they leave from another. Then, I like the idea of grouping four to six physicians in one area and then locating a bank of exam rooms near by because the four to six physicians will work as a team."

"Well, I think I would like to learn in the situation I'm in. I can where there's maybe two residents and four physicians. It's a working practice with a couple of residents there occasionally."

"Going back to the offices, I like the idea of having the offices a little bit more removed essentially where you can go back, have a little more quiet talk on the telephone, look up your labs, make those kind of decisions, and write referrals. I don't think you need as much protected space while seeing the patient."[2]

Interpretations concerning space, process, or organization articulated in the drawing:

1. The face-to-face patient communication flow work process influences this spatial diagram

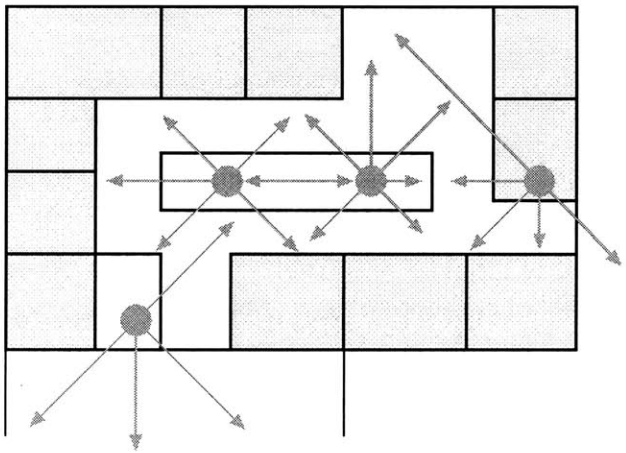
2. The open workspace in the center of the drawing addresses the issues of visibility and clear circulation within the work environment. This spatial arrangement would increase communication among team members which could potentially result in increased effectiveness on the job.

3. The combination of triage nurses and phone room medical assistants would increase communication,and potential employee learning, and improve customer satisfaction through increased ability to triage phone calls.

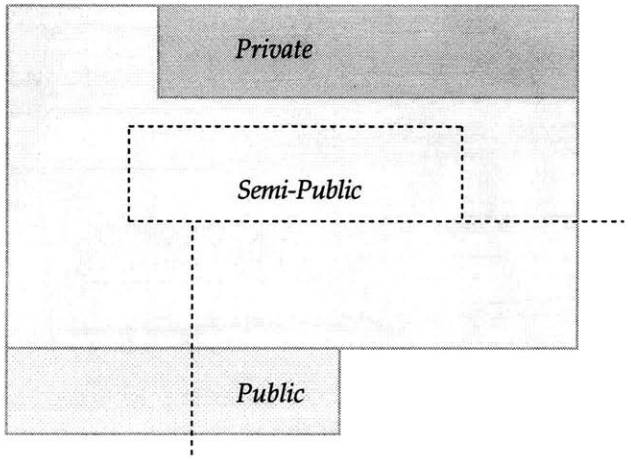
4. Privacy is eliminated for the triage nurse and phone room medical assistant by not drawing a wall around their space in the diagram.

[1]Jason Hunter, personal drawing, November 13, 1995.

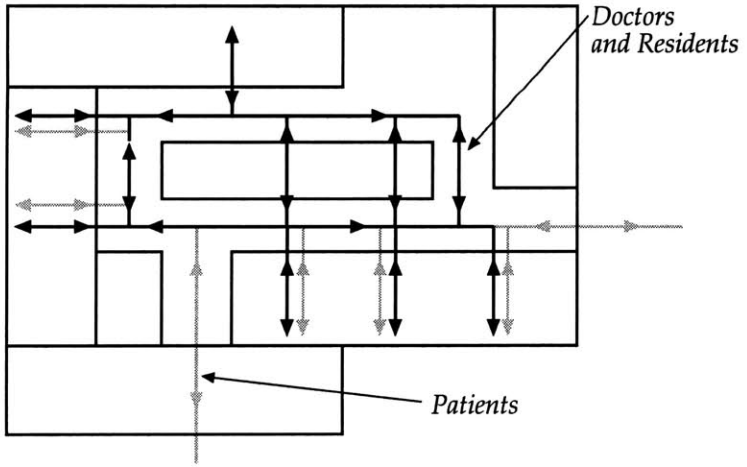
[2]Interview/Walkthrough with Jason Hunter, SP/ORG (Turid Horgen and Zack Rosenfield), Boston MA, November 13, 1995.



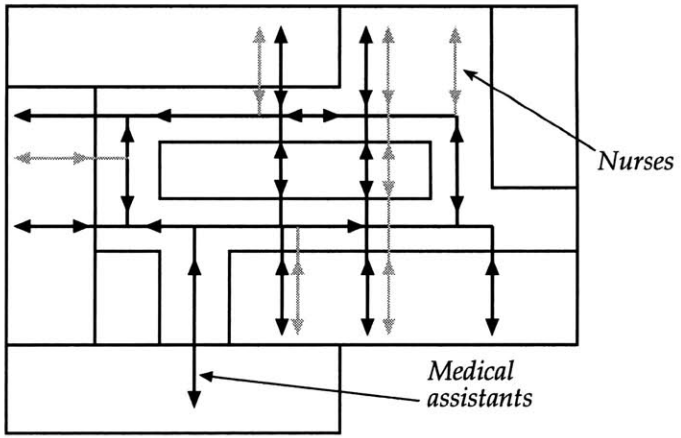
Symmetry and Visibility within the Workplace



Access and Public, Semi-Public & Private Zones



Doctor and Patient Flow Patterns



Nurse and Medical Assistant Flow Patterns

Fig. 3.6 a-d Interpretation of Jason Hunter's ideal drawing illustrates reflective exercise focusing on spatial issues.

Participant Drawing: Medical Assistant

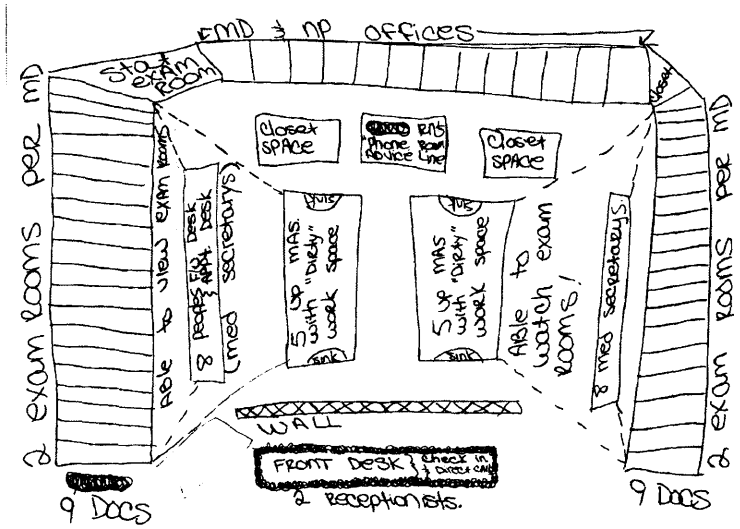


Fig. 3.7 Carol Markkula's Ideal Drawing of Primary Care Unit.[1]

Interpretations concerning space, process, or organization articulated in the drawing:

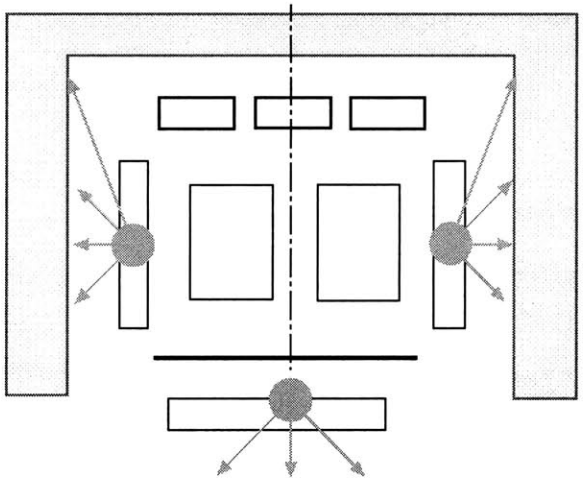
1. This diagram reinforces a hierarchical organizational structure that exists within the current space. Implied in this type of structure is a highly fragmented organization that would not foster communication. Doctors are separated. Nurses are separated. Medical assistants are separated. Patients are separated. There are implied walls that reduce visibility for all.

2. Doctors are protected by two spatial layers which serves to provide them with privacy.

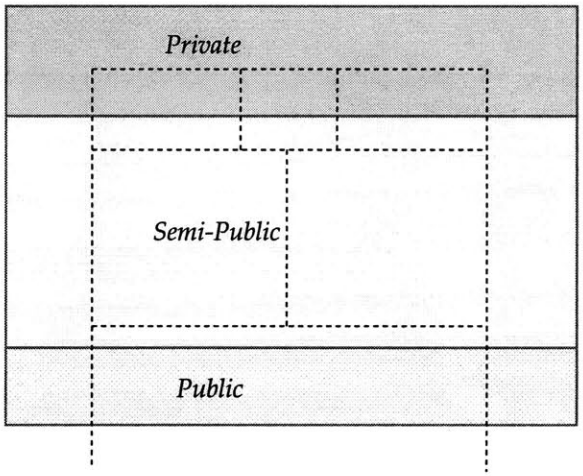
3. This scheme is highly differentiated which would limit visibility through the space and reduce communication.

[1]Carol Markkula, personal drawing, July 16, 1996.

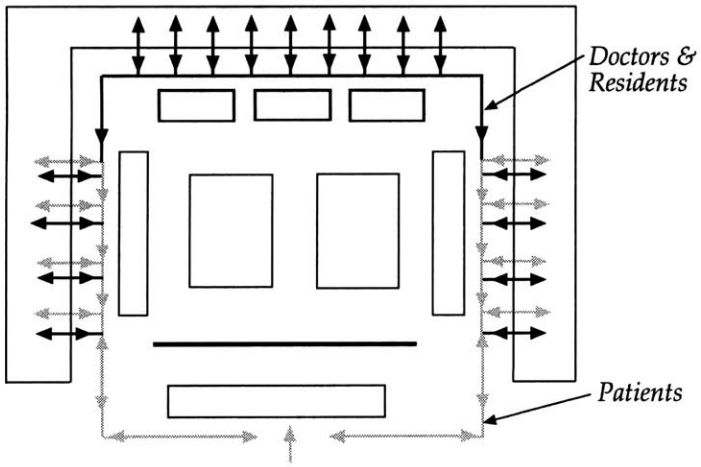
Participant Drawing Analysis



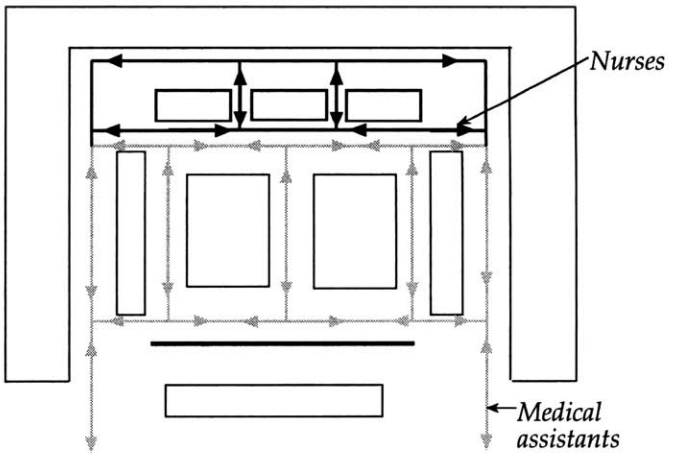
Symmetry and Visibility within the Workplace



Access and Public, Semi-Public & Private Zones



Doctor and Patient Flow Patterns



Nurse and Medical Assistant Flow Patterns

Fig. 3.8 a-d Interpretation of Carol Markkula's ideal drawing illustrates reflective exercise focusing on spatial issues.

Participant Drawing: Primary Care Physician

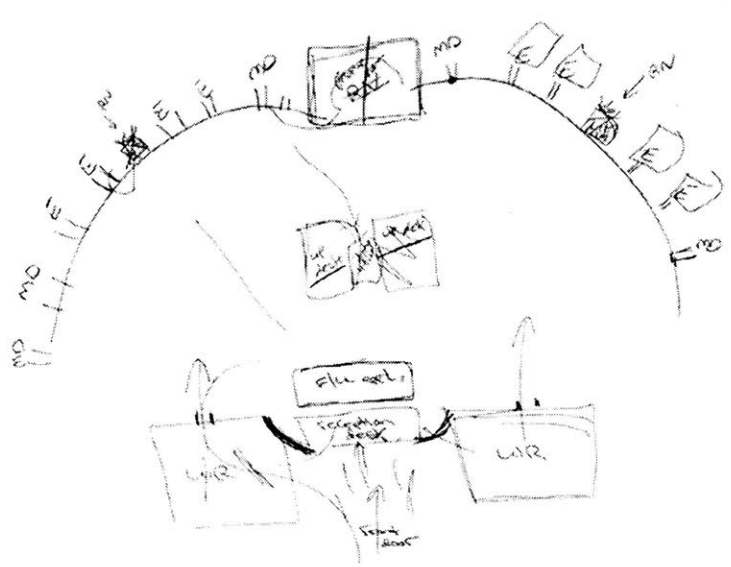


Fig. 3.9 Eva Jones Ideal Drawing of Primary Care Unit.[1]

Appropriate quotes:
"I think the patients would feel less isolated if they were not down an empty hallway..... If the patient could ask the up-medical assistant what is going on then the patient would not feel so isolated."

" I don't like patients to have to walk through patients who are waiting, they are looking at you. I think you should be able to walk in privately and tell the receptionist I am here for my x."[2]

Interpretations concerning spatial, process, or organizational goals articulated in the drawing:

1. The receptionist and follow-up medical assistants share a work area.

2. The triage nurses have been decentralized.

3. The telephone room has remained centralized; yet, it has been placed in a private area.

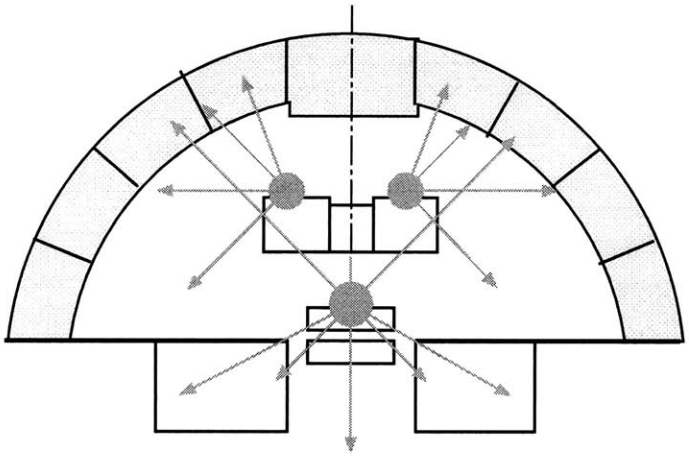
4. Visibility from the up-medical assistants' desk to all exam rooms has been introduced. This element would increase communication between patient and staff. Patients would not get disoriented due to the clarity or organization.

5. The up-medical assistants are centrally located which would increase communication with team members.

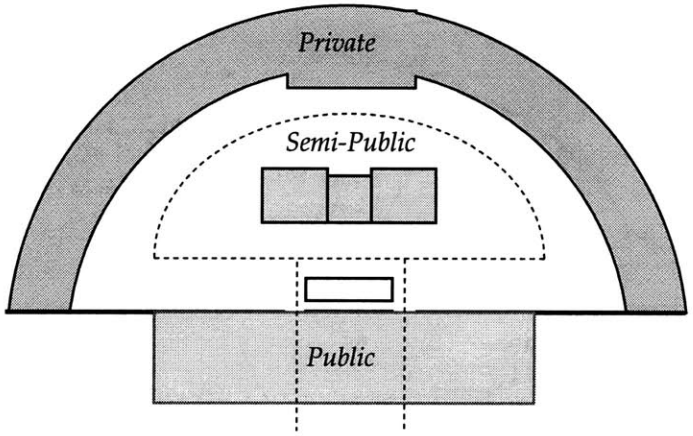
6. Two smaller waiting rooms have been created instead of one large space. This addresses the current layout which is large and impersonal.

[1]Eva Jones, personal drawing, August 8, 1996.

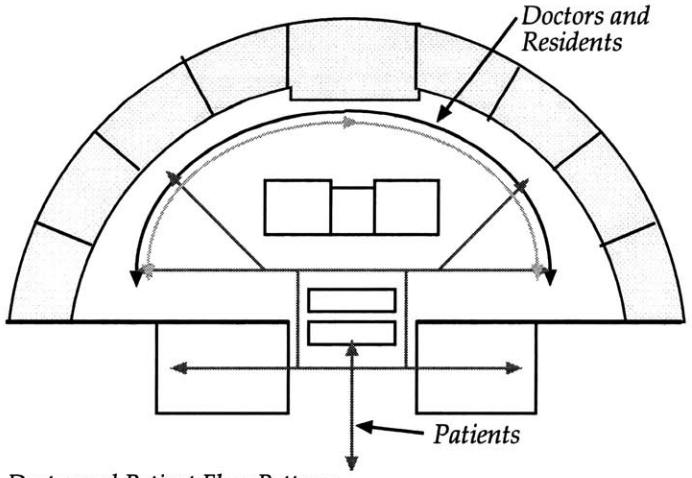
[2]Interview with Eva Jones, Arlene Kisiel, Boston MA, August 8, 1996.



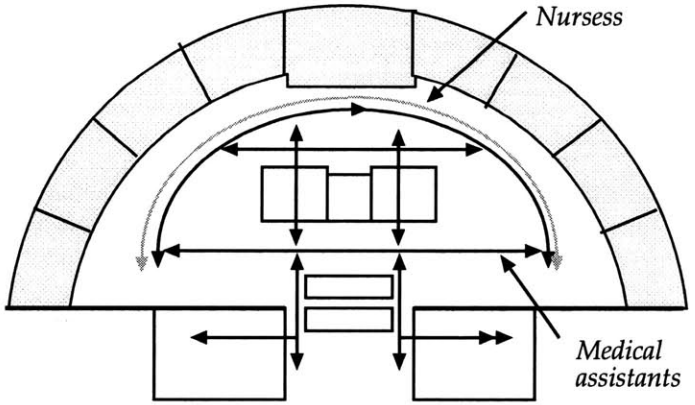
Symmetry and Visibility within the Workplace



Access and Public, Semi-Public & Private Zones



Doctor and Patient Flow Patterns



Nurse and Medical Assistant Flow Patterns

Fig. 3.10 a-d Interpretation of Eva Jones' ideal drawing illustrates reflective exercise focusing on spatial issues.

Participant Drawing: Physician/Manager

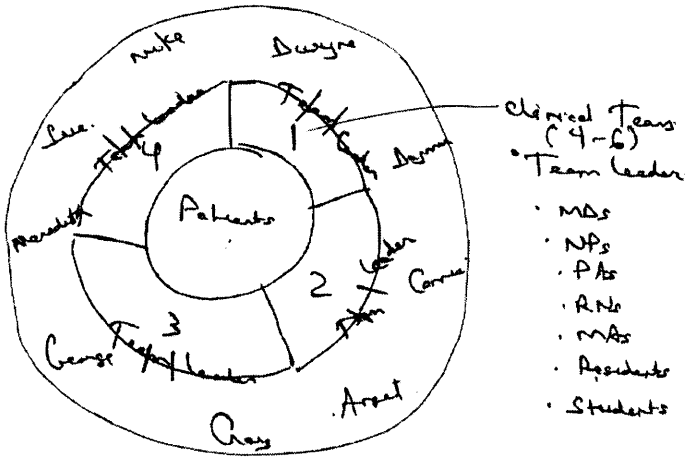


Fig. 3.11 Christopher Sadler's Ideal Organizational Drawing.[1]

Appropriate quotes:
"So maybe four to six clinical teams would be appropriate for our internal medicine practice. Then there is a layer surrounding the clinical teams. The team leaders actually sit on the cusp and bridge communication between the two layers. The team leaders interact with the support group."[2]

A: In looking at the ideal organizational diagram, will the organization still turn out to be a pyramid or will it be flatter? And will management be looking at issues on the left and clinical looking at issues on the right, or will they come together at some point?
C: "The organization ends up being flatter. It is greatly dependent upon how much management responsibility the teams and the team leaders take. If there is a requirement for a lot of supervisory management, for example, scheduling no shows, fudging vacation time, etc., the organization will not be flatter. But, if I build a strong culture and the create right incentives, then I will not have to watch them. My role will be a supporter of innovation in the practice. I will give the teams ideas of ways that they could do things differently to make them even more functional. This abolishes the need for so many support staff. And management becomes much more of a support group instead of a vertical hierarchy. So in my ideal organization drawing, this is a circle because it is not a hierarchy. So, it is flat. And, there is no reason why it cannot be flat."[3]

Interpretations concerning organizational goals articulated in the drawing:

1. This diagram illustrates a patient focused organization which is articulated by placing the word patient in the center of the drawing.

2. Four teams have been created which implies collaboration and communication between players of each team. The doctor becomes a team player.

[1]Christopher Sadler, personal drawing, September 7, 1996.

[2]Interview with Christopher Sadler, Arlene Kisiel, Boston MA, September 7, 1996.

[3]Ibid.

Participant Drawing: Resident

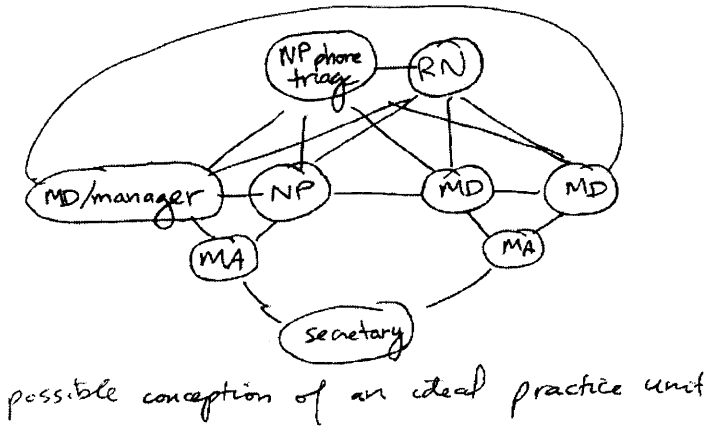


Fig. 3.12 Theodore Langley's Ideal Organizational Drawing.[1]

Appropriate quotes:
"I think it's a group. I think the solo physician now is nice in concept, but it's too much. You need a network of support physicians, First, for dynamic learning and Second, for coverage. Then a small unit, not this big and cumbersome, but just someone's house with three or four physicians practicing with different specialties so you have a few, you have mostly primary care physicians and then you have some that have a special focus in dermatology, some that have a special focus in surgery. Each one has their own little niche and can support each other. Then you might have some support staff and perhaps a physician's assistant who takes your phone calls."

TURID: What is management? How do you define management in a practice?
"...*Physicians, that physician/managers can contribute not necessarily financial expertise or hiring or firing or equipment- type things, but to information flow and how processes are worked out. Because the complexity of medicine is not "well how many test tubes do we have over there?" and "what's the salary?". That's part of it, but the big thing is how does information flow? How do I get my consultant on the phone quickly? How do I have him call me back? How do the medical assistants work with me? And then there is the patients. And how do I get a sick person to the hospital really fast? That is the process."*[2]

Interpretations concerning organizational goals articulated in the drawing:

1. The diagram illustrates communication links within practice unit.

2. Beginning at the bottom, the diagram implies a face-to-face communication work process for patient flow.

3. Beginning from the top, the diagram implies a telephone communication work process for patient calls.

4. By interpretating the drawing as described above, a hierarchical unit is proposed.

[1]Theodore Langley, personal drawing, October 17, 1996.

[2]Interview with Theodore Langley, Turid Horgen & Arlene Kisiel, Boston MA, October 17, 1996.

Participant Workbook Analysis

My interpretation of the participant workbooks as a reflective exercise emphasizes the issues that I have been analyzing throughout this project.

A. Physical Space
   1. Overcrowded
   2. Visibility is an asset and liability.
   3. Personal Protection for receptionist.
   4. Natural and artificial light positives and negatives
   5. Access positives and negatives.
   6. Waiting room is too impersonal and dark.

B. Learning Material
   1. Not enough throughout the space.
   2. Location of pamphlets is private versus public.
   3. Learning posters are liked in general.

C. Communication
   1. Patient wants privacy in reception area.
   2. Up-medical assistant desk area is centrally located, acces sible and fosters communication.
   3. Phone room as a circulation corridor prohibits privacy while medical assistants are on phone. Adjacency to follow -up desk and reception area also affects privacy.

Note: Given the wealth of information in these workbooks, one could develop other ideas from the data.

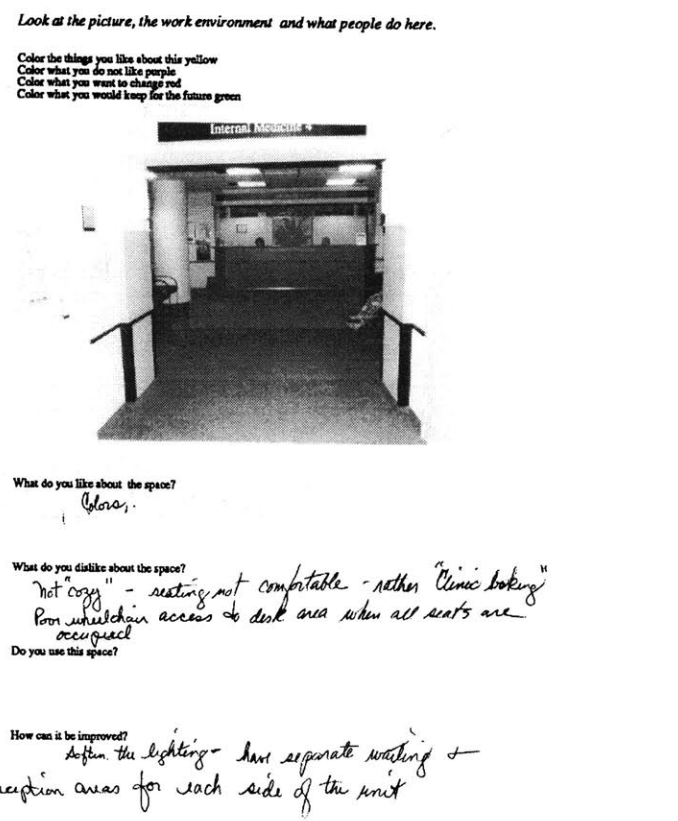


Fig. 3.13 Sample Participant Workbook: Image 4: Internal Medicine Reception Area Entry. Anne Bishop is a clinical manager. Anne chose to only write comments to the questions. Like: colors. Dislike: Not "cozy" seating not comfortable - rather "clinic looking". Poor wheelchair access to desk area when all seats are occupied. Improve: Soften the lighting - have separate waiting & reception areas for each side of unit.[1] *See Fig. 7.58.*

[1]Anne Bishop, completed participant Workbook, Workbook design Arlene Kisiel, July, 1996.

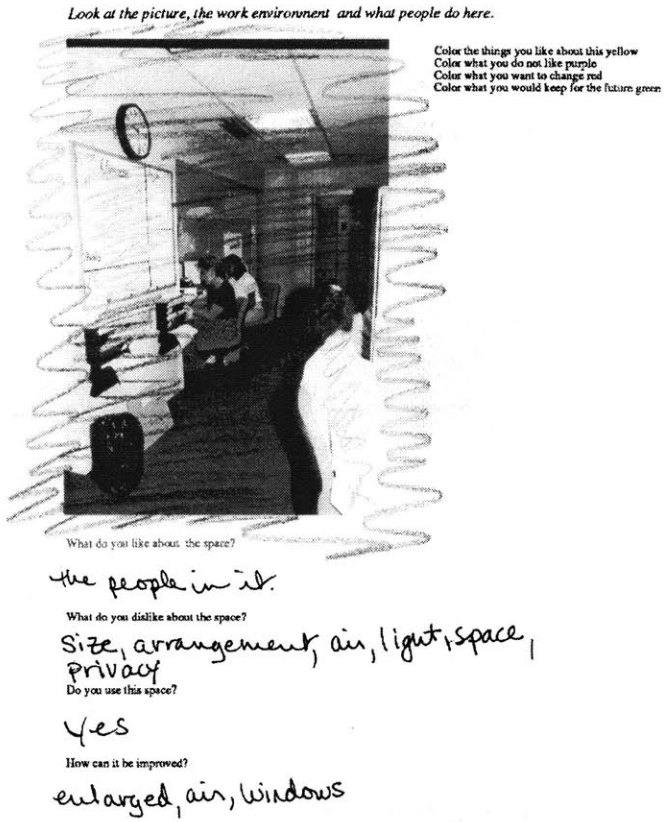


Fig. 3.14 Sample Participant Workbook Image 5: Medical assistants phone room. Dalia Strauss is an up-medical assistant. Dalia used both coloring the image and writing personal comments to communicate information . In the original workbook, purple lines are drawn over all parts of the space except for the schedule board and people. These are colored yellow.[1] *See Fig 7.57 for other participant comments.*

[1]Dalia Strauss, completed participant Workbook, Workbook design Arlene Kisiel, July, 1996.

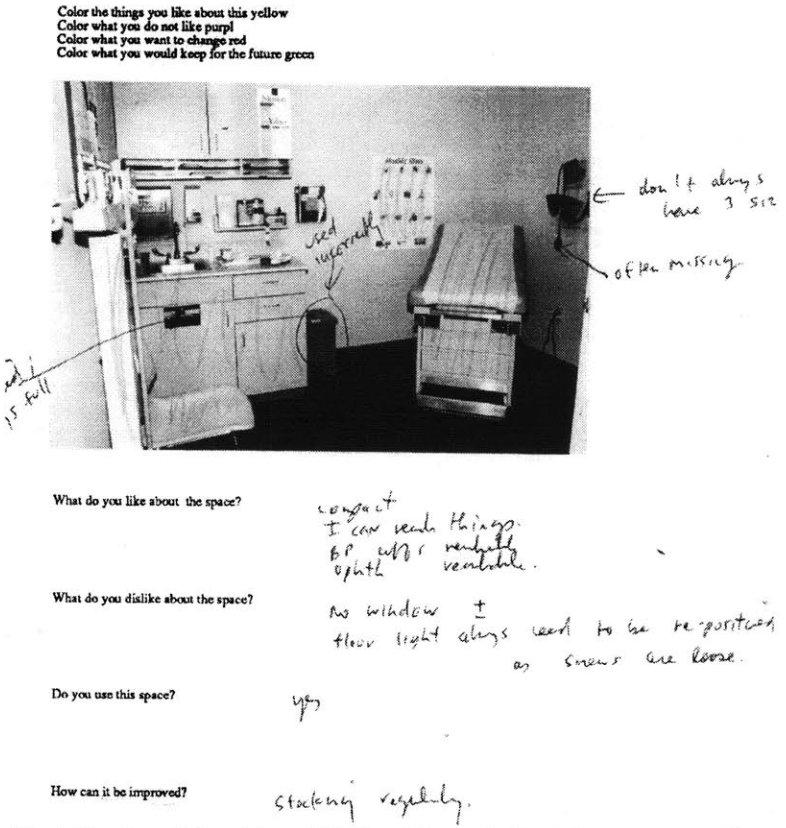


Fig. 3.15 Sample Participant Workbook Image 1: Typical exam room.. Greg Whalen is a primary care physician. Greg used both coloring and personal comments to communicate information . He selectively colored the scale, chair, exam table, blood pressure cuffs and educational poster in yellow. In pen two comments are: the trash: never emptied always full, bio-hazard trash: used incorrectly.[2] *See fig. 7.51 for other participant comments.*

[2]Greg Whalen, completed participant Workbook, Workbook design Arlene Kisiel, July, 1996.

Participant Communication Networks

The Netgraph analysis presented here visualizes communication according to two criteria. The two criteria are "team communication" and "face-to-face communication flow". By looking at the almost filled matrixes, it becomes apparent that internal communication is good throughout this department. (See Fig. 3.16 & 3.17)

My objective in performing this analysis was to verify empirical data that I had collected over the summer. So, my objective was to illustrate that there were communication gaps within the organization; especially between the physicians and the phone room medical assistants. Given the results, I cannot validate my observations. However, I question the reliability of the data I collected and my own ability to perform the research for the following reasons.

1. Time. Was there sufficient time allotted to the inquiry to acquire adequate data?

2. Is the quality of the data reflective of actual patterns which exist within the organization?

3. Did the participants clearly understand the meaning of the word communication?

4. The data presented is only reflective of 50% of the group and participants were required to complete only two out of the three questionnaires to be . Would a higher percentage of participants altered the finding? Participants were required to fill out only two of the three questionnaires to participate in this analysis.

[1]Thomas J. Allen, *Managing New Product Development: Organizational and Architectural Issues and Solutions* (in press).

Participant Communication Mapping

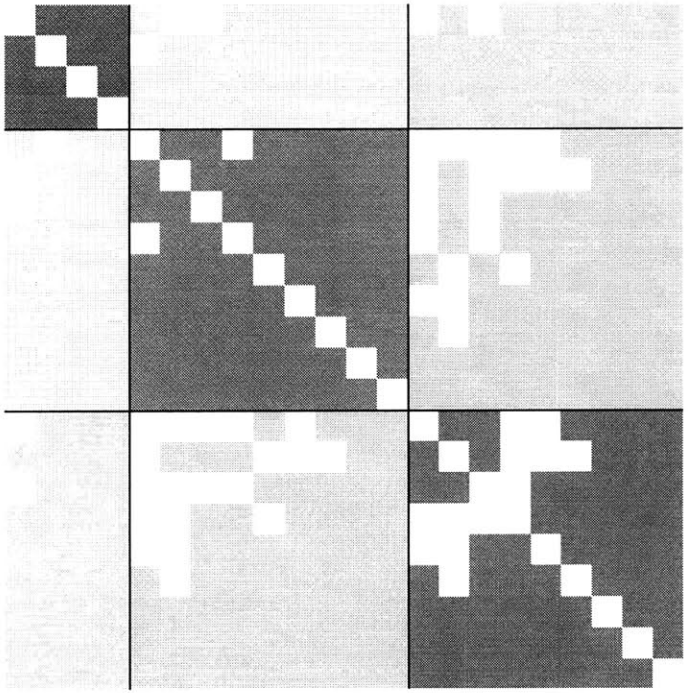


Fig. 3.16 Aggregated team communication netgraph for the three collection days. Beginning at the top left, the sort is organized as follows: management, east clinical team, and the lower right hand corner square is the west clinical team. The goal of analyzing communication according to this criteria is that it clearly enables one to visualize communication among team members and between teams. Within this matrix almost all staff are communicating. This is visually apparent because most of the squares are filled in representing communication. Note that this matrix represents fifty percent response rate in the questionnaire. (See appendix 3)

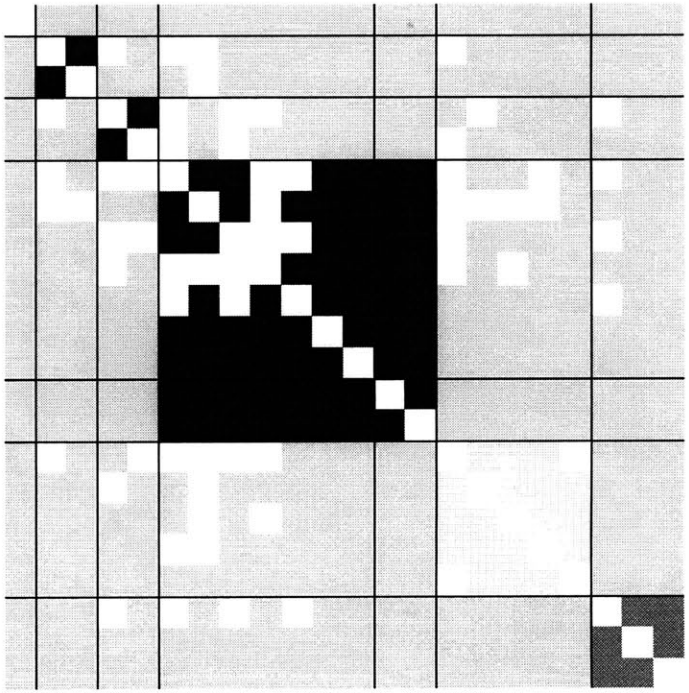


Fig. 3.17 Aggregated flow communication netgraph for the three collection days. Beginning at the top left, the sort is organized as follows: receptionist, up-medical assistants, mid-level clinicians, doctors, follow-up medical assistants, phone room & triage nurses, and finally, management in the lower right corner. The goal of analyzing communication according to this criteria is that it most closely reflects the face-to-face "steps" that a patient experiences when he or she visits the department of Internal Medicine. Within this matrix almost all staff members are communicating. For example, the large dark box in the center of the graph represents the face-to-face communication between the doctors within the department. (See appendix 3) Note that this matrix represents fifty percent response rate in the questionnaire.

4. Conceptual Framework

"These patterns of events are always interlocked with certain geometric patterns in the space. Indeed, as we shall see, each building and each town is ultimately made out of these patterns in the space, and out of nothing else: they are the atoms and the molecules from which a building is made."[1]

"In short, we want a theory which presents the interaction of the space and the events, in a clear and unambiguous way."[2]

"Each pattern is a rule which describes what you have to do to generate the entity which it defines."[3]

"It is in this sense that the system of patterns forms a language."[4]

"A pattern language is a system which allows its users to create an infinite variety of those three dimensional combinations of patterns which we call buildings, gardens, towns."[5]

"These pattern languages are not confined to villages and farm society. All acts of building are governed by a pattern language of some sort, and the patterns in the world are there, entirely because they are created by languages which people use."[6]

"The patterns of our time, like all other patterns in the built environment, come from the pattern languages which people use."[7]

"And all these rules of thumb - or patterns - are part of larger systems which are languages."[8]

"At the moment when a person is faced with an act of design, he does not have time to think about it from scratch."[9]

"It is only because a person has a pattern language in his mind, that he can be creative when he builds."[10]

"So the use of language is not merely something that happens in traditional societies. It is a fundamental fact about our human nature, as fundamental as the fact of speech."[11]

"The patterns, which repeat themselves, come simply from the fact that all the people have a common language, and that each one of them uses this common language when he makes a thing."[12]

"Every single part of the environment is governed by some portion of a pattern language."[13]

"Again it is the particular patterns there, and the repetition of the patterns, which creates the magic of the building."[14]

"You may wonder - if the rules are so simple to express - what is there that makes a builder great?"[15]

"But of course, the fact that these rules are simple does not mean that they are easy to observe, or easy to invent."[16]

"It may be hard to believe that one might make a work of art by simply combining patterns."[17]

"The source of life which you create lies in the power of the language which you have."[18]

"And now we realize the truly immense power which pattern languages have.

For it is not only true that every building gets its structure from the languages which people use.

It is also true that the spirit which the buildings have, their power, their life, comes from the pattern languages their builders use as well. The beauty of the great cathedrals, the fire in the windows, the touching grace of ornaments, the carving of the column capitals, the great silence of the empty space which forms the heart of the cathedral . . . all these come from the pattern

languages their builders use as well."[19]

"It is therefore obvious that the mere use of pattern languages alone does not ensure that people can make places live."[20]

"The connection between the users and the act of building is direct."[21]

"The adaptation between people and buildings is profound."[22]

"If we hope to bring our towns and buildings back to life, we must begin to re-create our languages, in such a way that all of us can use them: with the patterns in them so intense, so full of life again, that what we make within these languages will, almost of its own accord, begin to sing.

To start with this requires simply that we find a way of talking about patterns, in a way that can be shared."[23]

"In order to make patterns explicit, so that they can be shared in this new way, we must first of all review the very complex structure of a pattern."[24]

"Each pattern is a three part rule, which expresses a relation between a certain context, a problem and a solution."[25]

"Patterns exist at all scales."[26]

"And patterns may deal with almost any kind of forces."[27]

"To make a pattern explicit, we merely have to make the inner structure of the pattern clear."[28]

"We must first define some physical feature of the place, which seems worth abstracting."[29]

"Next we must define the problem, or the field of forces which this pattern brings into balance."[30]

"Finally, we must define the range of context where this system of forces exists and where this pattern of physical relationships will indeed actually bring it into balance."[31]

"We see, in summary, that every pattern we define must be formulated in the form of a rule which establishes a relationship between a context, a system of forces which arises in that context, a configuration which allows these forces to resolve themselves in that context."[32]

"Every living pattern is a rule of just this kind."[33]

"In order to discover patterns which are alive we must always start with observation."[34]

"Let us take the case of entrances, as an example."[35]

"Now try to discover some property which is common to all the ones which feel good, and missing from all the ones which don't feel good."[36]

"This property will be a highly complex relationship."[37]

"Now try to identify the problem which exists in entrances which lack this property."[38]

"Knowledge of the problem then helps shed light on the invariant which solves the problem."[39]

"Sometimes we find our way to this invariant by starting with a set of positive examples."[40]

"At other times, we may discover the invariant by starting from the negative examples, and resolving them."[41]

"And occasionally, we do not start from concrete observation at all, but build

up the invariant by purely abstract argument."[42]

"In all these cases, no matter what method is used, the pattern is an attempt to discover some invariant feature, which distinguishes good places from bad places with respect to some particular system of forces."[43]

"The task of finding, or discovering, such an invariant field is immensely hard."[44]

"It is easy to say that a house entrance should have a sort of mysterious quality, which both hides the house from the public domain, and also exposes it to the public domain."[45]

"But it is very hard to be precise."[46]

"And it is especially hard to be precise, because there is never any one formulation of the pattern which is perfectly exact."[47]

"Instead, to strike the balance between being too narrow and too loose, you must express and visualize a pattern as a kind of fluid image, a morphological feeling, a swirling intuition about form, which captures the invariant field which is the pattern."[48]

"Then once you discover a fluid field of relationships like this, you must redefine it, as an entity, to make it operational."[49]

"For the same reason you must be able to draw it."[50]

"And finally, for the same reason too, you must give it a name."[51]

[1]Christopher Alexander, *The Timeless Way of Building* (New York: Oxford University Press, 1979), p. 75.
[2]Ibid. p. 84.
[3]Ibid. p. 182.
[4]Ibid. p.183.
[5]Ibid. p. 186.
[6]Ibid. p. 193.
[7]Ibid. p. 198.
[8]Ibid. p. 202.
[9]Ibid. p. 204.
[10]Ibid. p. 206.
[11]Ibid. p. 208.
[12]Ibid. p. 209.
[13]Ibid. p. 209.
[14]Ibid. p. 221.
[15]Ibid. p. 221.
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[23]Ibid. p. 246.
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[47]Ibid. p. 262.
[48]Ibid. p. 263.
[49]Ibid. p. 265.
[50]Ibid. p. 267.
[51]Ibid. p. 267.

1. Networks of Communication

Communication problems among clinical team members exist due to the physical layout of the department. I watched the breakdown occur on one particular occasion and I learned of this conflict during several interviews.

Observation illustrating effect of physical layout which prevents visual communication in many areas.
This morning a woman was brought into the unit on a stretcher. One of the positive aspects of the reception area is that it can accommodate stretchers easily. This patient visit was relevant due to the fact that I witnessed a breakdown in communication. It is the story of too many cooks in the kitchen who ruin the soup. I think there were about six people working on this patient who had been in the exam room for a while. The communication breakdown between the team resulted in no physical damage. The damage was emotional and financial. Somewhere along the line someone heard the doctor order an ambulance. An ambulance was ordered mistakenly. The doctor said, "Who ordered the ambulance? I did not want the patient to go."
Somewhere there was a loss of communication among the six people involved in taking care of this three hundred pound patient.
As I reflected on this incident, I concluded that the space and its limited visibility effected the communication between the team.

Comments from a physician who has clear visibility to his team in order to clarify the difference.
"I can see the up-ma's and nurses from my door. If I have a question, then I go to them and ask for help." During our conversation, he did not address communication problems resulting from physical space once.

Interview with a physician describing his ideal conditions.
The main points he made concerned adjacency of the nurse to the doctor, his ability to communicate with the nurse easily (unlike the existing conditions), and visibility of the team. The concept of visibility was important because this doctor cannot see the support staff easily at this time.

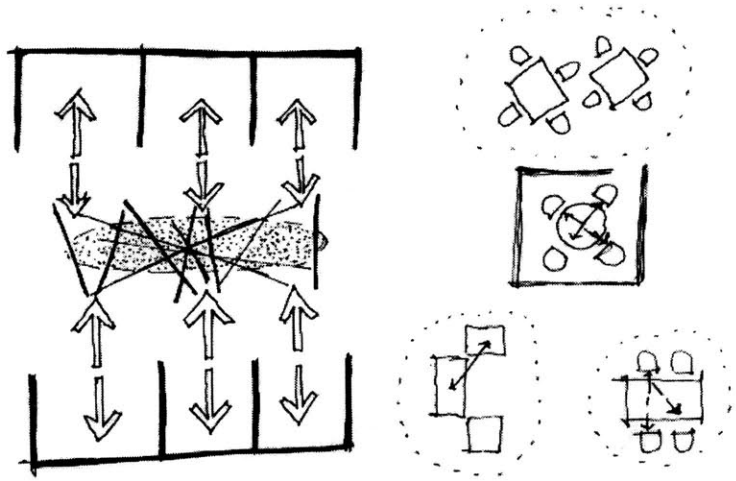

Fig. 4.1 Various Communication opportunities one might experience.

The solution to these team communication problems is to design a new workplace focusing on spontaneous interaction in order to promote networks of communication. Create spaces for informal interactions, divide the workspaces with wider corridors, and create spatial clusters where work and interaction can coexist.

Potential by-products of these communication spaces might be increased organizational learning and team collaboration. The implication of networks of communication is that space requirements will be increased and privacy will be reduced.

2. Organizational Teams Guided by Team Leaders

The work environment is so hierarchical within the department that productivity is affected. Upper level management will pull status and blame support staff for any type of work process problem. This ability to dominate supporting staff members creates problems because the support staff feel they are not respected; yet, they are responsible for initial client contacts and they are expected to provide personalized client service on the phone and during face-to face encounters. As a result of this organizational conflict, some support staff fear the upper level employees, experience personal loss of confidence, become less motivated, and perform less effectively.

Event I experienced when discussing organizational structure.
I was in the staff room discussing a company poster. The poster began with the mission statement and then listed other company qualities. (See July 10, 1996 for complete text)
Work environment: We create a diverse and supportive environment where people treat each other with respect, accept individual responsibility and are rewarded based on merit. We encourage creativity and risk-taking, and we learn both from success and failure.
We pursue excellence through continuous improvement, but not perfection.
We are proactive and action-orientated, making decisions with speed and efficiency.

A comment about this document.
"The doctors should read this."

Another discussion with a staff member revealed the following, I later reflected upon it:
"The up-medical assistants have to be tough. Why? Well, as I observed, I think the doctors are quite critical of their work. Rebecca said she does not have any communication problems with the doctors. However, one medical assistant expressed a bit of frustration. She said she was called a dingbat. Looking back on her past, she said,

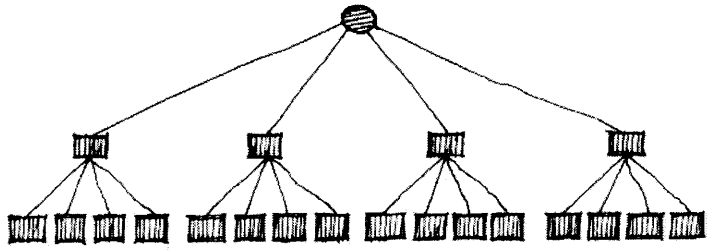

Fig. 4.2 Collaboration among teams guided by team leaders will foster efficient work within the workplace.

"Probably the doctor was right; but, now I think about it and I think how could he have said that?" On a few occasions one MA said that she almost cried because of one doctors comments. "I do not understand why a doctor would want to hurt a team member."

The solution to this hierarchical environment is to flatten the organizational structure. Create small teams that are supported by a leader, Live by a collective vision and encourage behavioral changes.

The implication of this organizational change would be the creation of a new workplace The space would serve as the vehicle for change within the organization and it's goal would be to foster team communication and collaboration.

3. Face-to-Face Work Process Flow

The problem is that the face-to-face process flow for patients visiting the department is inconsistent and at times results in excessive waiting.

There are a few reasons why this problem is present within the current system. To begin, the beginning of the bottleneck is when the medical assistant brings a patient into the exam room. Some patients will sit alone in those room for anywhere from five to thirty minutes waiting for a doctor. Patients get anxious and this results in patients who feel that their care experience has been compromised by the physician. The face-to-face work process' next weak link occurs after the examination. In some cases the patient will experience a consult within the exam room to discuss a diagnosis. This is problematic because the medical assistant cannot prepare the room for incoming patients. And this is problematic for the patient because when a patient is in an exam room, he or she becomes an object, not a person. This dehumanized environment should only be used for short periods.

To make the situation worse, the face-to-face work flow communication problems that exist might be partially due to the physical arrangement of space. The space does not permit visual communication.

The solution to this problem is to change the process flow of patients through the department. Reduce the number of "steps" in the process. Remove the bottlenecks created by the medical assistants who escort the patient into the exam room. Allow the clinical team to participate in escorting the patients from the resource area to the examination room when they are ready to care for the patient. Finally, standardize a new work process for improved efficiency and introduce diverse consult spaces for closing physician/patient visits that accommodates differing treatment styles and provides a opportunity for professional relationship building.

The implication of these modifications in the work process will be:

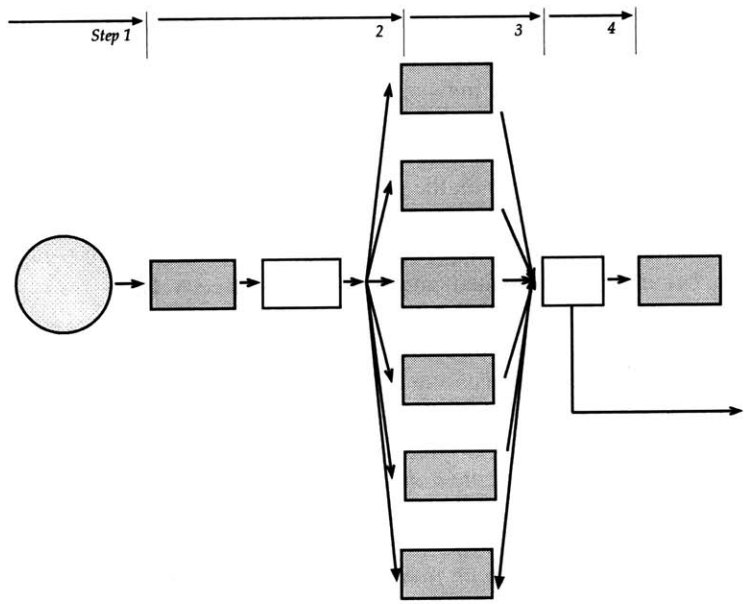

Fig. 4.3 Efficient face to face work process. The white rectangles suggest possible spaces that would alter the process of face-to-face patient flow through the office.

increased responsibility of physician in the care experience
increased efficiency for medical assistants preparing rooms for patients, improved service for members, and a spatial arrangement to foster these goals.

4. Telephone Work Process Flow

The problem is that the centralized telephone work process flow is slow, unreliable, and unacceptable for patients who need to contact their physician quickly. The two primary reasons why this process does not function is because the 'runner' or message carrier creates bottlenecks in the system and because the phone room medical assistants are not educated to triage incoming telephone emergencies. Another reason why this system does not work is due to the depersonalized service it provides. And finally, the last reason why this system fails is due to the centralized phone room itself. The space is windowless, overcrowded and serves as a major circulation corridor for staff. As a circulation corridor, the medical assistants do not have a confidential space and this is precisely what they need.

Quotes on the subject of phone room system and member service.
Before the phone system changed, one medical assistant received calls for two doctors. However, at times one medical assistant would be overwhelmed with phone calls and the other medical assistants would not. The new phone system addressed this problem. In the existing phone system, there is a general number for Internal Medicine 4. Calls are answered in the order they are received and are distributed evenly among the medical assistants. In solving one problem, the new system created another problem. Now, medical assistants receive 'any' doctors phone calls. Medical assistants no longer are familiar with a doctors panel and are physically removed from the doctors.

"Another individual related the communication breakdowns to the implementation of systems. When the centralized telephone system was installed, communication patterns changed. No longer were the phone medical assistants outside of the doctors offices, they were relocated to a centralized interior space. The effect of this centralized phone system and architectural space was the loss of a network of communication. And its effect is easily seen in the staff. On one occasion I asked a doctor if he had been introduced to a new phone medical assistant. He replied, "No I didn't know that a new staff member was hired."

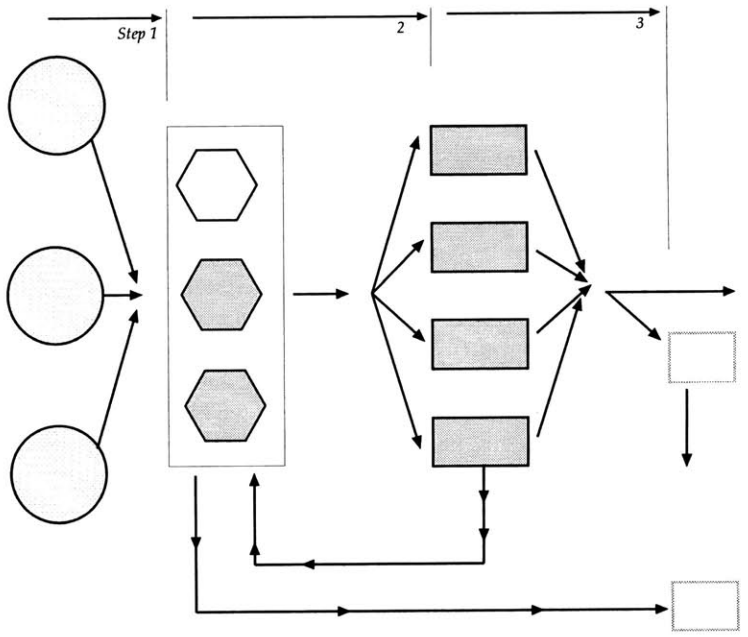

Fig. 4.4 Reduced bottlenecks in work process. "Taking the nurse out of the system."

4. Telephone Work Process Flow (cont.)

"The current telephone system is dangerous. A patient calls into a system and does not know who the person is. Messages do not get to us. It is not uncommon that a patient will be lost in the shuffle. Some patients have spent three days trying to contact a physician."

The opportunities for improving this process are numerous. To begin, the runners job must be replace with an information technology system that will fulfill some of the organizations' message forwarding needs. Of course, physical communication will be required, but the system will not be dependent upon it. The phone room will be decentralized to improve the flow of communication between non-clinical support staff and clinicians, and to improve service to members. And, one educated clinician should be answering the phones during all business hours to insure a higher level of care at the beginning of the process. This would require physicians, residents and mid-level clinicians to be involved in this work process

The implications of these two significant changes would be numerous. To begin members would benefit from improved personalized service and reduced time waiting for physicians phone calls. Second virtual communication coupled with decentralization would foster team-building and improved job satisfaction.

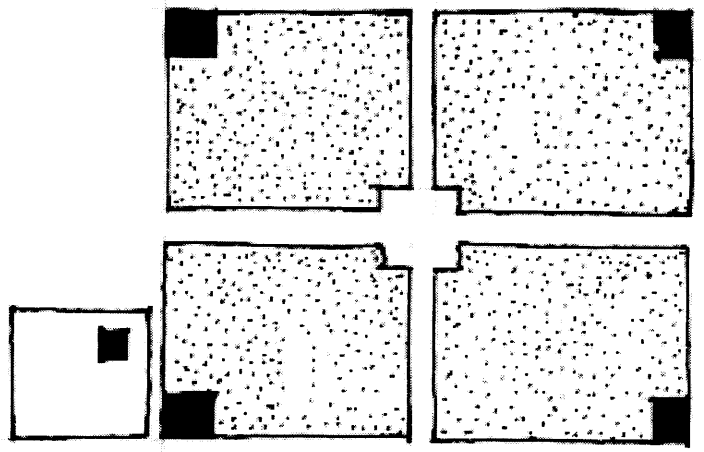

Fig. 4.5 Decentralized phone rooms can improve communication between phone staff and team.

5. Integrated Information Technology

The problem is that the computer systems available within the organization are not taking advantage of current technology to increase communication and work process effectiveness. The computer system is divided into six separate groups. Some are linked others are not.

My basic understanding of the system:
The Automated Medical Record system is DOS based and does not permit staff to utilize the functions of a windows system. So, staff can only work with one software package at a time. Personally, I found this aspect to be limiting and time consuming. It seemed like one had to get into one system and and then get out of it so that one could utilize another. Too many steps.

The solution to the problem of antiquated information technology is to invest in a integrated system that will support all services within the framework of a single system or intranet. Provides windows capabilities so people would be able to work with multiple windows at the same time.

The implications of investing in new technology include such factors as risk, organization wide learning, potential simplification of operations and embracement of virtual communication among staff members. This would open up the bottlenecks that were created by the runner message delivery system. No reliance on a physical message delivery system.

The Architectural Implications: The spaces would change. Public computers would need to be located in all areas of the office. And clinical team members could look into the new system and make certain decisions for themselves and record them in the network directly. New types of spaces would be required to address this change in work process. Why is it the spatial implication valid? Because it allows the clinical team to further enhance the care-giving experience while saving time.

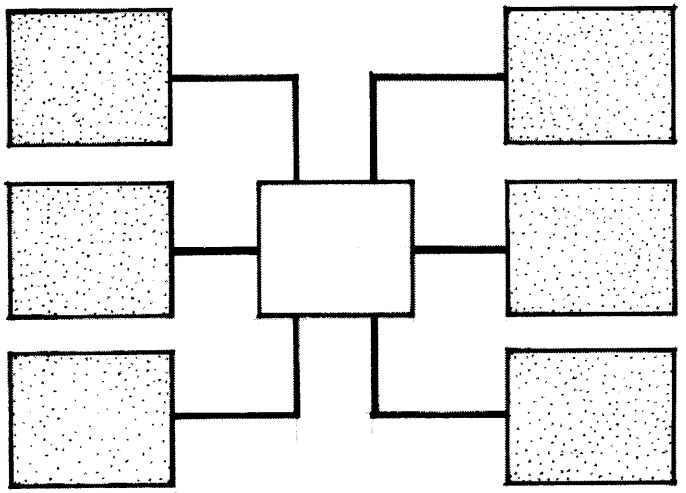

Fig. 4.20 Integrated Information Technology to support all services within an intranet.

6. Circulation Realms

The problem of disorientation exists. Some patients gets lost in the physical space when leaving an examination from a procedure room or leaving a consult with physician in his/her office.[1] From the numerous comments made by staff it seems that some patients get frustrated when this happens. Staff are say the structure of the space does not support the required circulation patterns. This is a conflict that exists and can be further observed in some of my empirical drawings found in Appendix 1. (See Fig. 7.35 & 7.36)

As stated by one employee: "Mazelike office layout"

Proceeding to investigate the problem of disorientation further, I learned that patients who sit in an exam room that is located in a dead end corridor will not leave the room after ten minutes of waiting. Yes, they will be anxious or angry; but, they will not leave. There are a few comments which affects this behavior. To begin, the patient cannot see the clinical team by poking his or her head out of the door. Visibility is limited. Second, when a patient is dressed in a paper robe, called a johnnie, he or she is unlikely to exit the privacy of an exam room in search of assistance. This is probably due to the fact that the patient would be embarrassed to be seen in public dressed in a johnnie.

The solution to the problem of disorientation is to create circulation realms. If one creates circulation paths that are based on clarity and visibility between clinical staff, support staff, and exam rooms, then patients might not get lost within the architectural space. Also, if a patients were unattended in an exam rooms for extended period, then he might look out for help. A visual connection would be possible.

The major implication of this solution is increased area requirements for the department. The physical space will need to be more open in order to accommodate clear circulation and visibility. These physical consequences will result in improved communication between patient and staff.

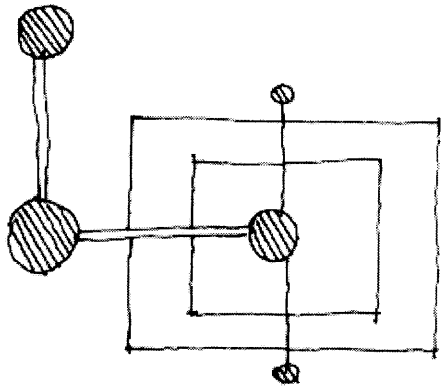

Fig. 4.6 Diagram shows two levels of circulation which are based on clarity. Circles represent nodes that visitors might recognize while moving through environment.

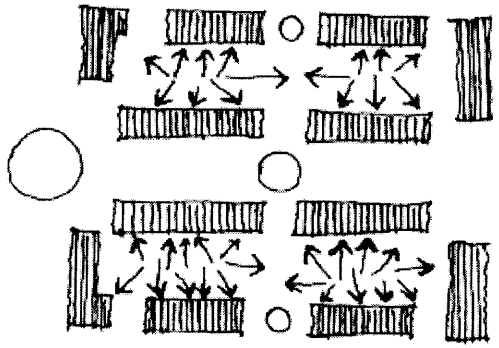

Fig. 4.7 Diagram shows how visibility can improve the ability to maintain communication and orientation within a large interior space.

[1]Christopher Alexander, Sara Ishikawa, and Murray Silverstein, *A Pattern Language: Townes Buildings Construction* (New York: Oxford University Press, 1977), p. 480-484.

7. Learning Center

The problem of waiting in a blank space exists. In the current reception area, patients wait silently in a large undifferentiated room for the medical assistant to call them in for their appointment. There are a few magazines to read while one waits; but, for the most part, the experience is passive and lifeless. The room does not have any visual access to the outside. In addition, patients do not have access to any educational material or medical pamphlets. The architecture separates the patient from an educational opportunity while waiting. What this implies is that a patient cannot actively engage in preventative healthcare learning. (See appendix 2, Fig 7.55)

The solution to the problem of waiting in a blank space is to create a learning center for patients. The learning center could be composed of a reception desk, cafe and resource room. The center would be located in a public space. This strategic location would facilitate interdepartmental communication as well as patient-clinician communication. By default, learning would occur. Within the Learning center, there could be a resource room. In it patients would have access to medical pamphlets and other healthcare material. The resource room would be directly accessible to the public space.

The learning center could make the experience of waiting a pleasure versus a pain. Of course, the success of this idea is dependent upon active patient involvement; so, other sorts of waiting spaces should also be provided. In the learning center, videos could illustrate an operation that a patient might experience. Knowledge would be disseminated from the center to the members in an effort to increase health awareness. In addition, this innovative space could be equipped with computers that could perform various functions. For example, patients might search the internet for information relating to an illness or review personal health records.

The implications of this space include such qualities as improved

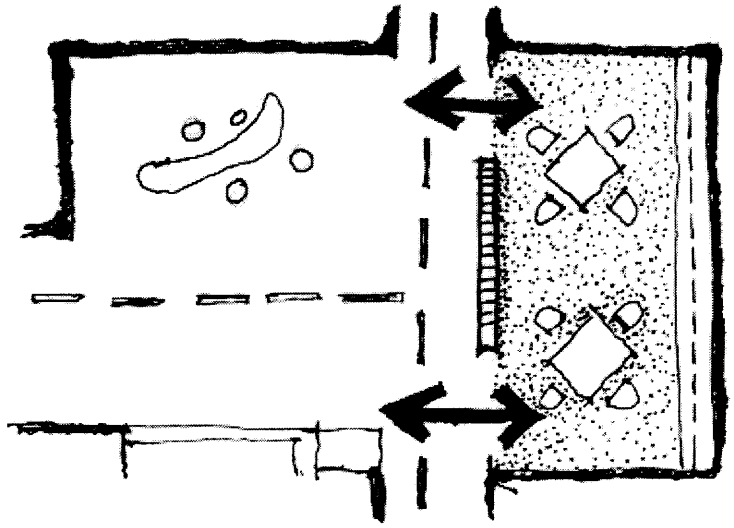

Fig. 4.8 The Learning Center is composed of a resource room, cafe, and reception area.

customer satisfaction through learning and reduced member turnover in the long run. For the department, a learning center would require extra operating expenses through increased staffing and area requirements.

Quote on the subject of videos for learning
"They are good. This type of set-up is used by orthopedic surgeons today in practice." physician

8. Protected & Unprotected Receptionist

The problem is that receptionists are exposed to germs at their present workspace. There is no physical device to protect them. As a result, the receptionists contract colds and other airborne illnesses from the patients.

The opportunity to resolve this problem would require the space to change. First, at the main desk, provide a barrier such as a glass movable screen that would reduce the ability of contracting germs from all patients. Second, provide another space that would provide unprotected personalized service. This space could be a separate work area where the receptionist would sit at a desk with the patient while checking-in the member.

The implications of this modification would result in reduced germ transmission and improved care. Also, this would require the work-space for the receptionist to increase.

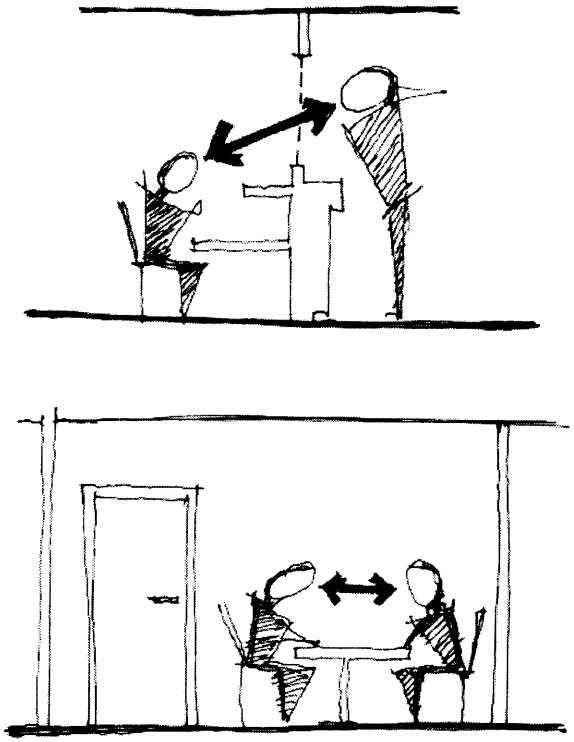

Fig. 4.9 a&b Above: Protected interaction between receptionist and member. Below: Unprotected interaction between receptionist and member.

9. Public & Private Reception Area

The problem is that patients are on stage when entering the reception area and have no privacy when speaking to the receptionist. For a patient who does not want to verify why he or she might be visiting the unit, the openness of the current reception area is inappropriate.

Quote on the subject of privacy.
"I think the most important thing when a patient walks in is to walk in and see the receptionist. I don't like people to have to walk through the patients who are waiting, they are looking at you. I think you should be able to walk in privately and tell the receptionist I am here for my pap smear privately. A lot of people have private questions they want to ask And then I would have two waiting rooms on either side, instead of one big waiting room everyone is staring at each other." physician

The solution to this problem is to modify the design of the check-in workspace. Allow two types of interaction to occur. First, keep the existing public condition. And second, introduce a check-in room for private encounters that might be awkward to discuss for the patient.

The implication of this solution is that more space will be required for the receptionist and that the patient will received improved personal care if he or she chooses.

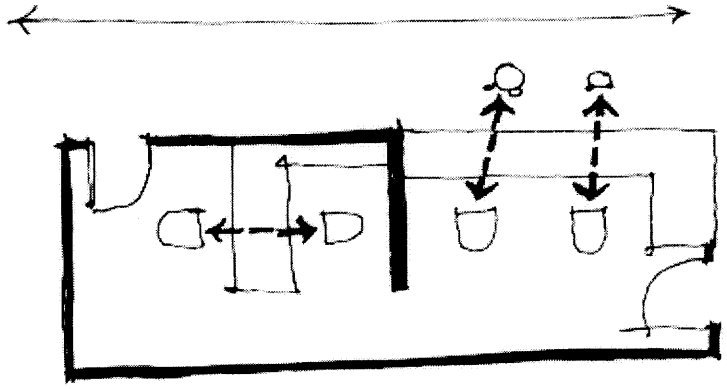

Fig. 4.10 Left portion of diagram: Private interaction between member and receptionist. Right portion of diagram: Public interaction between member and receptionist.

10. Marketplace

The problem is that the public corridors of the health center lack energy. The spaces are public; yet, no public amenities are available other than one lonely coffee vendor on the first floor. Is it a viable option to consider activating the main public spaces with commercial products focused on healthcare prevention and maintenance? Would it be convenient to provide HMO members with different medical supplies and accessories housed under one roof to save time and to enhance the experience of "going to the doctor?"

The solution to the problem of an unlively public corridors is to activate them with a medical marketplace. Fill the atrium with leasable space for independent medical vendors.

Incorporating a medical marketplace into the atrium would result in a improved space. The quiet atrium would become lively, because members would have a commercial focus on site in addition to the clinical experience. The concept of learning could be furthered by enabling patients to buy the book that they had glanced at while utilizing the learning center. What if an elderly member had an examination with his/her primary care physician and the doctor suggested that the patient invest in a cane to facilitate walking due to arthritis. With a medical marketplace on site, the patient could purchase the cane immediately after his visit. Time is saved and the customer is satisfied. The facility would be one step closer to the concept of one-stop-shopping health care.

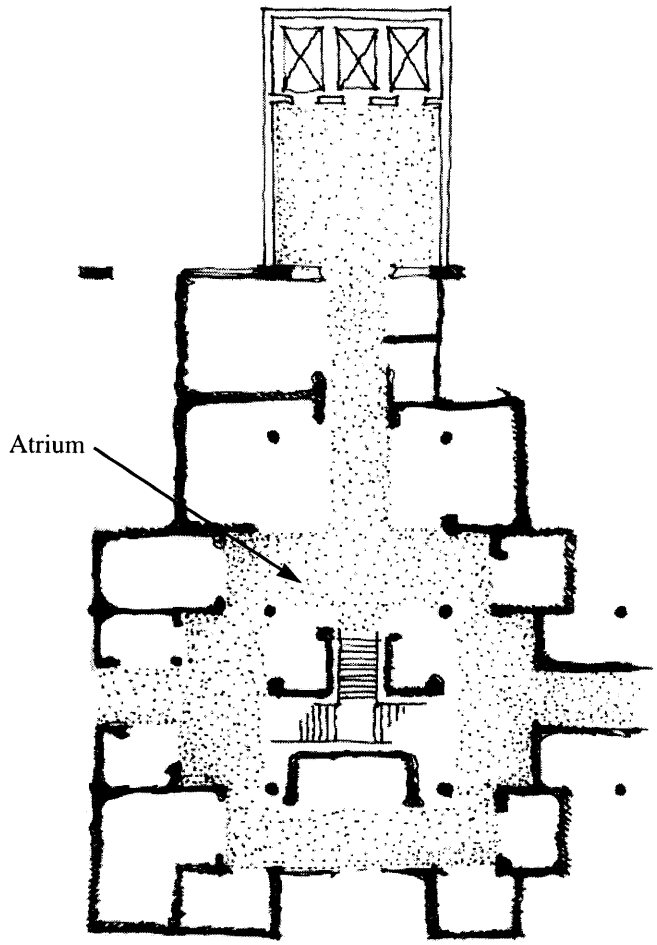

Fig. 4.11 Potential market condition within the HMO located at the base of an atrium space.

11. Coffee Bar

We know that people enjoy mixing in public. The idea of introducing a coffee bar is an attempt to address this missing element in the department's teaching practice.

In a recent design by DEGW, a coffee bar was introduced to provide a social focus and orientation point for researchers ar the Camelia Botnar laboratories.[1] The coffee bars in that project are located on every floor and improve contacts between the various disciplines and departments.

Within the department of Internal Medicine this same opportunity could be used to improve contacts between the various teams and between clinicians and members. This is a unique setting where one could spontaneously communicate while at work or while waiting for an appointment. If the surfaces were all forty-two inches high, then both sitting and standing could be supported by the area. And if the area was located within the learning center, it would further activate the space with people.

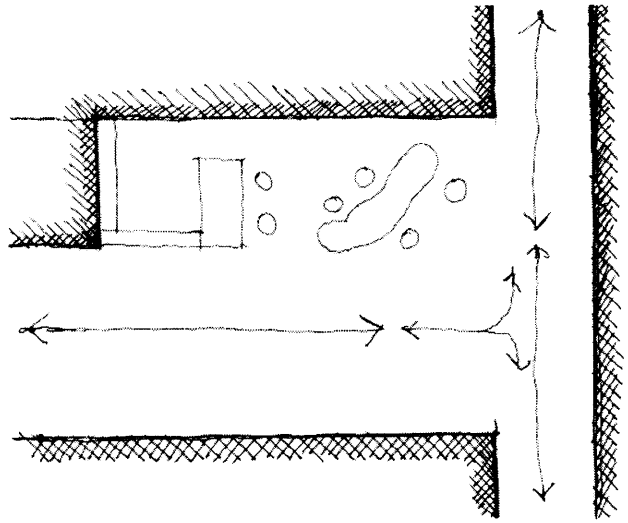

Fig. 4.12 The coffee bar provides a social focus for employees and members.

[1]Frank Duffy, *The Triumph of Science, RIBA/Journal,* June 1996, pp. 50-56.

12. Windows Overlooking Life

The problem with the existing work environment is that support staff are not given the opportunity to see the outside environment. The most senior staff members have the preferred workspaces and light. In Christopher Alexander's Pattern Language, he writes, if one spends eight hours per day at work, and eight hours at home, there is no reason why a workplace should be devoid of natural light.[1]

Therefore the solution to this problem is to design workplaces which are visually connected to the outside world. Allow all staff to enjoy the sunshine, rain or snow. No one should have to call the weather station in order to learn about the outside conditions.

The result of this design proposal would be a better working environment for all. It is likely that this additional quality will improve the working conditions in such a way as to increase job satisfaction and reduce job turnover.

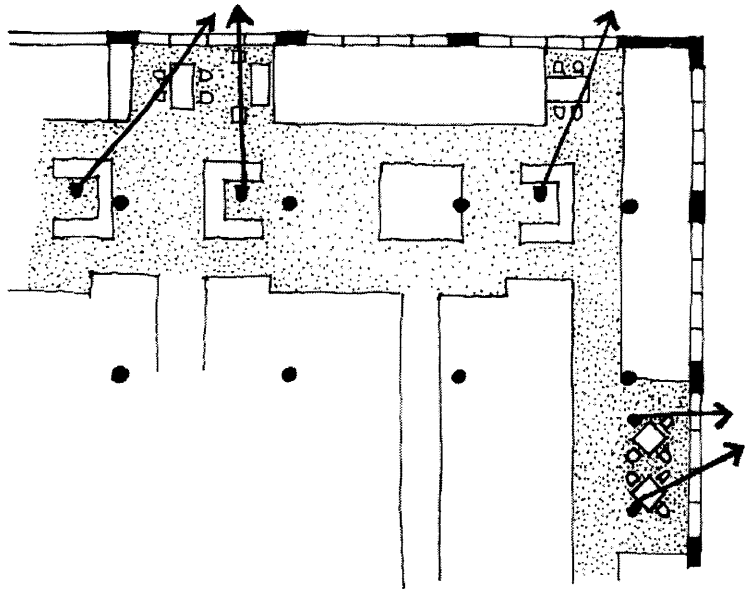

Fig. 4.13 Windows overlooking life for all staff.

[5]Christopher Alexander, Sara Ishikawa, and Murray Silverstein, *A Pattern Language: Townes Buildings Construction* (New York: Oxford University Press, 1977), p. 890-892.

13. Self Governing Support Staff

Within the existing interior, there is a conflict between medical assistant work processes. Patients approach the up-medical assistant desk instead of the follow-up desk for service repeatedly. This confusion is a physical condition that affects work processes and patient service. The work processes are affected because patients ask for help at one location when that help is not offered. The patient must be directed to an alternate site.

Quote on the subject of space.
'Many times patients will enter my office to make appointments for follow-up appointments. . . . They search around for where they should schedule their appointments. The doctor gave me this referral, how do I set-up the appointment?. . . And the up-desk medical assistants must direct them to the follow-up desk. I do not know if it is a line of sight problem, but people don't seem to be able to find that follow-up desk."

The solution to this spatial problem has two parts. First, combine the responsibilities of the up-medical assistant and the follow-up medical assistant desk. Increase the role of the medical assistant to perform both the job of an up-medical assistant and follow-up medical assistant. Or propose teamwork that advocates self governing support staff.[1] Second, design one larger spatial arrangement that provides multiple services.

The implications of this change would be resistance from the staff due to increased responsibilities; however, it would result in improved service for members due to the simplicity in completing their process through the unit and due to the clarity of spatial organization.

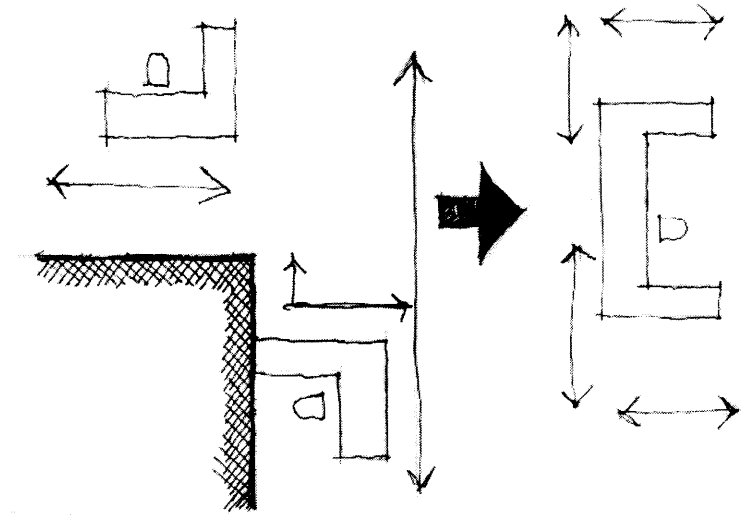

Fig. 4.14 Combine the up-medical assistant desk and the follow-up desk to empower staff and improve member service.

[1]Christopher Alexander, Sara Ishikawa, and Murray Silverstein, *A Pattern Language: Townes Buildings Construction* (New York: Oxford University Press, 1977), p. 399-403.

14. Interdisciplinary Resident Training.

At this time, the residents learning experience is limited to individual clinical care of patients. Unfortunately, they are not exposed to the other issues which arise in a medical office. This condition limits the interaction that residents have with support staff, reduces the residents understanding of other job responsibilities and leads to behavioral patterns that are associated with status and power.

The solution to this problem is to provide the resident with a holistic learning experience. Change the training from the individual as learner to learning as participation in the social world.[1] Involve resident in staff work for a few hours per week to improve interaction with support staff and to foster team building at an early stage in the residents' career. The potential gain of team-building could be innovation in the workplace and improved communication. One example of interdisciplinary resident training could be answering the telephones and performing triage.

Quote on the subject of resident triage system.
"Basically if I was going to spend my time effectively for the HMO, even though I would not want to, I'd be on the phones triaging while the medical assistants were sending my patients to the hospital after I've done the clinical work-up. But it's being done the other way around." resident

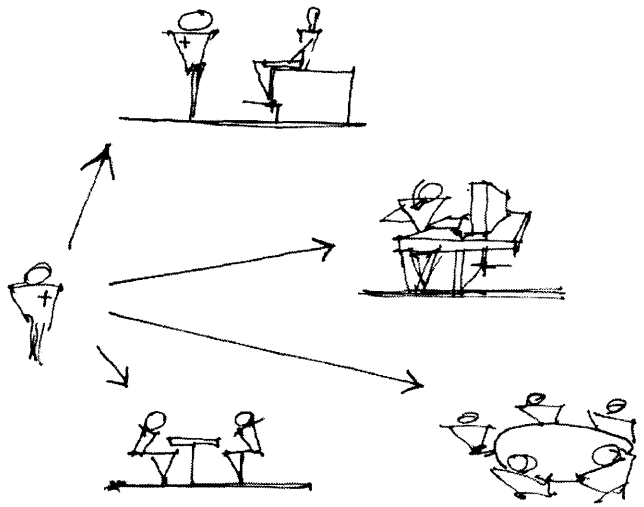

Fig. 4.15 Interdisciplinary Training

[1] Hillary McLellan, ed., *Situated Learning Perspectives* (Englewood Cliffs: Educational Technology Publications, 1996), pp. 19-44.

15 Informal Gathering Spaces

When visiting the medical office, providing variety of communication spaces could benefit the staff and patients by addressing various types of communication needs. In the existing space, there is the reception area and a few chairs adjacent to the up-medical assistant. In both cases the spaces are lifeless and uninteresting.

The solution to this lack of choices is to create specific spaces for communication to occur.

One problem this would address is the patient as object and patient as person issue. After examinations, a clinician could direct the patient to a few comfortable locations which range from public to private.

Another problem that this would address is that physicians would not perform their consults with patients within the procedure room. Recall that this is one of the bottlenecks in the face-to-face work process for patient visits.

One of the implications of this design element is an improved relationship between patient and physician through new communication spaces. This can be translated to improved care.

Also, the work process will move more efficiently. The patient and doctor will leave the examination room, and then the medical assistant will be able to clean up the exam room and prepare it for the next member.

One of the challenges of this change will be resistance from a percentage of the clinical community whose patterns of work will be affected.

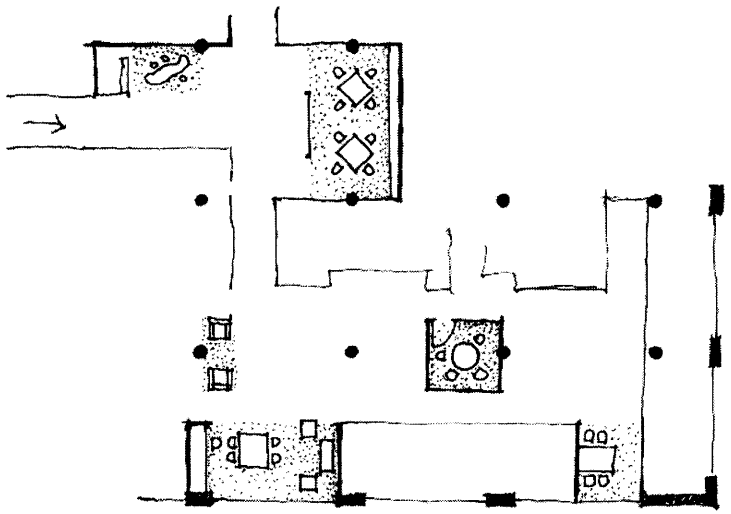

Fig. 4.16 Examples of informal gathering spaces that serve public to private conversation.

16. Transparency

The problem is that the highly differentiated interior of the department limits visibility. Communication breakdowns occur and work processes are affected.

Observation of a communication breakdown resulting from limited lines of sight.
Yesterday there was an incident where an ambulance was called. I was thinking about that today to imagine how the space might have been better designed to avoid confusion. Vision within the unit is limited. Sometimes a doc will say "Where is the MA?" According to Frank Duffy's model, the existing clinical space can be categorized as high differentiation and high subdivision. This type of layout is characteristic to corporate headquarters where hierarchies dominate and are expressed in the building form.

The solution to this problem is to create spatial arrangements that permit transparency within the workplace. This would assist the teams in collaborating by enabling worker within the same spatial cluster to respond to one another's needs for support. At the same time this type of spatial arrangement would physically breakdown the pyramidal organization which is expressed in the current space. It would serve to mirror the new organizational goals of teamwork and mutual respect for one another.

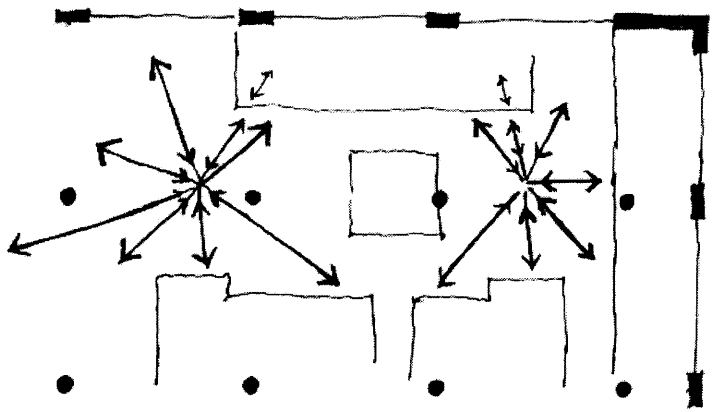

Fig. 4.17 Transparency within the workplace.

17 Master & Apprentices

The fundamental learning situation is one in which a person learns by helping someone who really knows what he is doing. Resident and preceptor time is not coordinated to take advantage of learning potential within environment. Their schedules do not intersect consistently, and allow only one or two short discussion periods together each week. This affects the overall learning experience for a resident associated with one preceptor.

Discussion on the subject of the relationship between a preceptor and resident who share an office.
This could be improved. The main difficulty with their educational relationship is that they both do not work in the office at the same time. Consequently, physical communication suffers. Why is this happening? Each individual has different daily obligations outside of the practice. When I asked Dr. Walker if he liked having his preceptor in the same office, he said, "It would be great; but, we are not here together all the time." One solution to this problem is that Dr. Walker precepts with the other physicians in the practice. Dr. Walker told me that the doctors who work in internal medicine on the fourth floor west are all interested in teaching so Dr. Walker has not run into problems with substitute preceptors. My perception of Dr. Walker's preceptor experience was very positive. He spoke of the additional learning that has resulted due to the exposure to different styles of practicing medicine.

The solution to this problem is to arrange the work in the teaching practice in such a way that work and learning go forward hand in hand. Treat every encounter with a physician or preceptor as an opportunity for learning. Therefore, organize the teaching practice around a group of physicians who support this form of social organization with a division of the space into units where the physicians and residents can work together. Not only would the hallway be considered a learning space, the whole unit would be. It would be divided into four clusters to foster the development of individual residents

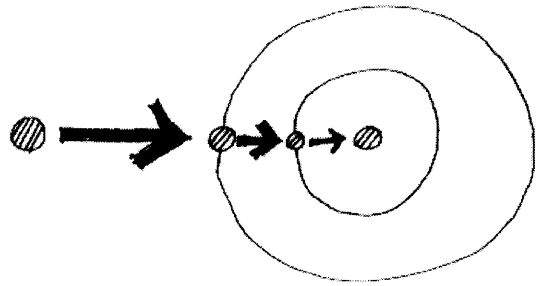

Fig. 4.18 Socialization

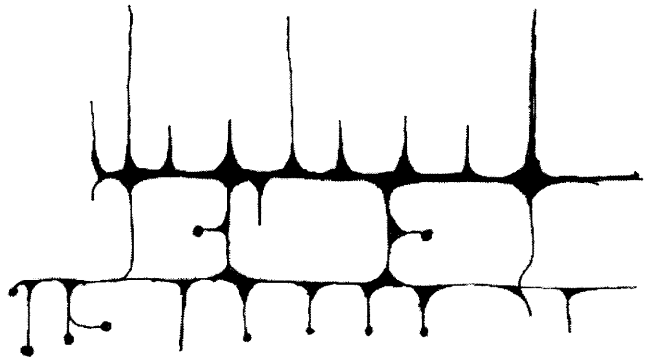

Fig. 4.19 Where the interaction occurs. Default is learning Learning in the hallways designed into the space for the master and apprentice.

who work closely with one preceptor and engage in the professional world of the other clinicians within the practice.

[1]Christopher Alexander, *A Pattern Language: Townes Buildings Construction* (New York: Oxford University Press, 1977), p. 412-415.

18. Exam Room Modules

The problem with the exam rooms in the current facility is that there is not a uniform layout for use by physicians and clinicians. As illustrated in Fig. 7.19 through 7.27, there are a variety of spaces and furniture arrangements and all of them are not ideal for performing examinations. During my research period, I investigated this subject at length.

Informal discussion on the subject of examination room design
Within the department there are a number of good designs and a few poorly designed spaces as well. Christopher described how the right side of the patient is the side a doctor wants to examine a body on. This is where the liver is. If the circulation space is on the right side of the body, the doctor can examine a patient easier. If the chair is adjacent to the exam table and on the right side another use can be incorporated into the design. This feature is the blood pressure tools which can be mounted on the wall. The point is that the doctor can either take one's blood pressure while the patient is on the bed or on the chair and still be in the optimal position in relation to the patient. On the left side of the exam table and at the foot of the table mounted to the wall should be the lamp. The lamp moves and is necessary when performing physicals. Another issue discussed included natural light. The light is nice, but the view can be a negative quality for the patient. The patient does not want to be undressed in a "visible space". If a patient has a headache, the doctor would prefer a windowless space. The location of the door might be considered as well. If the hinges are placed four inches from the wall, then the least privacy possible is established for the patient, unless the curtain is drawn. The better location is to place the door hinges at +/- 42 inches into the space. Some of the existing spaces are designed this way.

The solution to this problem is to create exam room modules that improve the clinicians ability to utilize space and work most effectively when examining a patient. Fig. 4.21 a-c illustrates three potential schemes.
The result of this solution will be an improved clinical work process while working with patients.

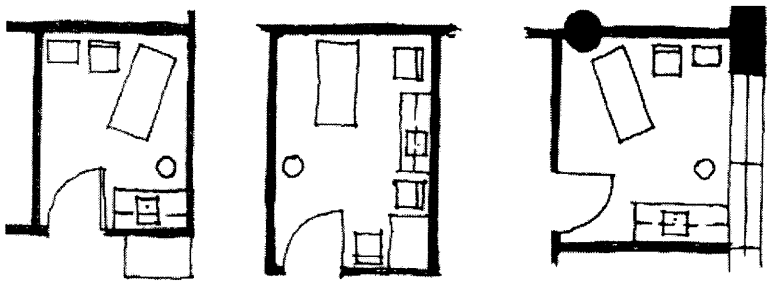

Fig. 4.21 a-c Three types of exam rooms.

Fig. 4.21 a: This examination room is the standard typology for all clinicians. The space provides all of the characteristics described above and has been described by physicians and residents as the preferred layout in the current facility. It is identical to examination room six. (See Fig. 7.20)
Fig. 4.21 b: This examination room is designed for initial health assessments and includes an additional consult area. It is larger than most so that a patient and doctor might be able to review personal medical histories prior to an exam. This layout would accommodate physicians who might not want to utilize any of the informal gathering spaces prior to a first time encounter with a patient.
Fig 4.21 c: This examination room is based on 4.21 a; however it has one additional characteristic. Natural light is provided. The reason for this unique space is to accommodate special patients who might be claustrophobic or experiencing mental disorders. From my interviews, some patients need these types of exam room.

The major effect of exam room modules is inflexibility. This might be problematic when designing small offices or facilities with difficult structural conditions.

19 Intimate Waiting Areas

The problem is that the current waiting room is large and impersonal. In the current plan patients sit passively and stare. There is no privacy.

Quote on the subject of waiting areas.
"I would have two waiting rooms on either side, instead of one big waiting room where everyone is staring at each other." physician

The solution one might propose is to create smaller waiting areas at the perimeter of the building. This will allow patients to have privacy and view to the outside. By creating these smaller waiting rooms patients will perceive the service to be personal versus impersonal.

The implications of this change will be improved member satisfaction. and increased spatial requirements for the department.

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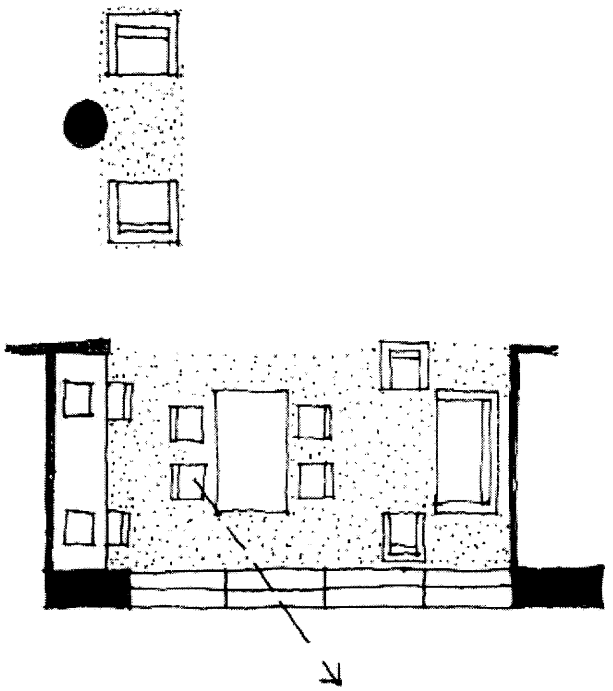


Fig. 4.22 Intimate Waiting Areas.

20. Hallway Interaction Spaces

In the current interior space, a number of learning experiences occur in the hallways for the residents and preceptors. These interactions are spontaneous and useful for the resident. Unfortunately, the hallways are not designed to accommodate these unscheduled lessons. So the problem is that the corridors are tight because they were designed for circulation and not for conversations along the side.

Observation of a resident.
Bernard had a question about a patient and his preceptor was in with another patient. So he was unable to speak to the doctor. In fact, the patient was a patient of the doctor. Because Bernard was giving the patient a new medication, he wanted to discuss the treatment with the doctor. Because the doctor was unavailable, Bernard prescribed the medicine and let the doctor know of the new medication, Bernard found Dr. Bennett in the hall by chance. The problem was solved. Quick .

The solution to this problem is to design the most traveled corridor that the the physician and resident use wider. Let the area become a "place" for learning. In fact, the zone could be considered a programmed space.

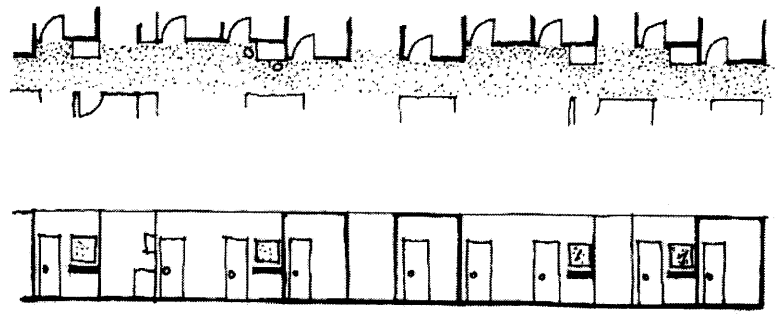


Fig. 4.23 Hallway as a learning space.

21 Laboratory: Dirty & Clean

The laboratories for the clinical staff are not strategically located and are too small.

For one clinician her walk to the microscope is too far away. See Fig. 7.33. *"That room should be readily accessible to me."*

For others the space needs to be larger.
"Too cramped."

The solution to these problems is to design the laboratories so they are readily accessible to all examination rooms. Also, the examination rooms should be designed for it daily use.

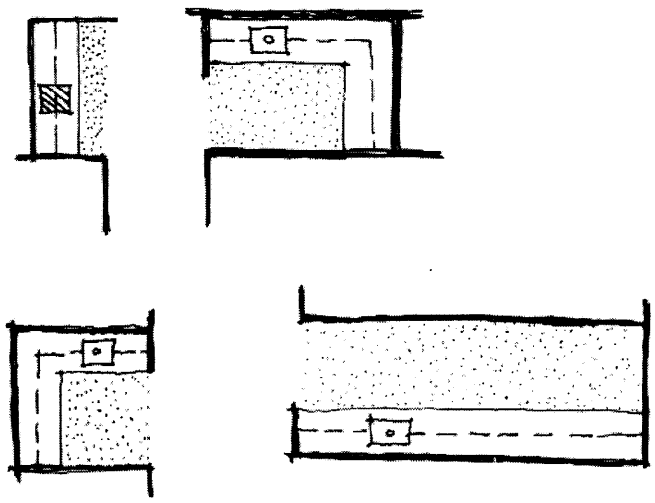


Fig. 4.24 Sample layouts for laboratories.

5. Design

The proposal presented here is a result of a synthesis of ideas generated through research and through design. John Zeisel writes, *"Carrying out a research project and designing an environment are similar in that both invent new ways to see the world around us. Research invents organizing concepts; design arrives at plans for future settings."*[1]

First, I will discuss the ideas generated through research or the *organizing concepts* embodied in the proposal. The list below summarizes the patterns documented in the previous chapter, Conceptual Framework.

1. Networks of Communication
2. Organizational Teams Guided by Team Leaders
3. Face-to-Face Work Process Flow
4. Telephone work Process Flow
5. Integrated Information Technology
6. Circulation Realms
7. Learning Center
8. Protected & Unprotected Receptionist
9. Public & Private Reception Area
10. Marketplace
11. Coffee Bar
12. Windows overlooking Life
13. Self Governing Staff
14. Interdisciplinary Resident Training
15. Informal Gathering Spaces
16. Transparency
17. Master & Apprentices
18. Exam Room Modules
19. Intimate Waiting Areas
20. Hallway Interaction Spaces
21. Laboratory: Dirty & Clean

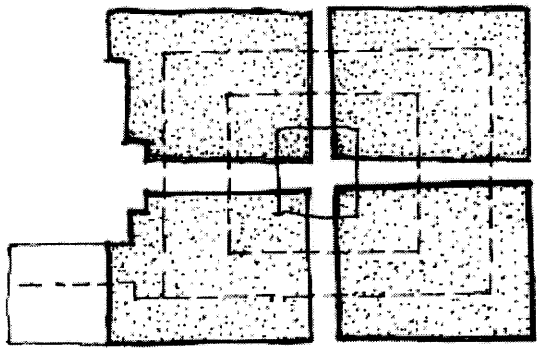


Fig. 5.1 Concept sketch showing organizational and spatial relationship.

These patterns became an internalized structure that I used to build onto as a designer. I knew what was required, it was like riding a bike, I didn't forget. So, my next step was to complement these ideas with visions or plans for the future.

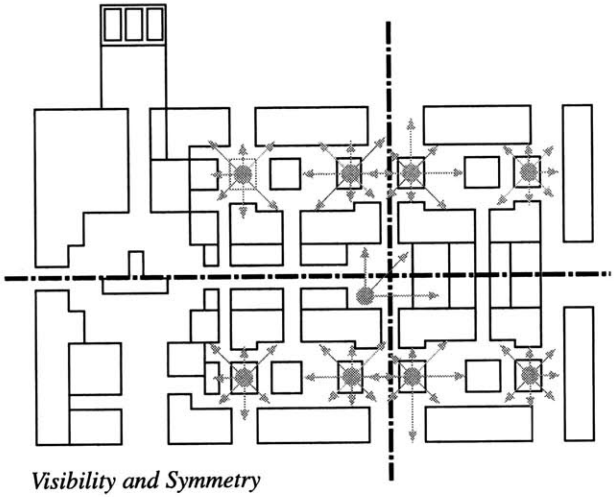
Now, I will outline the ideas generated through the design or the *plans for future settings* conceived in the proposal. Backed by my research, these *plans* are grounded on personal intuitions and add up to five objectives for the space, work process, and organization: The objectives are:

1. New Vision of Work Process
2. Service Oriented Teams
3. Training of the Resident
4. Responsible Workplaces
5. Architectural Solutions for Structure

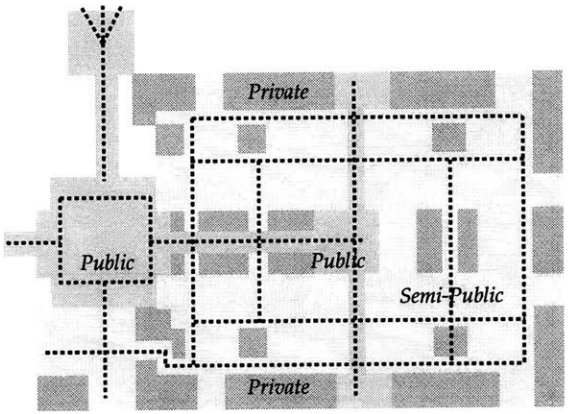
[1]John Zeisel, *Design by Inquiry: Tools for Environment-Behavior Research* (Monterey: Brooks/Cole Publishing Company, 1980), p. 226.

Interior Architecture Proposal

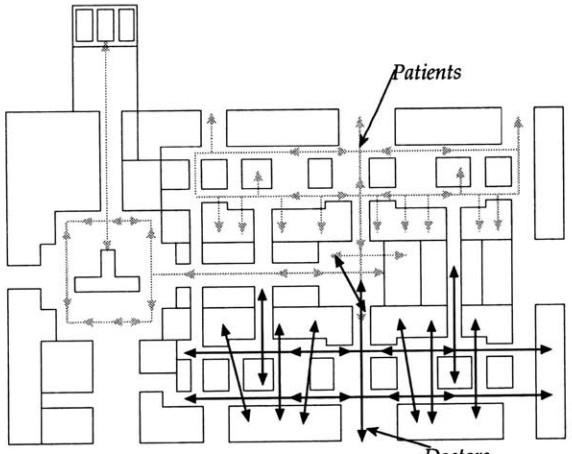
The architectural solutions for the department are diagrammed conceptually in Fig. 5.1, and Fig. 5.2 a-d. The major goals of the physical solution include: four smaller clinical units linked by circulation and a variety of communication spaces, clarity of organization, visibility, natual light for all, and flow patterns that will facilitate teamwork. Also, the supporting management team is linked to the side of the deparment for support (See Fig. 5.1). Management is not designed to be watching every move and the design reflects this concept. Finally, these spatial ideas are supported by the work processes and the overall organizational structure.



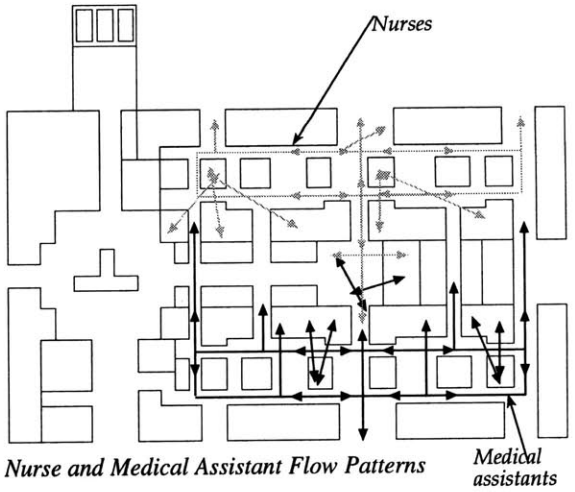
Visibility and Symmetry



Access, Public, Semi-Public & Private Zones

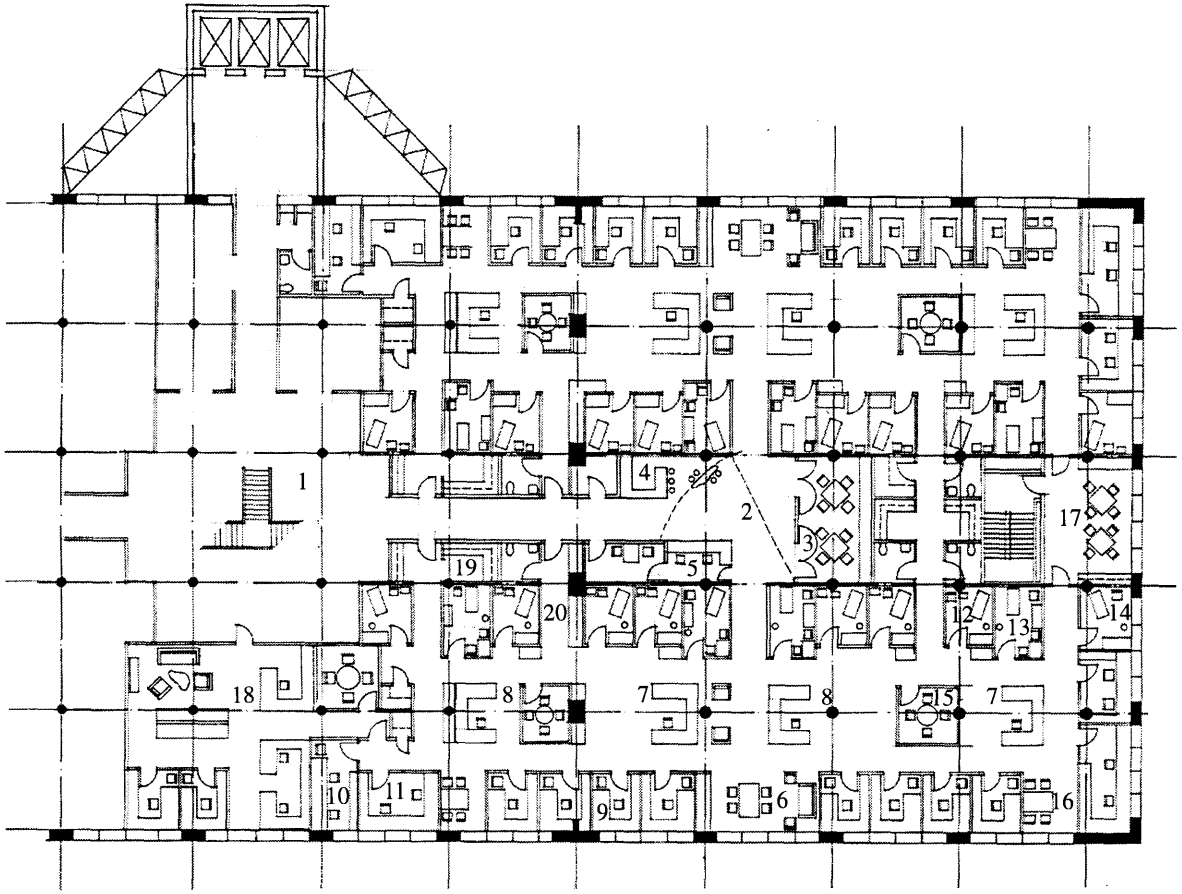


Physician and Patient Flow Patterns



Nurse and Medical Assistant Flow Patterns

Fig. 5.2 a-d Concept Diagrams illustrating the primary characteristics of the proposed workplace.



1. Marketplace
2. Learning Center
3. Resource Room/Conference Room
4. Coffee Shop
5. Receptionist
6. Intimate Waiting Area
7. Up-Medical Assistant Workstation
8. Registered Nurse Workstation
9. Physician Office
10. Preceptor & Resident Office
11. Triage NP & Phone MA Office
12. Exam Room Type 1
13. Exam Room Type 2
14. Exam Room Type 3
15. Private Consult Room
16. Semi-Private Consult Area
17. Staff Lounge
18. Management Suite
19. Dirty Lab
20. Clean Lab

Fig. 5.3 Floor plan depicts spatial layout and use. The interior architecture supports the proposed face-to-face work process for patient visiting the unit (See Fig. 5.6) and the space reflects four team-based organizational units linked by multiple access points and supported by management (See Fig. 5.10).

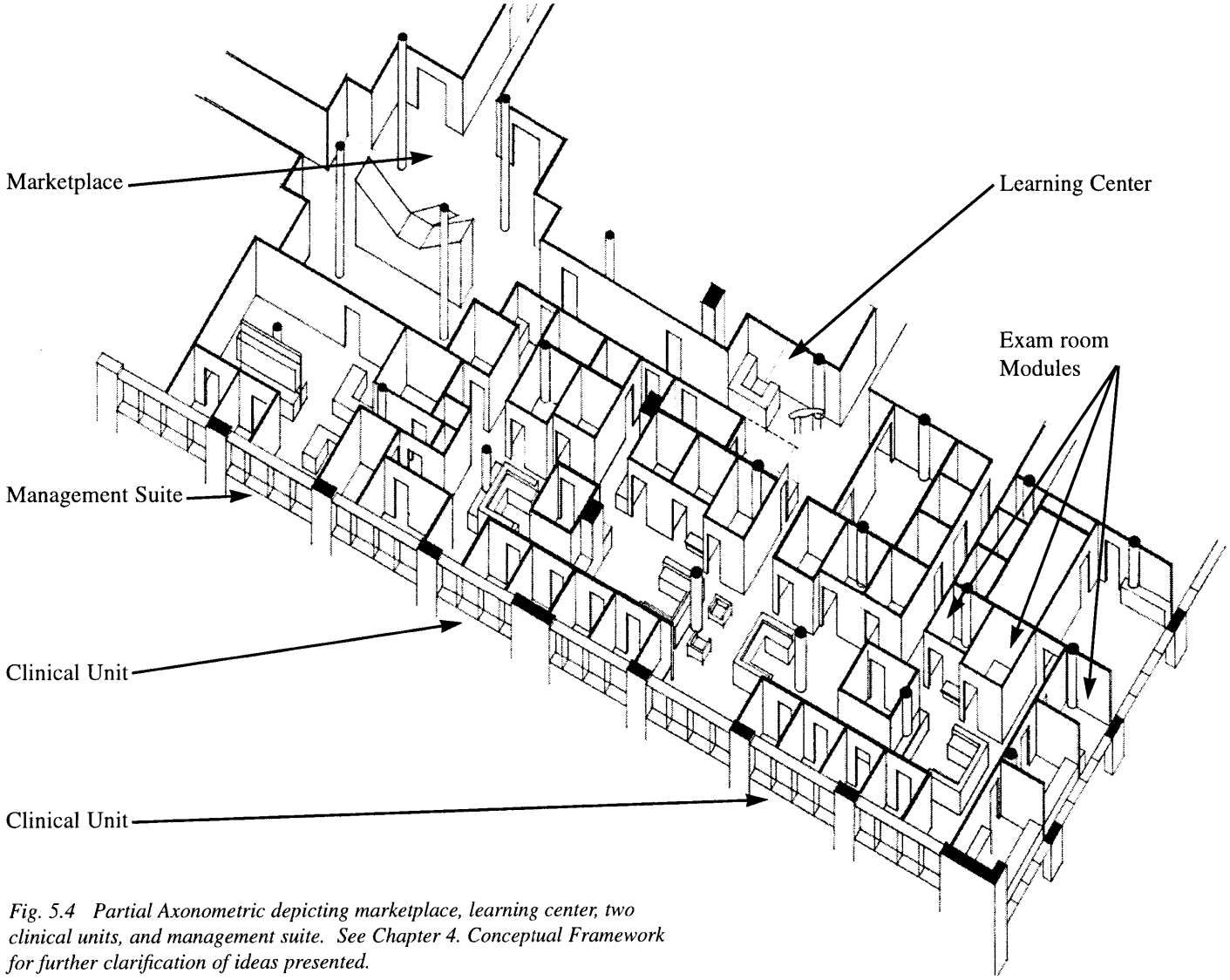


Fig. 5.4 Partial Axonometric depicting marketplace, learning center, two clinical units, and management suite. See Chapter 4. Conceptual Framework for further clarification of ideas presented.

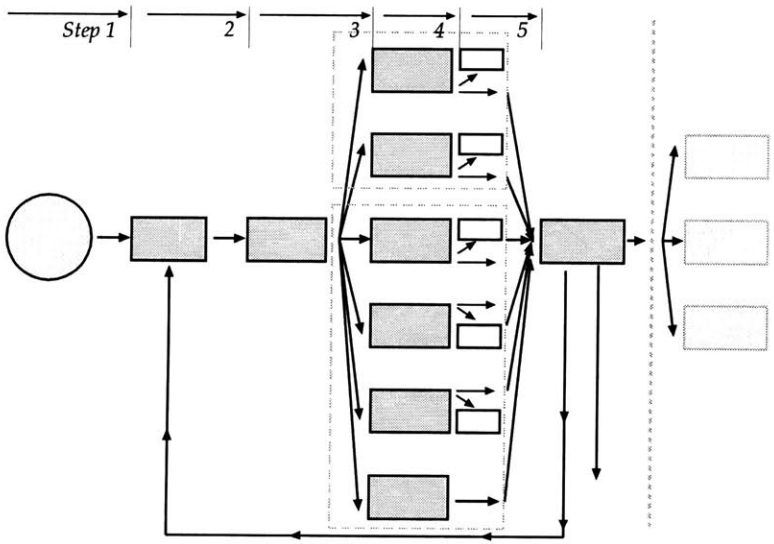


Fig. 5.5 Existing Process Flow Diagram of Services rendered to a Patient Face-to-Face. See Fig. 2.21 for details.

The face-to-face work process solution for the department is diagrammed conceptually in Fig. 5.6. The major goal of the face-to-face communication work process for a patient moving through the system is to reduce the number of "steps" or "handoffs" and improve the efficiency of the system. Fig. 5.5 illustrates the existing work process and enables one to compare it to the proposed solution.

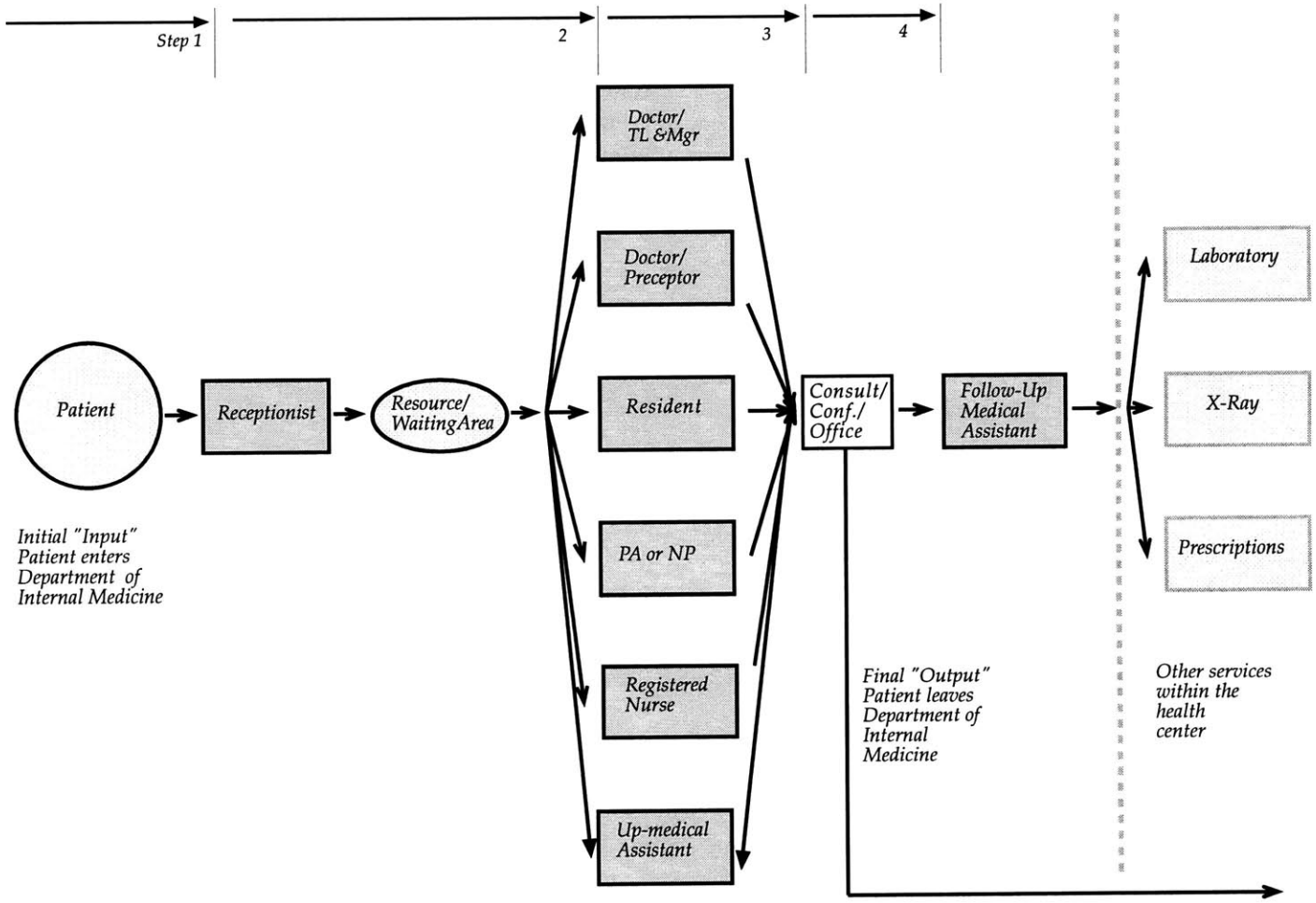


Fig. 5.6 Face-to-Face Communication Flow Diagram generated from Pattern 3. The goal of modifying the flow of patients through the process was to reduce bottlenecks. This was accomplished by removing Steps 2 & 4 from the existing process.

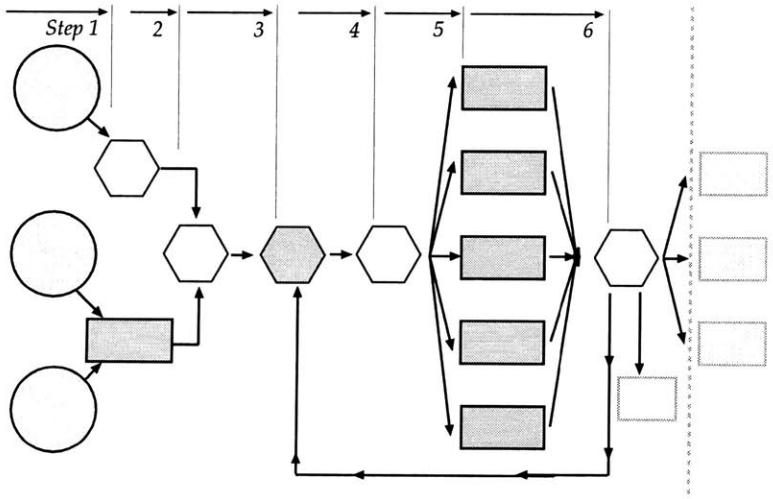


Fig. 5.7 Existing Process Flow Diagram of Patient Telephone Communication within the Department. See Fig. 2.23 for details.

The telephone work process solution for the department is diagrammed conceptually in Fig. 5.8. The major goal of the telephone communication work process for a patient moving through the system is to reduce the number of "steps" or "handoffs", improve the efficiency of the system, and increase the knowledge available to patients making initial contact with the department. Fig. 5.7 illustrates the existing work process and enables one to compare it to the proposed solution.

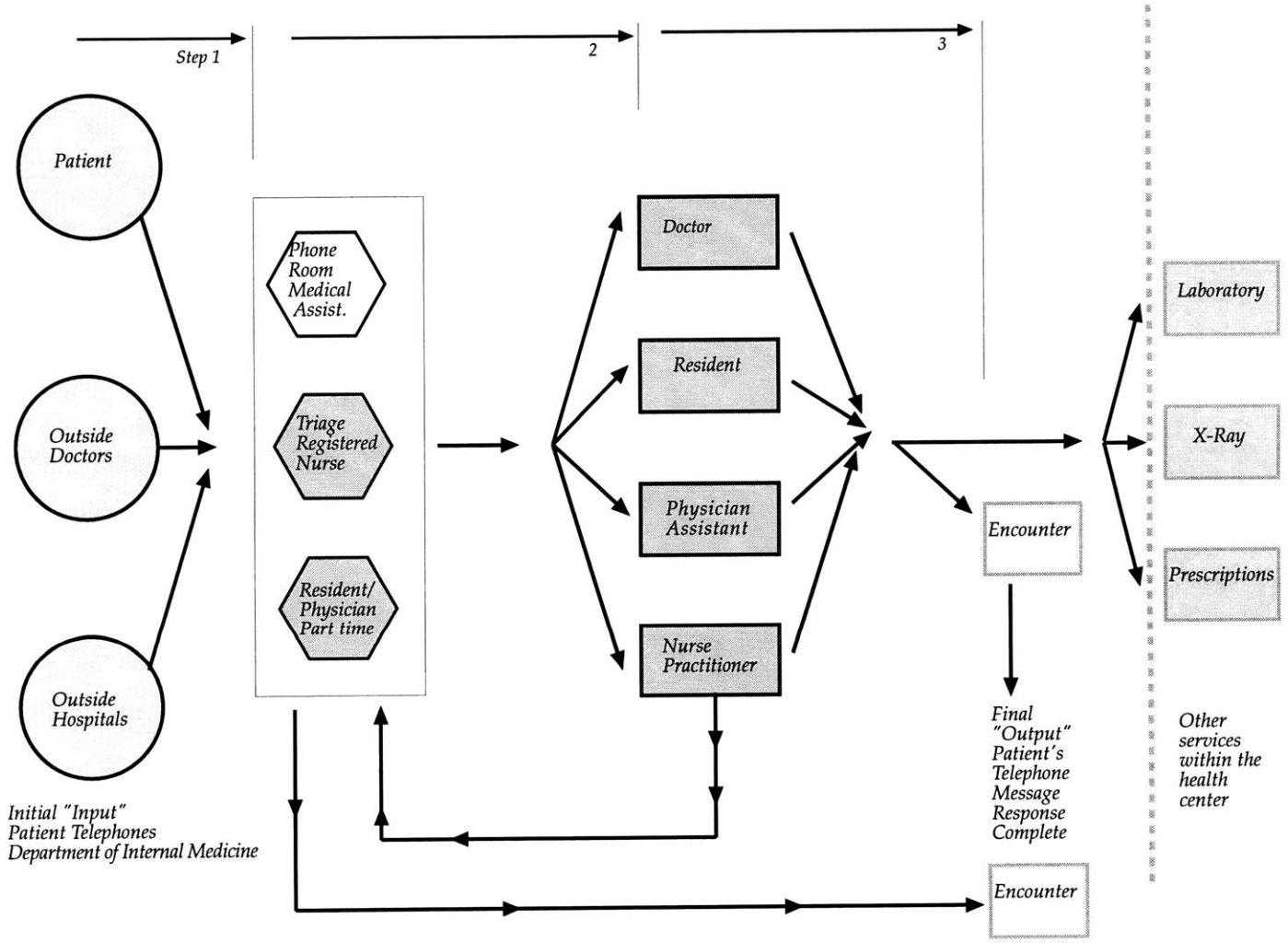


Fig. 5.8 Proposed Telephone Communication Flow Diagram generated from Pattern 4. The goal of modifying the flow of information through the system was to reduce bottlenecks. This was accomplished by removing Steps 2, 4, & 6. from the existing process.

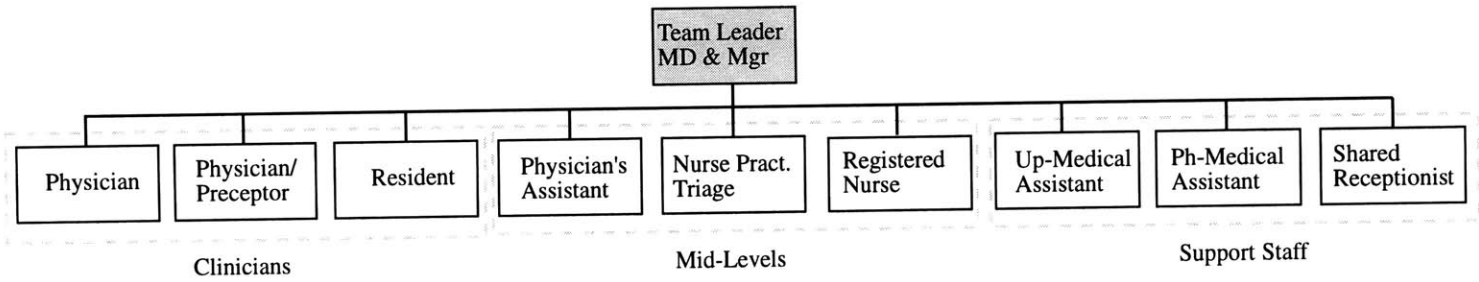


Fig. 5.9 Formal Team Structure. Proposed Department of Internal Medicine as the Model Teaching Practice. This team is comprised of ten players. In the existing organization, one team that I analyzed had twenty-one members. The goal in reducing the size was to foster team-building. Notice how resident participates within the community of practice. His role will increase throughout the department due to the smaller team size.

The proposed organizational structure for the department is diagrammed conceptually in Fig. 5.9 and Fig. 5.10. The major goals of the organizational proposal are the following: create teams that are flat and lead by a leader, include the resident in the team as a interdisciplinary apprentice who participates in a variety of departmental experiences, link management as a support not as an iron fist, and become a service oriented group.

Within these new groups, power and status will still exist; however, through team-building strategies excessive use of power and status will be reduced significantly. Mutual respect will become a standard behavior within the workplace.

The result of all these changes would be the beginnings of a learning organization.

Organizational Structure Proposal

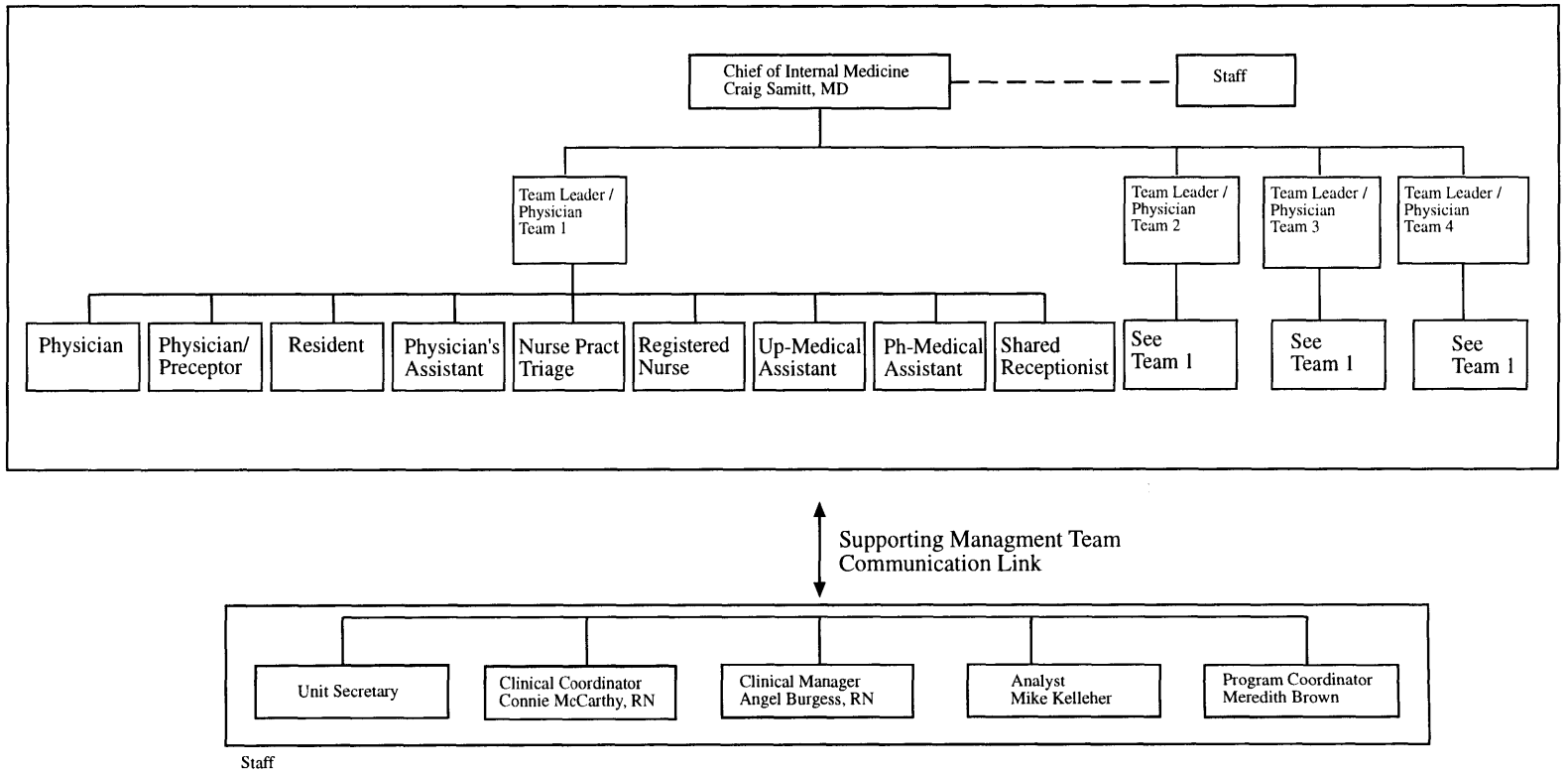


Fig. 5.10 Formal Organizational Structure of the Department of Internal Medicine. Diagrammed here are the four teams with management as a supporting link. Communication between teams would be promoted by the interior archintecture. Communication within the clinical area will improve team-building, learning and efficiency. Management forms a supporting link with all clinical teams. Clinical teams are managed by clinicians.

6. Conclusion

Inquiry Methods

This thesis has demonstrated how the use of non-traditional inquiry techniques can enrich the architectural design process. In connecting all these techniques, my desire was to understand the relationship of each inquiry process to the intellectual and creative process of design. In other words, design inquiry as explored in this thesis described the development of a prototype that is related both to the architecture of it's specific site and to the nature of the institution it supports. The goal for pursuing this research-based project was to enhance my problem-solving ability; namely my ability to identify, diagnose and produce recommendations for particular problems within an existing structure.

As I reflect on the experience, I believe the analytical skills that I have acquired will be easily transferable to future situations. The knowledge can be attributed to the project's research component where I was able to generate most of my ideas. John Zeisel writes about research in his book *Inquiry by Design*. In it he states, *"Research can provide deeper insight into a topic, better understanding of a problem, more clearly defined opportunities for and constraints on possible action, measurement of regularities, and ordered descriptions."*[1] I think that this quote most clearly states how the research affected my strategy for the analysis, for the language development and for the prototype design.

Success & Failure of the Inquiry Methods

The research methods that I used were for the most part successful. The empirical data and participatory information combined have fueled this project with an abundance of information. Maybe too much for one individual to handle. In any case, the information enabled me to work in a different manner and resulted in a project that is based on the limitations of people and space.

However, there was one inquiry method that did not work: Communication matrixes. From my exposure to the technique, I am sure it could have worked. I would have needed more time, greater participation and explicit directions for study group defining communication and interaction. If I had the time, participation and cooperation, I am sure I could have validated my empirical observations on communication gaps. Unfortunately, I did not have these things and I was told that my process would not generate quality data. This was after I had begun the analysis; given this discouraging advice, I continued so that I could personally understand the inquiry process. The data is presented because I wanted to demonstrate the ability to analyze communication within space. This idea is important and has implications on workplaces. According to Tom Allen, *"Unless architects and facility planners understand the ways in which organizational structure affects interaction and communication and how sensitive these things are to their own designs, they cannot perform their role properly."*[2]

Dismantling of Data resulted in Classification

The most difficult challenge that I faced while exploring the wealth of data was organizing it into a coherent body. In order to achieve this goal, I dismantled the data. This process resulted in the classification of three groups: interior architecture, work process, and organizational structure. With the defined groups, I tried to show how some of the independent forms of inquiry tended to converge. This convergence or overlap of data strengthen and reinforce some ideas which I further developed with confidence in my conceptual framework for design.

[1]John Zeisel, *Inquiry by Design: Tools for Environment-Behavior Research* (Monterey: Brooks/Cole Publishing Company, 1980), p. 18.

[2]Thomas J. Allen, *Managing New Product Development: Organizational and Architectural Issues and Solutions* (in press) p. 11.

Conceptual Framework

The conceptual framework formed the link between the inquiry and the design. It was my theoretical base and with it I generated my design. I found it to be useful in organizing the issues defined within the three groups as a collective body again.

Though the design solution is site specific, it is my hope that the conceptual framework articulates invariants that might be useful in alternate scenarios for prototype medical teaching practices.

Design Proposal

My design proposal formed the synthesis between people, work and space. Christopher Alexander talks about this quality in *Notes on the thesis of form.* Here he describes good fit, *"The argument is based on the idea that every design problem begins with an effort to achieve fitness between two entities: the form in question and its context. The form is the solution to the problem; the context defines the problem. In other words, when we speak of design, the real object of discussion is not the form alone, but the ensemble comprising the form and its context. Good fit is a desired property of this ensemble which relates to some particular division of the ensemble into form and context."*[1] This union has helped me understand that there can be a truly meaningful relationship between inquiry and design.

Summary

In summary, It is clear from this process that:

1. Research can provide a deeper insight into a topic.
2. Participation from a body of users can provide invaluable data.
3. Data and Language Development can transform the physical world of architecture to a higher intellectual level.
4. Architecture, work process and organization are inherently linked.
5. Using multiple inquiry techniques reduces bias.

7. Appendix

appendix 1

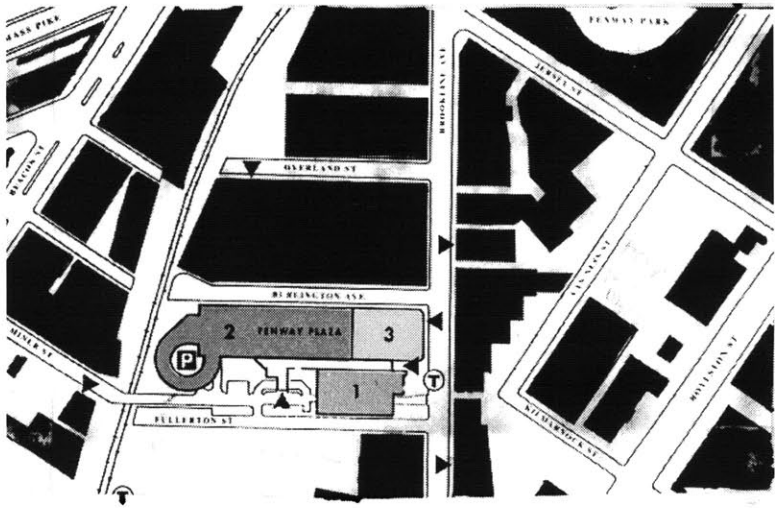


Fig 7-.1 Site drawing of Health Maintenance Organization's Kenmore Center. The building is located between Brookline and Beacon Streets, and is accessible via the T-System and Bus.

Logs: Observations, Drawings and Interviews

The data presented in this appendix was collected during a six week period of research at a Health Maintenance Organization's (HMO's) Department of Internal Medicine in Boston, MA. During this time, I worked, observed, analyzed space, and interviewed staff members within the organization. The data that follows articulates the information I collected on a day by day basis. All of the data is empirical. All of the personal ideas are biased. This is inherent in the methodology I have used for this thesis. Images are introduced throughout that illustrate spatial issues that I felt were relevant at the time. The data is not meant for leisure reading, it has been used as a reflective tool for this investigation into design inquiry.

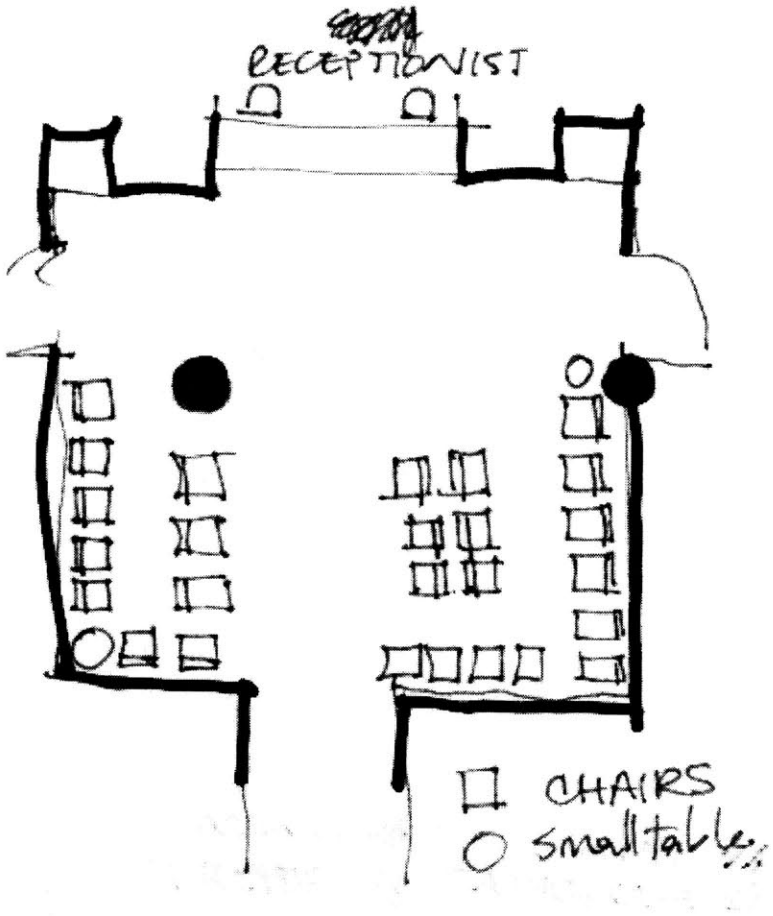


Fig. 7.2 Drawing of waiting room based on observation.

DATE: MONDAY JULY 8, 1996
SETTING: INTERVIEW WITH INGA BORUCH
Receptionist

What is Happening?
Today I sat with Inga Boruch and observed the Internal Medicine receptionist's job on the fourth floor. The receptionist's main responsibilities include checking-in patients, collecting co-payments from patients, scheduling future appointments, verifying member addresses and submitting daily cashflow to management. Other responsibilities include answering the telephone, contacting physicians when patients arrive late, helping members get prescription refills and observing the general health of patients seated in the waiting room. Inga also possesses one more asset. She is Mexican and speaks Spanish fluently. Another responsibility is putting out fires. Day to day fires that Inga has to solve include: accommodating the schedule for patients who arrive late and are unable to see their primary care physician. While I was at the reception area two patients arrived late and still wanted to see their doctor on that day. One person mistakenly arrived for an appointment that had been canceled. A few people came to the health center without any means of payment, no money, check or credit card. And finally, one woman aware of the system, even tried to avoid Inga by not checking-in before she entered the clinic. Why did she do this? Maybe it was to avoid her five dollar co-payment. In all cases, the receptionist needs to bite his/her tongue and solve try to accommodate the patient. Inga did it with patience.

In terms of technology, the receptionist must be proficient with the Automated Medical Record System At the Kenmore Health Center, AMRS (Automated Medical Record System) is the standard software and it is networked with the rest of the Kenmore Health Center. Inga used the system consistently during the work day. Not only can the receptionist check-in patients, schedule and cancel appointments, the receptionist can access patients basic history though the automated

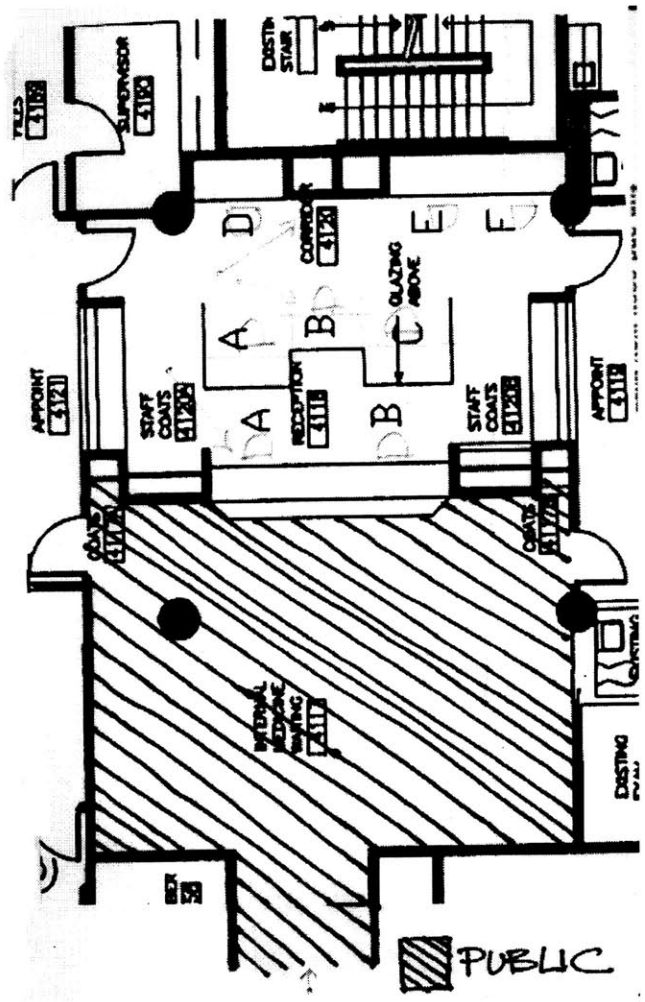


Fig. 7.2 Drawing of waiting room, reception desk and phone room based on observation.

medical record computer system. For example, if a patient cannot remember one's last physical, then the program can quickly track the date and physician who examined the patient. Other details are listed as confidential.

Teamwork is limited to help from M.As working the phones. When the office became busy late in the morning, Dionne Davis quickly teamed up with Inga to speed up the process and reduce the check-in time for patients.

Another issue had to do with the physical space. *"The fluorescent lighting is a problem because the lights are too bright,"* Inga stated, Next, she commented on how she might alter the physical conditions of her workplace. She would install a glass panel to separate her from the patients due to the fact that she gets sick from the patients germs when coughing and sneezing. Inga would also like direct access to the reception room adjacent to her desk. In its current configuration, the area is not complex. An eight foot linear worksurface is equipped with two computers, two telephones counter space, drawers below for storage, and a transaction surface for patients to write checks and place their bags.

What I noticed most was the lack of natural light and institutional feeling of the space, so I asked Inga about this and she told me that some of the medical assistants will call the weather station because they want to know what the weather is like outside.

Human touch: I saw one doctor enter the reception area to greet his patient. According to Inga this only occurs on the initial visit. That explains why I saw a the medical assistants calling out for a patient, introducing themselves and escorting the patient to an exam room.

My Interpretation
This position requires one to solve simple problems fast through direct communication with the patients and predominantly indirect communication with the supporting administrative and clinical teams. Direct communication can be defined by face to face contact. Indirect communication can be defined as computer print-outs to staff or by telephone conversations to clinicians or others areas of the health center. Communicating that a patient has arrived and scheduling a future visit are two examples of simple problems that are solved by the receptionist. Although the job requires one to solve simple problems, utilize basic skills and preform redundant tasks, I felt that Inga was earnestly pleasant while greeting the patients. She smiled to them, asked about them if she knew them and gave the extra effort to make the visit comforting instead of tense. This is a personal quality that any manager would look for in a receptionist.

At the receptionists desk privacy is a problem. Why? I noticed that while seated at the receptionist's desk, I was able to hear what the medical assistants were saying to some patients. In general the conversations were focused on scheduling; but, I am sure if I had attempted to listen to the conversation my ears would have supplied me with confidential news that was not meant to be heard.

Reflection
Why is it that the staff members who spend their whole day within the confines of the health center are not given access to natural light? It seems like this is a physical way that status assets itself.

How do the patients feel about privacy at the receptionist's desk?

Space
Architecturally the bright light above the receptionists desk creates problems for her computer work. She has a glare screen on her computer screen and this has been effective. But, isn't there another possible solution to prevent this eyestrain? Why not propose to alter the lighting design? Task lighting is one possible solution.

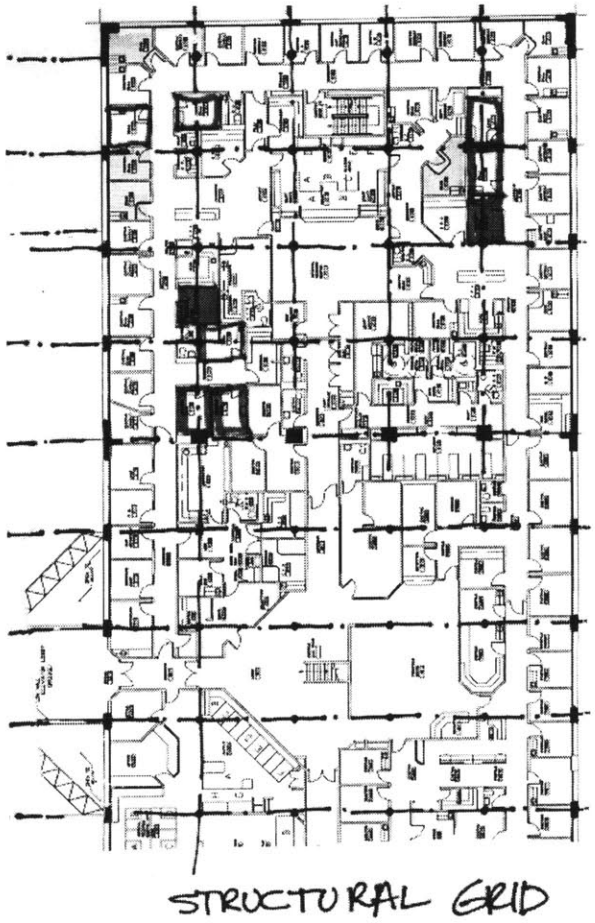


Fig. 7.4 Drawing of the structural grid which dominates the existing building. The dark colored areas represent exam rooms preferred by the physicians and staff.

DATE: TUESDAY JULY 9, 1996
SETTING: INTERVIEW WITH AND OBSERVATION OF PHONE ROOM MEDICAL ASSISTANTS

What is Happening?

At eight thirty, the phones began ringing. Answering the phones is the responsibility of the down medical assistants and I was scheduled to meet with Margaret Becker and discuss her job. While speaking on the telephones, the MAs use the Automated Medical Records System and the Automated Appointment Scheduling to perform various tasks. What I watched Margaret do was schedule appointments, answer questions pertaining to a patients history, answer questions about specific lab results (in limited scenarios this is called triage), select primary care physicians, and document their telephone encounters. Some of the other responsibilities included mailing letters about normal labs, writing and delivering phone messages, calling the pharmacy and documenting work on official forms. While I observed the group work, I tried to understand how the medical assistants actually fit into the overall organization. Because the the medical assistants are the first point of contact for a patient wanting to visit the center, it seems as if the medical assistants are in fact a source, point of origin for communication. From the medical assistants, messages are conveyed to the appropriate clinical staff members. Then those members of the staff (i.e., the nurse practitioner or doctor) will respond.

For the six medical assistants working as a team and answering phones, the job appeared to be impersonal. Why? Because the medical assistants do not engage in face to face conversations with patients and because the Automated Call Distribution system randomly distributes the incoming phone calls and the MA's do not have the opportunity to "get to know the patients." There were two exceptions. Dionne Davis, the senior MA ran messages to appropriate

staff members. So, in between her time at the phones, she was moving about the health center. Carol Markkula and another MA sat at the follow-up desk.. Their job responsibilities were related to outpatient services and referrals. For example, if a patient had just finished with a consult and exam, and the doctor requested further work, They would work with the patient to solve the problem. As a team, the medical assistants worked efficiently and supported each other throughout the day. For example, "W*ould you cover me was a phrase I heard repeated.*" However, beyond the group the team work is hierarchical. This gap is frustrating to the MA's because as Dionne explained, *"We would like to be accepted as part of the clinical staff."* Unfortunately, they are not. One example of this exclusion is the fact that the medical assistants are not included in clinical meetings within the department.

The Staff:
Down Medical Assistants
- Margaret Becker *
- Moira Furness
- Vanessa Jansen
- Carol Markkula *
- Sheldon Howe

Senior Medical Assistants
- Dionne Davis *
- Jan Sudman

Up Medical Assistants West Side
- Martin Oscar
- Yolanda Lee

Up Medical Assistants East Side
- Rebecca Bailey
- Dalia Strauss

note: * Indicates the medical assistants that I spoke with today.

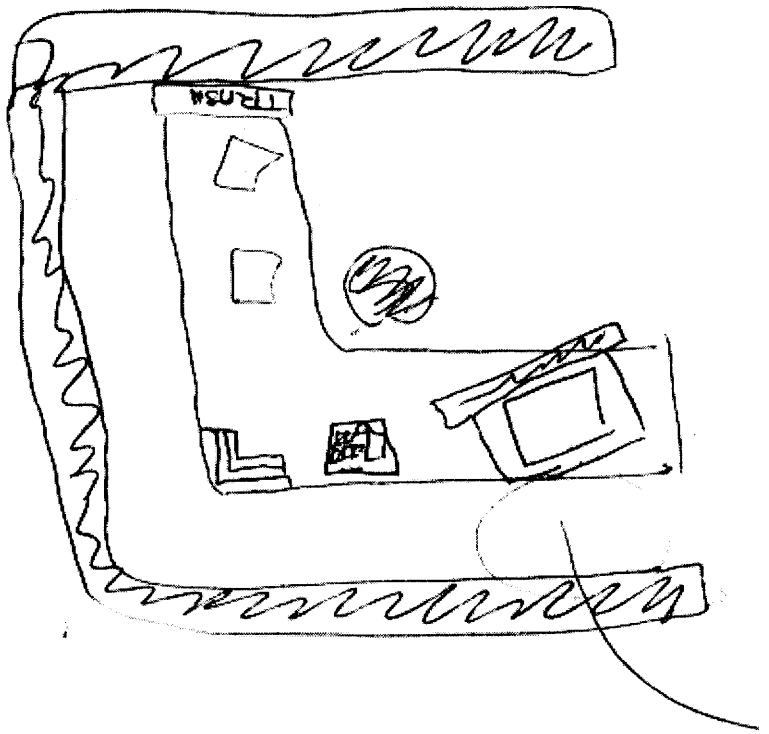


Fig. 7.5 Ideal workstation drawing by Dionne Davis, senior medical assistant.[1]

[1]Dionne Davis, personal drawing, July 9, 1996.

My Interpretation of this
If the physical space changed for the phone-room medical assistants would they possibly be able to support the clinical staff more? The employees I spoke with had varying levels of education. Recently two staff members resigned from positions. One left the company, one changed departments. In August, Margaret is leaving. She was promoted to a more challenging position within Internal Medicine. Next week, Sheldon is resigning. Is the position so mundane that the Internal Medicine department cannot hold onto their staff? If I were there, I would be looking for another job. How could anyone with the desire to be remotely challenged be happy in this dehumanized and impersonal environment? One comment I thought was accurate: *"I feel like I am not really helping, I'm getting in the way. I cannot answer questions for the patients, all I can do is schedule. I would really like to feel like I am contributing to the group. If on the other hand I was an up MA, I would feel a lot better. I would at least be able to participate in helping the doctors."*

I think the medical assistants are glorified secretaries, and they do not like their situation. They want a bit more. Not the world.

Reflection
Why are the medical assistants so isolated from the rest of the organization, socially and physically?

Space
Architectural Space: The phone-room MA's do not see the sun all day in their windowless space. And the size of their work area varies from a forty-two inch linear workstation to a sixty inch linear workstation. Glare is an issue because of the lighting There is no privacy in this space. It is basically an open plan area that is used for circulation.

DATE: WEDNESDAY JULY 10, 1996
SETTING: INTERVIEW AND OBSERVATION OF PHONE ROOM MEDICAL ASSISTANTS

What is Happening?
Inga demonstrated the reason why she would like to have direct access to the waiting room from her workstation. Today, she needed to get a wheelchair for a sick patient. When Inga sees a sick patient, she gets a bit nervous and moves rather quickly to get to the waiting room. Inga's problem with the current spatial arrangement is that the path is not direct. Her desire for a door leading directly to the waiting area that is adjacent to her desk would address the present circulation problem.

During the morning I photographed various interior spaces in Internal Medicine and the exterior of the building. The spaces I photographed depicted a range of spaces that exist within Internal Medicine 4.

Technology: The Genicom is a large and loud printer that is used for hard charts (the actual chart is called the hard chart) and schedules. Rebecca showed me when and why the up-medical assistants use the Genicom printer. For example, an emergency happens, the member calls the health center, speaks with a registered nurse and is scheduled for an appointment that day. This is a case when the medical record will be needed on very short notice. So the up-medical assistant will print specs or a hard chart for the doctor which is a printed paper chart of the patient's history. An alternate procedure would be for the runner to go downstairs for the hard chart and bring it back to Internal Medicine. Rebecca told me that medical records delivers the the hard charts for the following days schedule.

I was briefly exposed to the task of the up-medical assistant. I was showed the autoclave, which is used for cleaning the instruments. And, I had a brief description of the supplies which are needed in the exam rooms and how the spaces are prepared for patients.

Donna gave me a simple task and showed me how to use one command in the Automated Medical Record System. I was asked to retrieve information and print it for billing purposes. The information I needed to retrieve included: the patients member number, name, date of appointment and the name of the clinician who saw the patient. Apparently, some clinicians complete their record of the consult or exam, record the data on the computer; but, do not complete their paper forms that are required for billing purposes. The records I retrieved for Donna contained the necessary information.

This was posted in the staff lunch/break room. One person said, *"The doctors should read this."*

Mission Statement: We seek to improve the health of our members and offer unsurpassed value for our customers by providing high-quality health care and excellent service through an organized system of health care delivery and financing.

Work environment: We create a diverse and supportive environment where people treat each other with respect, accept individual responsibility and are rewarded based on merit. We encourage creativity and risk-taking, and we learn both from success and failure.
We pursue excellence through continuous improvement, but not perfection.
We are proactive and action-orientated, making decisions with speed and efficiency.

Community: We contribute to the health of our community, and advo-

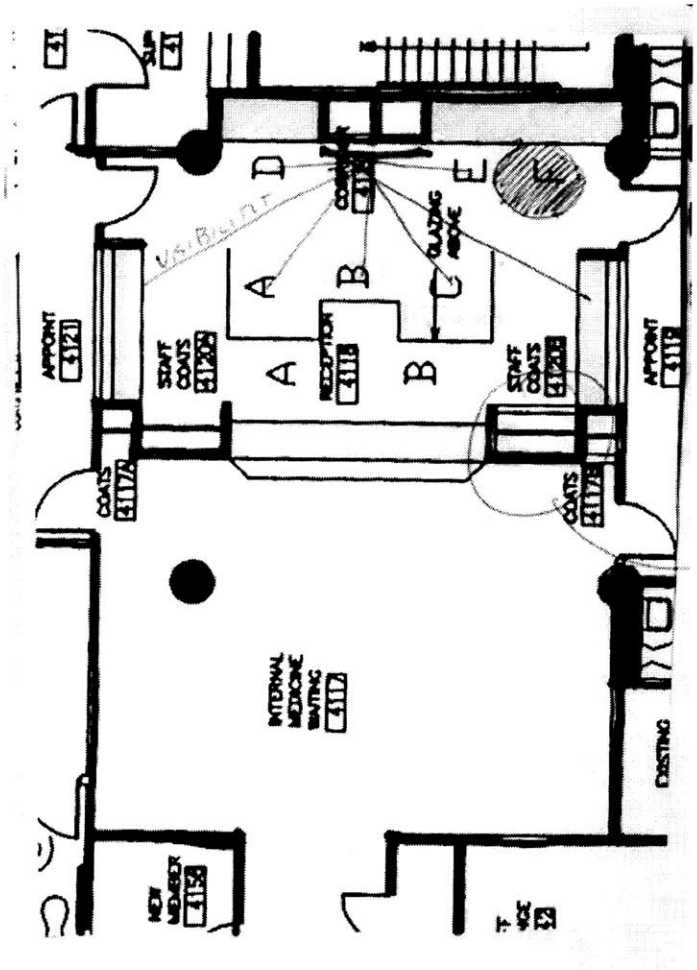


Fig. 7.6 Drawing of waiting room, reception desk and phone room based on observation. Focus of drawing is schedule board and visibility for phone room medical assistants.

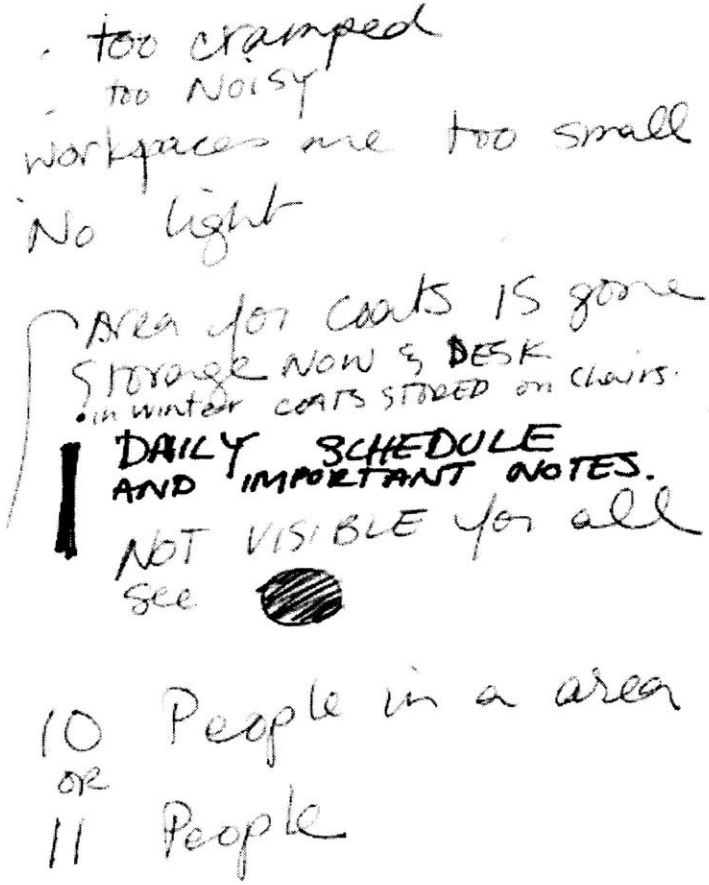


Fig. 7.7 Comments about phone room from medical assistants during informal interviews.

cate for public policy that assures adequate healthcare for all.
We serve everyone in our community, including the frail, the elderly, and the poor, while remaining fiscally responsible.
We actively support teaching, research and community service, as specified in our community Services Plan.

Our Customers: We exceed our customers' expectations, and earn their satisfaction and loyalty.
We stretch beyond the bounds of rules and policies to serve our customers.
We deal with our customers openly and honestly, recognizing that they have differing and sometimes conflicting needs.
We keep costs down, using our customers; premium dollars to maximize health.
We continually innovate to improve the health of our members and delight our customers.

My Interpretation of this

What this small computer task led me to consider was the how one might be able to utilize the data stored within the computer for both the clinical and financial needs of the HMO. But, what about confidentiality? Is the transfer of information via a paper system an old pattern that won't die or is it in fact efficient?

Reflection

Inga: I do not know why Inga's idea of access to the waiting room was not incorporated into the latest design scheme.
Question about the mission statement:. I think that a majority of the statements are good; but, I do not know why they use the word teamwork if in fact there are two parties. The educated doctors & clinicians, and the rest. What might be proposed to foster communication within the organization?

DATE: THURSDAY JULY 11, 1996
SETTING: INTERVIEW WITH MARIA WOLCOTT, RN,
The Coumadin Program

What is Happening?
Maria gives a blood test called the protime (the amount of time it takes the blood to clot) on patients who take the drug coumadin. Coumadin is a drug which makes the blood take longer to clot than a healthy person. People who take this drug have either developed a blood clot or at risk to develop a blood clot. Some take this drug for a short period and others take it for a life-time. The people who take this drug for a life time have had problems with their heart. These patients have a mechanical valve in their heart. The drug needs to be monitored to reduce the risk of the treatment. On this floor there are approximately 120 patients that Maria monitors. The patients are tested in three ways: in the lab, in the office or at home. Maria follows patients on the fourth floor.

Every day Maria runs off all the logs for the patients who are due for testing on a that specific day. One number she looks at is the International Normalized Ration. The International Normalized Ratio (INR) is a formula developed to measure the clotting potential of a patient's blood. She showed me the basic guidelines that have been developed to follow when prescribing the drug. So, on the paper logs Maria will collect data from the lab system, make phone calls from coumadin patients and input the final data into the computer files.

Observation: Later in the day, I was able to sit in on a patient visit. I watched Maria administrator the coumatrac. This was a fast and simple procedure where she had to obtain a drop of blood from the patient. It took about one minute.

Translation. Maria uses the translators who are available. Inga speaks Spanish and Yolanda speaks Russian. There is a translation service available to assist in these times of need.

Technology: two software packages are available now. Coumadin Tracking System is used because it is familiar to Maria. She used the package at Mass General where she monitored patients on Cumidom. The second package is called Coumacare for windows and was created by Dupont. Dupont has offered to transfer the files onto their system because THE HMO continues to prescribe and purchase coumadin from them. During the afternoon, Maria spent a lot of time on the phone talking to patients about their health as it relates to the use of the drug, coumadin. Her phone calls focused on these issues. Notifying the patient of how effective the drug was preforming, Asking if the patient is taking the drug in the correct doses, Increasing or decreasing the doses, complications, among other things. Maria will also talk with the patient about whatever the patient wants. The phone is important for her job.

What is VAXLAB? VAXLAB is the computer system that is networked and used by the clinicians. This system is different from the Automated Medical Record System. Basically, the information contained in this database pertains to a patients test results for a period of thirty days. All staff members have access to the VAXLAB. There is no confidentiality built into the system.

Organization: *"Ideally I would like to have a secretary because I am doing more administrative tasks versus nursing."* So I asked Maria if it would be possible to have a medical assistant dedicated to helping out? Maria told me about a past experience that was not a perfect marriage and stated she might benefit from a new position which was dedicated to supporting the coumadin patients. Also, Maria stated that this niche is going to grow within the HMO and she is going to become a part-time RN due to outside pursuits (She will be studying Psychology at BC for a Masters Degree). So as a result, a administrative assistant would not incur the same costs as another registered

nurse. Within the department, a suggestion was made for a second registered nurse.

Medical Algorhythm: *"I am very conservative with this. Kaiser is very different. But Kaiser is not conservative, they change people quickly. I like people to declare themselves. I do not like to react to one result and they change everybody. All the time big big changes. And I would like to see some literature on it because I do not really think it is safe to do that. But they sort of want me to do that here because they think it will cut down on testing and put people in range sooner. And I am definitely not convinced that that is true. There is a pharmacist on the sixth floor, June Windlander, experience in coumadin and anti-coagulation so she and I got together. she was much more comfortable with Kaiser protocol, I was very uncomfortable with it and our job was to write up a protocol for the HMO. We did get it done, it was very difficult to do because she had one way of thinking and I had another and so we sort of had to come to the middle of the road with it. And we have an algorhythm that all of the doctors have seen. That all of the doctors have agreed that we will follow. The doctors know what we are doing. I mean I don't know if they really know in terms of really looking at it, oh I know they are going to increase him by 10% or what. They have all been shown the algorhythm. So it is pretty much a nurse run unit; but, it is with a written protocol. It has been established and approved by all of the doctors here. The doctor prescribes coumadin. There is a form he fills out and he gives the form to Maria. The other thing I do is when I enter all these doses & blood tests is I print out a copy of every body that was done that day and I send it to their doctors to make sure they see it. So they have it, I mean they may know something I do not know. It could be anything. Sometimes I will send it back and say I do not agree with that or give the patient less; but, I give the copy to them just to let them know. We are really trying to follow the algorhythm. Because we are trying to get some statistics. If it is good this is the best way to go and the only way we are going to do that is if we follow a protocol. It is standardized. Let me show you the algorhythm. I am interested to know it will work. The computer helps to perform the job. In the future we are hoping to put the algorhythm into the computer. Three groups: Target range INR of 2 - 3(most common goal); Target range INR of 2.5 - 3.5 (Mechanical heart valves); target range INR x - x,(ortho people). Monitoring is based on this algorhythm."*

"I feel like I am extended beyond the typical role. I am OK with that but that is because I know what I am doing with comaudin. In my past job we had a high rate of keeping patients in range using that algorhythm so I know it works. But this is a different time, age, and different place. And I know everybody is so cost conscious. We are trying to cut down on costs. so I know we need to change it a little bit and the drug itself is not expensive."

Organization: A few comments were discussed about the medical assistants. Some people are very hard on the Medical Assistants. *"They are called stupid. The clinical staff complains about them a lot. The Medical Assistants are not introduced to the doctors. There is a big communication gap here."* Maria stated that she hand delivers her orders for home draws because she want s to ensure that her request makes it to the lab. This walk occurs because of a mistake by a medical assistant runner on one occasion. The trust was broken.

Maria does not do triage. Why? Triage is when patients call in with a particular problem telling the nurse what the problem is, the nurse tries to elicit more information from the patient to figure out if they need to be seen and if they need to be seen today. Is there anything that a nurse can advise them to do over the phone. Triage is a tricky business. The patient may not be telling the RN the important symptoms.

My Interpretation of this
The care experience exists in this position because Maria really has a relationship with her patients.
The coumadin program is the only program which is taking advantage of technology. By tracking patients using a database on the computer, Maria will be able to effectively utilize the data for future benchmarking.

Reflection
The HMO lab and the coumatrac instrument are at odds for getting blood test results. Why? These are two possible techniques to test the clotting potential of blood for patients in the Coumadin Program. At the lab, blood is drawn from the arm. Then, the technicians obtain the test results and enter the data into the VAXLAB Computer System. Once on the VAXLAB, the information is networked and accessible to Maria or any other clinician. The local technique is to use the "coumatrac" to obtain the appropriate information. The coumatrac is a portable instrument that measures levels of coumadin in in the blood with one big drop of blood from one's finger. It is fast, easy and inexpensive. The benefit of using the "coumatrac" is that this technique fosters trust between patient and clinician. The patient would be receiving personal service from a specific clinician. Why would other departments step on toes for improving the care experience?

Space
The exam room's are intimate. During today's visit five people occupied the space. Maria, the nurse, myself, the patient and her child. If one person moved to do something, everyone else was affected. There was no extra space. For a smaller encounter, a doctor and a patient, this size space would be adequate.

DATE: FRIDAY JULY 12, 1996
SETTING: OBSERVATION AND INFORMAL INTERVIEW WITH REBECCA BAILEY
Medical Assistant West

What is Happening?
Rebecca is a up medical assistant. Some of her numerous tasks include: preparing and cleaning the exam rooms for the doctors, preparing paperwork for the doctors, greeting patients and escorting them to the exam rooms at the appropriate time, assisting in physicals, collecting urine for doctors, having slides ready for patients, taking throat cultures, blood pressure, and temperature. Also, the Up-MA answers phone calls from the hospitals and outside doctors that want to speak to the Internal Medicine doctors.

Throughout the morning Rebecca was up and down moving the patients in and out of the department. Her position entails that she work closely with the doctors and at their beckon call. In the morning she was working with Dr. Whalen and in the afternoon she worked with Dr. Caulley. Also, Rebecca escorted one patient into an exam room for Randye, one of the registered nurses.

I learned that doctors like to work with specific medical assistants. A relationship is developed and change is not preferred by the doctors. Rebecca said, *"The doctors get used to the working style of a MA and do not want to rotate."* Therefore, their are a limited number of medical assistants who are able to work with the doctors.

Technology: Rebecca and Dalia receive lab results from the VAXLAB at their shared workstation. This printer is a dot matrix dinosaur that works perfectly fine. They also have a computer link to the receptionist's desk. The PAS is a printer which prints labels. All sample must have a label affixed to them before the patient receives them. The PAS is networked to the front desk and labels are printed

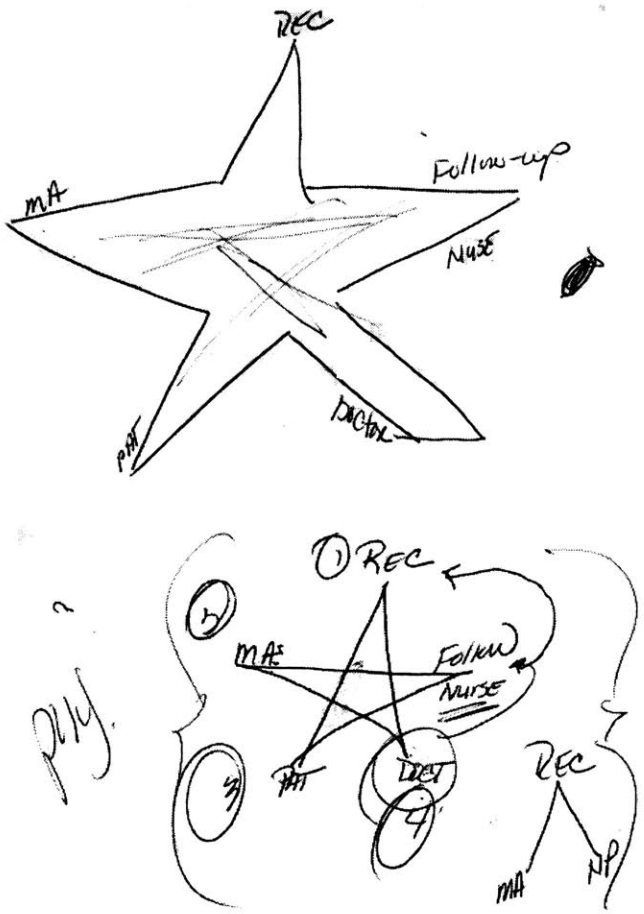


Fig. 7.8 Rebecca Bailey, up-medical assistant. Her drawings of the existing face to face communication patterns.[1]

[1]Rebecca Bailey, personal drawing, July 12, 1996.

when patients check-in for an appointment. So once Inga or Katie finish using the AAS with a patient, the labels are sent to the printer. This computer system is one way that the medical assistants and receptionists stay in contact. It is not a physical communication, it is a virtual link. Each patient received about 15 labels for each visit.

Organization: The up-medical assistants have to be tough. Why? Well, as I observed, I think the doctors are quite critical of their work. Rebecca said she does not have any communication problems with the doctors. However, one medical assistant expressed a bit of frustration. For example, she said she was called a dingbat. Looking back on her past, she said, "Probably the doctor was right; but, now I think about it and I think how could he have said that?" On a few occasions one MA said that she almost cried because of one doctors comments. "I do not understand why a doctor would want to hurt a team member."

One doctor who is friendly, cordial, and courteous is Dr. Caulley. Today, he taught Rebecca how to perform an ear irrigation. When Rebecca was finished she was psyched. She said that this is what she liked most about the job. Learning to help others.

My Interpretation of this

For a young individual who is interested in healthcare yet not qualified to be a clinician, this position is quite desirable. It is a great steeping stone. If, a MA couples this job with night school then the rewards of the training could only help launch a career in the medical field. On the other hand, the position changes constantly, one minute you are with a patient, and the next you are filling out paperwork for the doctor. I think one must be organized for this job. Rebecca is.

The idea of pigeon holing staff increases efficiency for the office. However, this also creates monotony and dissatisfaction with one's job. My perception of this situation is that those medical assistants are

resentful of one's who move on and begin to lose confidence in themselves.

Reflection

If the relationship between the doctors and medical assistants changes, how could the up-medical assistants be affected within the organization? Will the up-medical assistants be hired based on professional experience, educational merits, and honest interest in the care giving nature of the job? In relation to the follow-up or phone-room medical assistants, Rebecca was different. Why aren't all medical assistant trained like Rebecca. Or are the medical assistants who answer phones really secretaries who are misled that they are going to participate in the care giving that they wish to pursue?

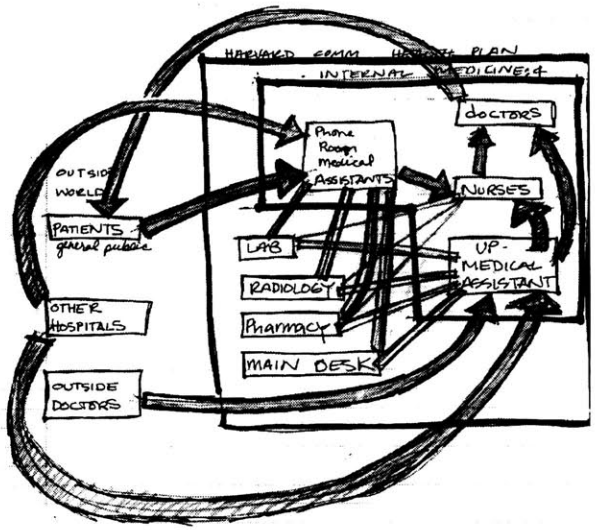


Fig. 7.9 Drawing of telephone communication patterns based on observation and informal interviews.

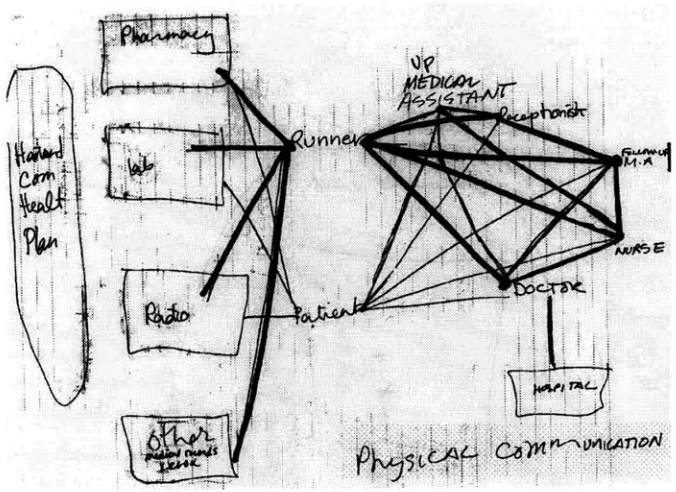


Fig. 7.10 Drawing of face to face communication patterns based on observation and informal interviews.

DATE: MONDAY JULY 15, 1996
SETTING: OBSERVATION AND INTERVIEW WITH MICHAEL CARLIN
Follow-up medical assistant

What is Happening?
Michael and I discussed the relationship between the medical assistant in the follow-up position with the medical assistants and the other members of the office. Michael drew a diagram of the way he currently works as a follow-up medical assistant. To begin, the people Michael communicates with most include the doctors, nurses, patients, and the other follow-up medical assistant. There are two follow-up medical assistants. Together they work as a team and help each other throughout the day. They help patients who are waiting for a referral or appointment that the doctor or nurse has requested. As I observed Michael, he described how the face-to-face communication worked for him. Michael said that a lot of time is spent pleasing the doctors. So I asked him how the communication might be improved with the clinical staff? Michael said, *"First a team has to be created and second cooperation among the team members must exist. At this time each of these elements are missing."*

Another medical assistant spoke about two current issues which exist in the phone room. A-TEST appointments and scheduling. The A-Test appointments are scheduled by the nurses only, not medical assistants, and are suppose to be scheduled for the current work day. However, this is not what is actually happening. If a patient calls and says she has pain in her "arm" and the pain has been chronic for two weeks. In some cases the nurse will fill an A-TEST appointment for this individual two days in advance. This means that the appointment is not available for same day visits which might be needed by the doctor.

Scheduling appointments is another problem. Today is July 15 and

the phone room medical assistants cannot schedule appointments for September. One comment was, *"This is ridiculous."* The problem is that patients want to be scheduled for September or have been requested to be scheduled for a two month checkup. So what has been happening is that the patients will stop by the follow-up desk and say that so and so said to schedule an appointment for mid-September. The unfortunate response by the medical assistants is that they cannot do it. Where is the link broken? In this case, it appears that the link is broken at the top. The doctors are suppose to submit their work schedules to a specific person in the office. Apparently, the office needs to have all the doctors schedules before the automated records system can be updated. I do not know if this is true, but that is what I heard. Who suffers? First, the patients and second the medical assistants who schedule appointments.

My Interpretation of this

The follow-up MA positions work closely with the nurses and doctors but the communication patterns that exist are not fulfilling.

The A-TEST scheduling system that is currently used by the staff might be a responsible way to schedule patients in need; however, if this system has been changed, then the medical assistants should have been notified so that they work be effectively instead of being critical of their fellow employees.

The appointment scheduling. It seems that if the company wants to be efficient they should analyze where time is being wasted. In this case, the medical assistants end up doing a task two times. Once to say that the schedule is not ready, and second to actually accomplish the task. How frustrating this must be for the patients who walk out of the clinic and think why couldn't I have scheduled that appointment today? Now I will have to call the clinic next week. Another thing on my to do list. Why does the HMO plan their schedules so inefficiently. How inconvenient.

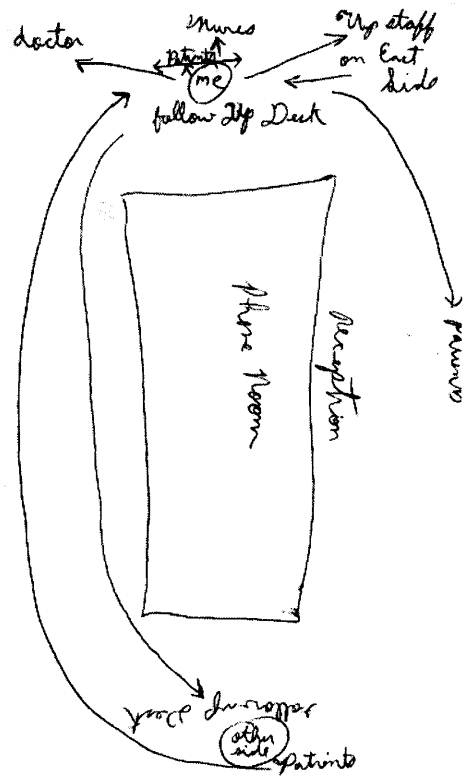


Fig. 7.11 Drawing by Michael Carlin, follow-up medical assistant.showing patient face to face communication patterns.[1]

[1]Michael Carlin, personal drawing, July 15, 1996.

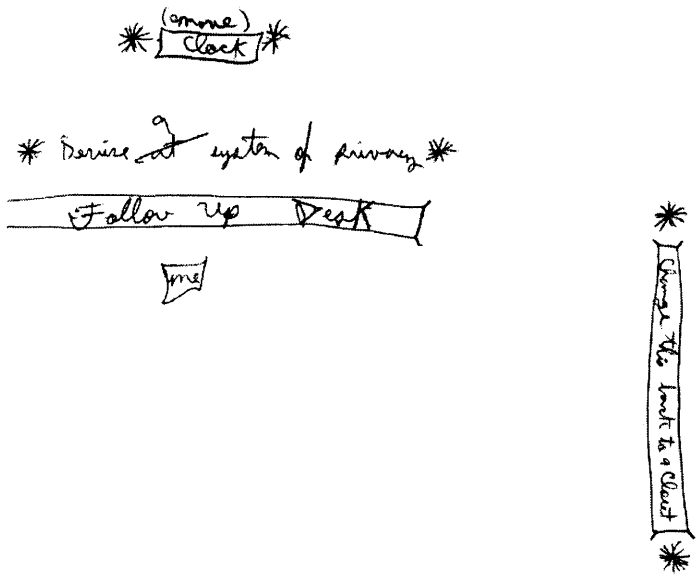


Fig. 7.12 Workspace drawing by Michael Carlin, follow-up medical assistant.[1]

Reflection

Are some of the doctors aware of the inefficiency that they are creating by not submitting their schedule or by neglecting to correctly fill out referral forms? The hold ups result in cases of the domino effect for staff and patients. Can there be any logical reason for this type of action. Who is accountable?

[1]Michael Carlin, personal drawing, July 15, 1996.

DATE: TUESDAY JULY 16, 1996
SETTING: OBSERVATION AND INTERVIEW WITH PHONE ROOM MEDICAL ASSISTANTS

What is Happening?
During the morning, I observed and spoke with Moira about her role as a follow-up medical assistant. She said that basically she preforms the same job as Michael. What I noticed about Moira is that she is much more personable than some other medical assistants. And she is willing to incur risk to maintain a high level of efficiency. For example, I asked her what would happen if a doctor told a patient to get a mammogram and did not fill out the proper form. Her response was, *"One has to do what one has to do."* It was that simple. So when Michael said he felt uncomfortable filling out forms which were prepared for clinicians to complete, Moira had no problem at all.

I saw one of the nurses enter the phone room for an emergency phone call. Why would this happen? If a patient begins to describe chest pain or irregular heart beats to a medical assistant, then the medical assistant must turn the phone over to a clinician because medical assistants are not qualified to handle these emergencies. As I discussed, the emergency phone (which ringer is louder) is answered by the medical assistant like this, *"Emergency line. Is this a life threatening emergency?"* I entered the room and I saw the nurse take the call. She talked to the patient for a minute and said that she would have to transfer the patient to another phone because she, the nurse, could not access the patients record while the medical assistant was logged in.

Confidentiality is a big, big issue. In physical conversations, no one has any business hearing what others are saying. One has to speak in a quieter tone so that the discussions are private while being in an open environment. Confidentiality and the computer. At this time, the computer will record who looks at records. a prompt will state, "Your being documented for entering this file." The mental health records are confidential and a prompt will appear: this is restricted. No information can be retrieved unless one has authorization. Authorization can be granted if one is a clinical staff member.

One computer system that all staff members can access is the VAXLAB. A medical assistant, nurse, or doctor can go in and get any records that might be needed for a day's work. This might be an issue to consider when investigating new technology. Confidentiality is not maintained using this system. For example, if a employee appeared to be pregnant, I would be able to check her lab test file. When looking if I found a positive pregnancy test, Pow. I got the information I wanted. No confidentiality. These files are active for 30 days.

Moira described the basic responsibilities of the medical assistant. The MA has five jobs: (1) receptionist, (2) follow-up appointments, (3) telephones, (4) up-medical assistant, (5) runner.

Today I was introduced to Dr. Diaz. He commented on one of the goals of the study: *"To do a better job at taking care of patients."* History of Dr. Diaz. One of the founders of the HMO. Clinical experience: With HMO since 1969; 14 years as Chief of the Inpatient Internal Medicine Service. Medical School: Harvard Medical School. Faculty Appointment: Harvard Medical School. Special Clinical Interests: Care of older patients.

My Interpretation of this
When I saw the nurse transfer an emergency patient phone call from the phone room her office, I was disturbed. I will never know why she had to physically move, but her action spoke loudly to me. I read it as a status or power issue. Because I am a nurse, I must work outside of this area. What if the patient was disconnected? I learned that the computer was an issue but still why couldn't the nurse have

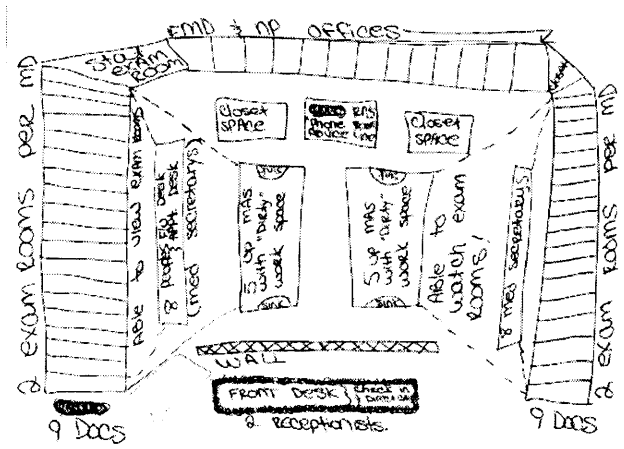


Fig. 7.13 Ideal workplace drawing by Carol Markkula, phone-room medical assistant.[1]

logged out and logged in to keep the patient on the same line?

The job of the medical assistant needs to be clarified by both the administrative and clinical areas of the office. I am not sure if a medical assistant should fill out forms that were not legally designed for their desk.

Reflection

Why are the nurses adverse from working along the side of the medical assistants?

[1]Carol Markkula, personal drawing, July 15, 1996.

DATE: WEDNESDAY JULY 17, 1996
SETTING: OBSERVATION AND INTERVIEW WITH MARGARET BECKER
Phone room medical assistant
SETTING: FORMAL INTERVIEW WITH JAN SUDMAN
Senior medical assistant

What is Happening?
This morning I was observing one of the medical assistants who works in the phone room. I was wearing a training earphone or headset which enabled me to hear conversations between Margaret, the medical assistant and the patients. One of the goals of the MA is to try to find out what is wrong with the patient's health. For example, for one call, Margaret asked, *"What are the symptoms that you are experiencing?"* The patient said, *"I am coughing, sneezing and I have a sore throat."* Margaret was able to schedule an appointment with urgent care so that this patient might be able to come in that day for a visit. In this case, the patient was noted on the computer as having a routine cold. Some telephone calls are from other doctors who want to speak with one of the primary care physicians. In these cases, typically the MA will forward the call to the doctor's voice mail. A call may be from a patient who needs advice about x. Sometimes the medical assistant can answer the question and sometimes the MA will forward the question to one of the triage nurses. The triage nurses might be able to answer the question; if not, the question would be forwarded to the doctor. One of Margaret's personal feelings about the job is that there is never one solution to the patients problems. *"All cases are unique."* There are a variety of reasons for a patient to call internal medicine. To summarize, the basic reasons for calling include: (1)appointments, (2)illness, (3) lab tests, (4) prescription, (5) call back, (6) cancellation (7) new patients, (8) talk to clinician.

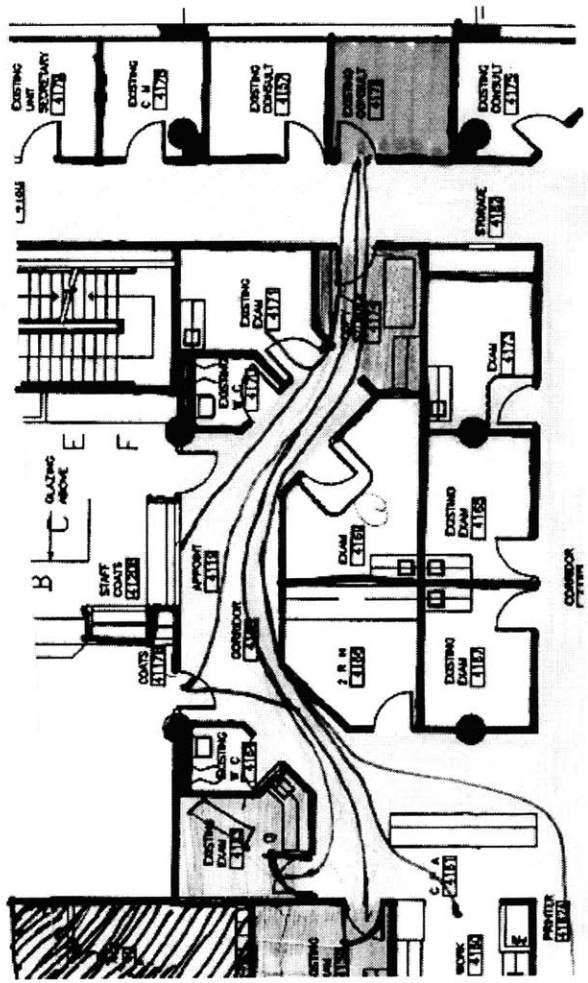


Fig. 7.14 Drawing of Mary Swain's office, exam rooms and typical flows based on observation.

Margaret and I talked about the physical communication that tran-

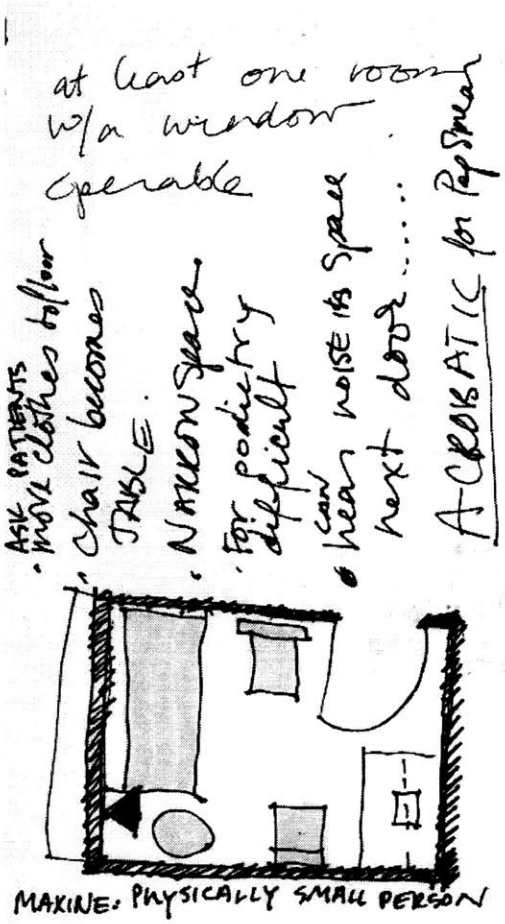


Fig. 7.15 Comments made by Mary about one of the exam rooms that she regularly uses.

spires between the medical assistants who works the phone and the other members of the office. Margaret said, *"I think that our quality of care is really great, it is the administrative ..... that clogs the business. Even if we could take one hour where we did not have to answer the phones, and could concentrate on the paperwork and then went back to the phones. Just to break the day up a little bit, because when you are on the phone and the phone rings, it is very hard to switch gears and drop all the papers you have in your hand. I can do it, because I am good a juggling different things in my brain, that is the way my brain works, I am always thinking before I do something, so I will have one patient on the phone, I am observing what they are saying but I am finishing up the other thing I was doing. And most people, I notice, I have been watching this ever since you have been here, just to see how other people work, they will put people on hold to complete what they were doing. I will continue to do my three things at once. I do not know what type of workstyle is better because I could be forgetting to do something. The runner is a good break, I am glad to get out of here."*

Rotating with the east and west side. The only problem is for coverage for vacation and sick time and stuff like that. It would be good if we could all rotate around. I would definitely like to be an up-medical assistant. That is what I did when I first came here. I learned to do that first because I was only temporary employee. *"It was great. As an MA, I was able to get to know the doctors, the patients, and get to participate in pelvic exams. A little variety never hurt anyone."* Another problem with the phone job, *"It is difficult to sit all day."*

I had a brief conversation with one of the follow-up medical assistants. Andre was discussing the fact that she has worked as a medical assistant for seven years. Now, she is beginning to get bored at work. *"The job does not change and I am ready to move on."* Her comment, *"The job is probably good for two years unless one is totally into it."* After being on the phones for so long Andre wants a

job that deals with more people.

Also, I met Mary Swain who is a physicians assistant in the unit. She works for Dr. Lindsey who is a cardiologist and internist. And the patients who Mary works on are extremely complicated. Many on her panel have had transplants. Some have had heart and lung transplants. The patients are geriatric, they have had birth defects, been on medication all their lives. The success of these patients brought a smile to Mary's face. During our conversation she introduced me to a potential project for the summer which is outside of the Internal Medicine unit. In her spare time, Mary donates time to a homeless shelter. She is a volunteer for the alliance of the homeless. A current project that is being developed is the design and build of a medical and dental clinic. The project is government funded, political and complex. She has basically asked if I would be interested in donating time to the design of the project.

In the afternoon I had a tour of the sixth floor from Jan Sudman one of the senior MA's. During the tour Jan showed me a few of the more significant differences between the spaces. First we looked at the reception area. The space is asymmetrical versus symmetrical and it is lit a bit differently. Next the follow-up desk and phone room are separated. Jan commented that he thought the spaces worked better here. We toured the perimeter offices and looked into some of the shared spaces. They are tight, small and in many perimeter offices there is a free-standing column within the space. These perimeter office conditions are similar to the fourth floor plan .

Resident scheduling: Jan does the resident scheduling for Dr. Falkin who is in charge of the residency program. The resident year is from July 1 to June 30. *"I have to schedule the residents for the next year." "So I know where they will be for the next year. When they will be here all month and when they will be a the Brigham and Womens Hospital all month. It is really frustrating because we do not have the cooperation with other specialties, that is where the responsibility lies. The specialties are areas such as Neurology, Orthopedics, Internal Medicine, Cardiology, OB/GYN, Gastroenterology Endocrinology etc.".* Jan has to coordinate the residents with the other centers. Conflicts arise. To put five residents on Friday afternoon is impossible because our Internal Medicine Department does not have the space for them or the preceptors. When the program began 5 or 6 months was the scheduled time for the residents. Now the residents are here 8 or 9 months. This means more work for all of us. It must be frustrating for a doctor to have somebody tagging along. One doctor who works with aids patients has 4 residents sometimes when he visits with a patient.

Scheduling through specialties is difficult for Jan to do. He has to go through various contacts and some cooperate and others make life difficult. Jan commented on the problems, *"They ignore phone calls, they don't really want to deal with residents because they know they will not get straight yes's from all the doctors. However, when Dr. Falkin contacts the specialties, the responses are different. For example, Dr. Falkin can call doctors directly. Skip the supervisor, the normal path."* Jan researches the schedules of the physicians and then he presents the options to Dr. Falkin to get the scheduling done. *"The doctors are much too busy to deal with me, when I call. Some specialties are a problem and others are so easy, they give me a yes right away."*

Randye and Gordon load the physicians' schedules into the computer. Dr. Falkin is compensated for the resident work. The other staff members are not compensated for the resident work. This is a unionized office. *"The scheduling has taken me away from the responsibilities of the department which is not fair. I feel bad because the medical assistants need help with difficult patients, especially when Donna is not here."*

"It was June 20 and I was not even close to having the schedules finished." "There wasn't enough time." One possible solution to the frustration that Jan discussed: *"We are working on a program with the Brigham. Make our responsibilities, the IM end of it, get the residents schedules, fill-in when we want them to work Internal Medicine Schedules, then get the schedule back, and a central person will fill in the specialties for all the residents. This is suppose to be done by September or October. I doubt it will be ready."*
Attitude shift when doing the work for the residents because staff is not paid. Union contract brief discussion. we haven't had a union contract in 10 months. *"There is no power. There is no clout."*

Scheduling patients for September is not possible. Where is the block? What is the barrier? Randye and Gordon design the schedules specifically for the internal medicine department. Each department issues their schedules independently. The scheduling was difficult because there was a change on June 1. At that time, Extended hours were implemented. This completely changes the physicians schedule. It stretches them out. It gives them more time off. Nobody came up with strict rules. Also, on the fourth floor there are two teams instead of three. So the coverage has been reduced. Summer vacation for doctors is suppose to be limited to three weeks in the summer because the coverages are so low. *"These are the strict rules that always get overridden by the doctors."* Then when a doctor says to Randye that he/she wants a day off, Randye will say, *"There are two people on your team that are off so you cannot have that day off. Then...the doctors will complain over their heads to Anne and then they will just give the day off to the doctor."* As a result, no one might be working on a team.. Randye and Gordon must go through all this info before releasing the schedules.

Doctors get a form to use to input their vacations and then they will have to get a name to sign off on it. The person who signs off is suppose to be someone who is working.

Scheduling for patients for September is not possible. *"The doctors really do not understand the paperwork and the difficulty involved in doing it. I have a problem with the residents. They will want to see a patient in two weeks, they will call me up and say, Can you please add me three sessions, It is not quite that easy."*

Just introduced for the physicians is the idea of time sheets. This is a new project which had not been done in years. Martin Kidder helped to design the program. The goal is to keep track of all the vacation time, education time, sabbatical time etc...

My Interpretation of this.
What has happened to the position of medical assistant? Yesterday, I was told that the position was actually quite varied as it had five different roles. However, to increase efficiency I perceive the position as being singular. An employee becomes an up-MA, a phone MA, a follow-up MA or a runner. At this time the runner is the only position that actually rotates. So, the diversity that an medical assistant might anticipate upon being hired actually becomes quite mundane and boring. I think if one analyzed the turnover rate in the medical assistant I predict that the number would be highest here.

How should the resident be incorporated into the office culture? Should the support staff or other members be compensated for their efforts at accommodating the residents?

Reflection
Why have rules if no one is going to follow them?

What if the doctors did not align themselves with a single up-medical assistant? What if the rotation of the medical assistant was a more complete rotation? What if the doctors were not allowed to limit the

medical assistants who work the up position? Would this resolve the issue of monotony? Would that improve the communication of the team?

DATE: THURSDAY JULY 18, 1996
SETTING: MORNING OBSERVATION WITH DALIA STRAUSS,
Up-medical assistant
SETTING: AFTERNOON FORMAL INTERVIEW WITH JAN SUDMAN
Senior medical assistant

What is Happening?
This morning a woman was brought into the unit on a stretcher. One of the positive aspects of the reception area is that it can accommodate stretchers easily. This patient visit was relevant due to the fact that I witnessed a breakdown in communication. It is the story of too many cooks in the kitchen who ruin the soup. I think there were about six people working on this patient and she had been in the exam room for a while. The communication breakdown resulted in no physical damage. The damage was emotional and financial. Somewhere along the line someone heard the doctor order an ambulance. The doctor said, "who ordered the ambulance? I did not want the patient to go." Somewhere there was a loss of communication among the six people involved in taking care of this three hundred pound patient.

Later in the morning, I escorted Dalia, one of the up-medical assistants into exam rooms with patients. She explained her role. When she enters the exam rooms, she introduces herself, asks a few basic questions about the visit, and shows the patient how to dress for the visit. For physicals, Dalia will weigh and take the blood pressure of the patient. She leaves, puts the chart on the door and returns to her desk to get the next patient ready. Dalia took my blood pressure. She told me my BP was 92 over 65(it was something like this). Then I went to another MA on the east side, Marshall. Marshalle took my BP and it read 120 over 80. Why would two MA's get a different reading? I know what my standard BP is due to the fact that I donate

blood. In this case, I think Marshall was correct and Dalia was off. At lunch, I went outside to the picnic tables which are under the ramps for the parking garage. On a sunny day this is the place to have lunch in a cool place. Also, there were people seated at tables located in the sun. Adjacent were a lot of moving cars and pedestrians. It was during lunch, that Morgan made a few comments about the office being a "beehive" and we are in the center. *"It seems like everything is moving around us." "I read in a study that people heal better when they have access to natural light." I love coming outside during lunch."*

My Interpretation of this.
The communication gap. When it happened, I was thinking, of course they will try to blame the MA. She is the lowest person on the team. But, what actually happened was that the doc got upset at the RN; and second RN blamed the MA. After this event, the RN stayed clear of the doc. I wonder if the doctor really did say something? Why would anyone order an ambulance on their own? The MA's are servants to the doctors.

When one MA told me my blood pressure, I was shocked. It was so low. I said what can be wrong with me? The MA said maybe you are dehydrated. Well, I was walking around and another MA was teaching a MA how to take blood pressure so I joined in. My blood pressure was much higher. So, someone was not trained to take blood pressure accurately. This may explain why some doctors prefer to take patients blood pressure personally. Doctors do not trust the medical assistants.

Reflection
I think that the doctors have the privilege of blaming others for their errors in this clinic. How do others really feel for taking the blame of the man who leads the team? Is that a good standard to set for the team? Accountability. How can it be checked?

DATE: FRIDAY JULY 19, 1996
SETTING: FORMAL INTERVIEW WITH GORDON JACKSON
Program Coordinator

What is Happening?
At noon I had an interesting interview with Gordon Jackson. Our conversation was about his role at the MHO and I basically was trying to learn more about the scheduling problem which seems to be a source of organizational disruption. I recorded the conversation and I have documented the relevant comments that he made here from the tape. For me, recording a conversation allows me to participate in the conversation and ask questions as they arise. I am trying to understand my theory of use as Don Schon describes in the book, Theory in practice. Also, I really can get into the conversation. What I mean by this is that I am not noting ideas on paper while I am engaged in the conversation, I am trying to really listen and then respond with questions which either dig deeper into the comment or move the conversation to another aspect of the issue. If I think I may understand something, then I consciously ask for definitions. Who knows maybe I really do not know what a term means, so let me clarify it. The sequence of this conversation led from comments concerning existing conditions to comments or ideas relating to a new design space. The new design space that I was thinking about was the MTP. I tried to share with Gordon the basics of the project and dig for innovative ideas that he might have.

A: Who do you work with?
G: *"Christopher Sadler, Chief of Internal Medicine and Anne Bishop, Clinical manager of internal medicine."*

A: Comment on access for patient:
G: *"One of the goals of the scheduling project was to increase the*

patients accessibility to the doctors. To maximize the amount of appointments we could schedule. Why? Previously a lot of the doctors time had been taken away from the clinical work for other obligations.

A: Scheduling the doctors, NP's, PA's and RN's:
G: *Scheduling is my primary responsibility. I also distribute patient panels for a doctors on vacation. Doctors now have time sheets. Automated timesheet project. How time is deducted, how time is accrued, ... What is the process of scheduling? At the beginning of the month, forms are passed out. Each form has a due date. I personally give them out and say it is due in two weeks. Vacations, conferences, Educational leave, Sick time."*

Scheduling the patients:
When the physician schedules are not completed on time, problems arise. The workload of the medical assistants increases, a lot of work is duplicated and the phone volume rises. *"It is not entirely the doctors fault, but they are usually at the center. There are other people working behind them." Problem one: the doctors do not hand in their leave forms on time. This is historical. "You have to at one point give them, not an ultimatum, but there has got to be a consequence of sorts. Some doctors are repeat offenders at giving the forms in late. This is not good. Because the schedules still have to be issued and I have to know if that doctor will be working on say that Saturday. So I in fact have to do my work twice. This is frustrating. The 'on call program' is done for the doctors here. Putting together a schedule does not have to be so difficult. I think we could easily have four months advance scheduling within the department. The problem is that the doctors are not encouraged to think ahead. In terms of planning out vacations coverage In terms of giving the program coordinators the information necessary to open up the months. To know that if you are going to make a change to a schedule, it can only be the next month that is not open. If a doctor tried to make changes to the actual template, it would not work. Accountability for one's practice needs to be advocated by the preceptors who are training the residents. Some patients put up with doctors canceling appointments or giving a patient to a team member. The most difficult thing I have ever done is to get...we've tried many different ways, not only are they slow in learning or caring about it, because I think they have the cognitive ability to put this together, I think. I'm not so sure the doctors see the whole picture, I do not think they are encouraged to do this."*

A: Team Players: The concept of us and them.
G: *"We are really trying to get everyone to be team players. To recognize the support that they have and to work with it. To address the class system. The class system is alive and well here. Some of the older clinicians, they come from a way of thinking, it is very hard to change. But even the new doctors, there is a resident here that I like very much, the resident started here and is in his third year now. A nice person that would go out of his way to not only accommodate the patients, but to learn the best way to go about taking care of patients in terms of access, and treatment of the patient. Now it seems like through their training, they are becoming more like: 'What do I need to know that for, that is your job. You do it. I do not care how you do it. Just get it done.' That mentality. So I guess they are learning. And I am not sure it is the right thing. And so I had an issue with this doctor. It had absolutely nothing to do with me, someone was so beyond wanting to take responsibility and I really believe that they want responsibility. They are blind or something."*

A: Why does the class system exist?
G: *"There is a history of it. But the MA's and anyone who is in a support role here adds to the class system. I am not apprehensive about going to a physician, I would go to them respectively as would anyone else. I try to have manners. I try to be courteous to the MA and physician alike. I will go to them and say this, this cannot be*

done. What are you doing with this? I need some answers. The MA's could not do this. The culture here is, if you are an MA then you cower. The doctors are promoting it, directly promoting this kind of behavior. So it is very hard to change things. You know and then it really comes back full circle to my getting my leave forms on time. If these MA's would just communicate with the doctors. Tell the doctors how their work is effected. We are talking about working as equals and recognizing that there is one main goal here to satisfy our customers. To get the biggest bang for the buck as they can is what the members are looking for. Not because they are just assuming they are going to get it. I hope they diagnosis this correctly. They are just assuming that these are the best doctors. I'd like to think that they're the correct assumptions. But all the little problems. The customers cannot get access. their phone calls are not returned on time, their scripts are not at the lab, there is not enough time, or I cannot make an eight week follow-up, I got to call back and when I call back, ..Well let's say I make an appointment, I have to tell my boss about the appointment two weeks in advance, four days before the appointment the doctor rescheduled it. Now the doctor is going to move me to the next day. I love that term. Move the patient, not reschedule the patient, You are not moving, you are canceling. Get it right. Some people, the blue collar workers cannot change their schedule like this. Their job is at risk. And this is all about the class system." As Gordon said this, I interjected, "Accountability (an issue that I had seen in one of Turid's diagrams)."

Gordon's Idea of a solution to the status problems: *"The MA's have to be treated in such a way that they have to act as equals, if we have some primadonnas(the doctors) walking around here, it is because we(administration and medical assistants) allow that. And it is our (MA's and other support staff)fault. The MA's just cannot understand that. Gordon always says this to his supervisor. Gordon's manager would reply, "OK Gordon calm down. You are getting into an area that might not be the best for you." "Some doctors are super. Actually, some of the doctors that do not give me their leave forms are very nice."*

Systems.
G: *"The real thing that people care about I think is the systems involved in putting together such a unit which is access, computer systems, systems in terms of scheduling so that we are accurate and we reduce the rescheduling."*

High Turnover for the Medical Assistant
G: *"The doctors complain about this. God, I never know who my MA is going to be and that things are not getting done. Well if they treated them a little nicer."*

Hiring the medical assistant: *"The doctors are now interviewing."*

Spatial Issues
How does the separation of IM4 and IM6 work?
G: *"Geographically the department does not function as one group. We are one unit. Because we are separated, we are like the brown beaver that got separated by the stream. They cannot even mate after a while they are so different. They are so different. They say they will cover for each other. This will never occur.*

Medical Assistants: During the afternoon the office was quiet. When this occurs some of the medical assistants will talk, chit-chat and walk around to kill time. I am not sure what the doctors do when it is slow, but this type of behavior might be one of the reasons that the doctors criticize the medical assistants.

My Interpretation of this.
Gordon helped me to understand some of my perceptions about the us and them. Policies, rules and regulations are not working within the

unit. Some people follow the rules and others do not.

Reflection

How could the medical assistants be encouraged to change the environment without risking their jobs? Is it that the administrative supervisors (who must be aware of this problem) are not permitted or are afraid of their own job security to approach the doctors with these organizational issues? Are the administrative supervisors really trained to specialize in management issues so that the organization has the ability to challenge the existing hierarchical structure?

What does the concept of partnership have to do with the administrative fear? If the doctors have equity in the company, then in fact the other staff members really do have to listen to the doctors.

Is having the doctors answer the phones the correct strategy?

If the medical teams were designed to be financially competitive in a positive manner, what would result?

Space

Yesterday there was an incident where an ambulance was called. I was thinking about that today to imagine how the space might have been better designed to avoid confusion. Vision within the unit is limited. Sometimes a doc will say *"Where is the MA?"* According to Frank Duffy's model, the existing clinical space can be categorized as high differentiation and high subdivision. This type of layout is characteristic to corporate headquarters where hierarchies dominate and are expressed in the building form. What would happen if this spatial arrangement were changed to promote teamwork and break down the pyramidal organization? Two challenges will be to incorporate visibility and confidentiality into the new design.

DATE: MONDAY JULY 22, 1996
SETTING: INTERVIEW WITH PRISCILLA STEAD

Primary Care Pharmacist

What is Happening?

In September 1993, the primary care pharmacist job was created. Pharmacy was to be exploring the idea of decentralization, working with clinicians, directly linking into the departments and addressing members needs. One of the first goals was to tell the staff and members why the primary care pharmacist was in Internal Medicine. Reactions varied. Some were optimistic, some skeptical and others pessimistic. The two floors of internal medicine reacted differently to the position. The fourth floor welcomed the pharmacist and the sixth floor did not. Staff supervisors were questionable, like Donna Eckstein. How did the fourth floor react differently: the doctors used her to answer questions, to design patient specific forms, and to design patient education material. Priscilla relocated to the fourth floor. Priscilla asked the question to the departments: *"What do you see my role as being within the unit?"*

Quality of Care:

Priscilla has a provider code like the physicians which allows her to document in the medical record. She has a schedule like any doctor or nurse and sees patients to answer questions about their medicine, she schedules appointments. One type of patient might be the following: "A skilled medication facility patient," Priscilla's role is seeing these patients after they come out of the skilled medical facility. First the patient would visit with the primary care physician and then the patient would visit with Priscilla for a hour. She would tell them the purpose of each medication, the name, when to take the medicine and how to take the medicine. These are things that the doctor/nurse/provider cannot explain in a 15 minute visit. So this is how the primary care pharmacist began to see patients. Priscilla said that patients called to thank her. One type of response was as follows:

"This is the best service, the greatest thing, they should have more of you." Patients taking more than one medicine find Priscilla's knowledge helpful in understanding complications arising from the drugs. I research for patients, I make recommendation for the medicine. Two other types of pharmacist's are: oncology and OB/GYN; however, these are not located among the specialist team.

Finance:
One of the main reasons for establishing the position was to help look at formulary management issues pertaining to drugs: prescribing habits, utilization trends, and to initiate drug intervention. The HMO found that it had a lot of problems with prescribing of expensive nonformularly medications. A second goal of the job was to educate clinicians on alternate less expensive medications which performed as well as expensive drugs. A few doctors were resistant to change and made Priscilla's job a bit more difficult as she has to ask why a doctor would not change. In the end, the doctor would win and the pharmacist would concede. The subject would be dropped.

Finance successfully introduced to doctors:
Dr. Sadler has introduced new measures. Christopher Sadler uses the pharmacist's information. *"This is what the drug costs this is how much we could save, look at the numbers, what does it mean to you?"*

Learning
Pharmacy needs to orient all medical residents. For example: these are our formulary, these are our preferred agents, this is what the pharmacy has to offer to residents, this is what the pharmacy expects from you.
"The things that I do are done by a lot of doctors, but it is a lot cheaper for me to do it." "It is less expensive for me to communicate with the patients."

Perception of the Medical Assistants:
Priscilla thinks it is the medical assistants attitude that they want to be part of the clinical team. *"And I think they should be, if it wasn't for the medical assistant staff, the departments wouldn't work. They see the patients first, they see the patients last. They make the practice for the clinicians much easier."*

Telephone:
At this time Priscilla works alone and answers her calls. She does not mind. But what if her office moved to within the clinical unit? Would she still answer all of her calls? I am not sure. I think she would want to rely on the medical assistants. I think it has to do with status.

My Interpretation of this
Priscilla was trying to identify with the doctors a lot during the interview. Her comments were structured like a "staff member" trying to gain "professional status" within the organization.

Priscilla was very optimistic. In her comments to have primary care physicians everywhere, I thought that within internal medicine this may work; but, that is where all the primary care doctors are. In all areas of the HMO I think a primary pharmacist would be overkill or financially exhaustive.

Reducing costs: When Priscilla discussed the issue of money, I wanted to know how the staff responded to the change. Resistance is what occurred. Any type of change is difficult for an organization because it represents a disruption of an existing pattern. This pattern could have existed for years. When Dr. Sadler decided to utilize Priscilla's pharmaceutical knowledge to reduce spending, it was as if she had become an official team member.

Reflection
Is this organizational change, the addition of a primary care pharmacist, something that might be repeated elsewhere?

Space
Priscilla's office on the fourth floor is removed from the clinical space. In fact, the office is a windowless 8' x 8' room which is adjacent to the corridor leading into the reception area of internal medicine. The space is lonely and there is no stimulation from other clinicians.

In the past, Priscilla was located within the clinical area and she commented on the increased interaction that transpired with the nurses and doctors due to her proximity.

A windowless space = *"I feel like a mole."*

Confidentiality is a problem due to Priscilla's location. Medical records cannot be left outside her door.

DATE: TUESDAY JULY 23, 1996
SETTING: INTERNAL MEDICINE

What is Happening?
Have you had your mammogram and breast exam? I stuffed envelopes all day, wrote the doctor's name on each note and on ten percent, I had to write a personal note. If the form letters had not been pre-printed, the job would have been issueless. However, I do not think the capabilities of the computer are being exploited in this office. Especially, when it comes to business letters. I do not agree that filling in a doctor's name in pen is the best presentation when conducting business.

My Interpretation of this.
Someone needs to take an initiative to develop more professional documentation methods. This type of professionalism will only help to increase the quality of business done at THE HMO.

Reflection
If I were to send a letter to an employer for a job, would I fill in the vice-president's name in blue pen? Of course not!

DATE: WEDNESDAY JULY 24, 1996
SETTING: INTERVIEW WITH DR. BERNARD WALKER, MD
Resident

What is Happening?
The program's strengths: (1) It is as close to being in real practice as possible. (2) Freedom.

The primary job of the resident is to learn how to treat patients in the environment of a health maintenance organization. As a resident, Dr. Walker sees patients individually which means he is given the opportunity to build a panel. He introduces himself as Dr. Walker to the patient. He examines, diagnoses and treats patient's illnesses. When needed, Dr. Walker consults with his preceptor to ask questions concerning the patients illness or diagnosis and to examine patients who are difficult to diagnosis. The learning is independent and self generating. As Dr. Walker said, *"One of the challenges is knowing when to ask a question. Because if you do not ask the question about something you do not know about, then you will never know that it was a good question and it will affect the amount of learning you receive."* He discussed one situation where he had a patient who was not feeling well. After the consult and exam, He would ask questions to either his preceptor (or substitute) or specialists who are outside of the internal medicine practice.

Relationship with preceptor:
This could be improved. Dr. Ruga shares an office with Dr. Walker. The main difficulty with their educational relationship is that they both do not work in the office at the same time. Consequently, physical communication suffers. Why is this happening? Each individual has different daily obligations outside of the practice. When I asked Dr. Walker if he liked having his preceptor in the same office, he said, *"It would be great; but, we are not here together all the time."* One solution to this problem is that Dr. Walker precepts with the other physicians in the practice. Dr. Walker told me that the doctors who work in internal medicine on the fourth floor west are all interested in teaching so Dr. Walker has not run into problems with substitute preceptors. My perception of Dr. Walker's preceptor experience was very positive. He spoke of the additional learning that has resulted due to the exposure to different styles of practicing medicine.

Resident and sub-specialties:
The purpose of working with the sub-specialties is to gain exposure to the specialists. For example: Dr. Walker described working in Dermatology and nephro Kidney exposure, Dermatology, this is another issue. Time.
Sub-specialties. Training that residents receive outside of the primary care setting . The goal of this experience is to expose the resident to sub-specialties, and to learn (1) what patients require to get specialized care and what patients can be treated by the primary care doctor and (2) when to refer and when not to refer.

Technology:
The computer system is antiquated. It is user unfriendly. Dictations are not updated in a timely manner. For example, if a patient visits the doctor, he will make a dictation of the exam and treatment. Sometimes he will look into the computer file of the patient only to find that the dictation has not been completed after two weeks of time. This is problematic. Why? He cannot review the patient's previous visit prior to a scheduled visit. One of his reasons for looking at the computer record would be to confirm a patient prescription. Was is 50mg or 100mg? Another problem with the computer system is from one system to another. Sometimes the only way out of a program is to turn the computer off.

Telephone
Another problem is telephone numbers. Apparently, some patients

reach Dr. Walker and the telephone number on record is not current or their is no listing at all. Dr. Walker described an incident where he tried to contact a patient. The phone number was not on record. He called Nynex and learned that the phone number was unlisted. Therefore, he sent the letter to the patients listed address, not knowing if the medical information would ever reach the patient.

Patients
Some patients want to be treated with medicine. How does Dr. Walker address this problem. He talks to them and from my interpretation, he educates them. How to build a panel of patients? This is the residents responsibility. While I was visiting Dr. Walker, two patients called. Dr. Walker discussed lab results in a friendly manner and discussed the fact that the results were well in the range of a healthy person.

Courses in negotiations: Focus of course is people skills: the patient and the patient's quality of care. *"In the negotiations class, we learn how to talk to patients. The goal is to make the care experience more personal for the patient."*

Relationship with primary care pharmacist:
Dr. Walker does not utilize her. It seems that because Dr. Walker's panel size is small that he has time to discuss medication with patients.

My Interpretation of this.
Dr. Walker has a positive attitude about his learning experience and desire to give quality care. I perceived these feelings from my interview with him and from listening to him discuss lab results with two patients.

Fig. 7.16 Drawing of Dr. Bernard Walker's shared office. The focus of this drawing is the awkward furniture layout.

Reflection
What is the difference between specialists and sub-specialists?
Dr. Walker stated that his experience with his preceptor was good and that his substitute preceptors added to his learning experience. It must be noted that the substitute preceptors all have expressed a desire to teach from Bernard Walker's perspective. So, why must the preceptor be limited to one physician versus sharing the preceptor position among a few preceptors? Would this type of experience benefit the learning of the resident? Would this change address the difficulties of scheduling to meet with a preceptor?

Space
Dr. Walker's desk is not large enough for him to work efficiently. He does not have a computer on his desk, it is shared with Dr. Ruga. The problem with sharing is that he cannot use the tool ergonomically. Other part of my job require that I order lab results. Lots of paper, and my desk is too small request the lab results.

DATE: THURSDAY JULY 25, 1996
SETTING: INTERVIEW WITH RANDY JACKSON
Program Coordinator

What is Happening?
Gordon Jackson:
In a conversation with Gordon Jackson, I discussed the resident and preceptor relationship that exists between Bernard Walker and the other fourth floor east physicians. Gordon stated, *"Bernard is on top of it. He is very organized. I am not surprised he has such a positive relationship with the other doctors (or substitute preceptors). Then, Gordon said but the reason that there is only one resident on the fourth floor is because the doctors do not want to precept on the fourth floor. That is why the residents are on the sixth floor."*

Team meeting
Today there was a team meeting. I did not sit in on the event as I was not invited. From a brief discussion with two staff members, the focus of the meeting was to learn to work as a team.

Discussion with Randye Jackson
One strong comment on the existing department layout: *"Humanity sacrificed for efficiency."*
A team was previously composed of 1 full time doctors, 2 half time doctors and a three forth doctor.
Randye said that the medical assistants are pigeonholed in their jobs. If there was a rotation the position would not have as much turnover.

Cancelations to the patient schedule by doctors:
At this time the doctors do cancel a number of patient visits. Apparently, this may be for one day or for a week. Randye said that "Bart Simpson" was the patient most seen by THE HMO doctors. "Bart Simpson" is not a patient. Bart can be translated to mean free

time for the doctor. Another way that the doctors obtain free time through the patients is by admitting them to the hospital and not notifying the medical assistants. Again, this results in more free time for the doctors. Why do doctors use these tactics and why do the patients allow it to happen?

Space
Maria Wolcott's office: There was an outside consultant who was changing the software that the coumadin project will use. As he tried to work in the space he commented, *"Cozy isn't it."* This response is directly linked to the fact that the clinical nurses have poorly designed workplaces. Heights are wrong. There is no task lighting. And there is no available surface area to work on.

I was reading in Dr Whalen's 80 sf office today. The layout of his space is simple. A desk & chair, overhead shelving and a visitor chair are on one side of the space. On the other is a 48 inch wide four high lateral file. On the floor are books, reports and restricted medical information packages. On the wall daily schedules, a calender and documents are taped. It is easy to read all the information. His desk is a bit cluttered. Natural light from the west is wonderful. I enjoyed seeing the sky and daylight. However, the blinds in this office are drawn to limit the amount of sun. Is it too hot?

Randy commented on the two problems: 1.) heat generated by the sun in her office, and 2.) the natural light creates glare on her computer screen. She said that for the patients who are examined in the perimeter offices on the west side of the building, climate control is difficult.

Handicap bathrooms:
The handicap bathrooms were not designed well. Randye said that there were times when she could hear someone yelling, "Hello." She would leave the office and find that the handicap person was unable to open the door to get out of the toilet. To try to solve the problem she wrote letters to facilities and described the heavy doors and inability of patients to open the doors. Her attempts at solving the problems were futile.

Commuting
The Kenmore facility is accessible by public transportation of all sorts. I enjoy taking the M2 bus to work in the morning. On the way home I take the T.

DATE: FRIDAY, JULY 26, 1996
PLACE: KENMORE
SETTING: FORMAL INTERVIEW WITH CHRISTOPHER SADLER, MD
Chief of Internal Medicine,

What is Happening?
This morning I met with Dr. Christopher Sadler to discuss internal medicine as an organization.

A: Teams
C: *"I don't think the teams are functioning as teams yet. It is not because of space constraints even if you design the space with a different spatial layout. You would see no difference. I presume it is change of behavior. It fits into larger and newer strategies, I think that the way you need to do it is you need to create incentives for a team to work as a team and have them realize why teamwork is effective. Systems and space are secondary. The team will therefore decide, based on why they feel teamwork is essential, the best spatial design for them."*

A: What will the effect of capitation have on the situation?
C: *"It depends. It is a very involved issue. It needs to be a very delicate incentives system that involves visioning, team-building, financial incentives, performance incentives that are not financially based; but review based, and hiring the right people in your practice. It is a combination of all of those things I think that drives systems or team-think. And what I am trying to get right now are the teams to think as team-think. So once they get to team-think mode, the team gets together and says the way that this works is not right for us. One of the major obstacles for the way things were before was structural. There were three teams on this floor and the layout is more conducive to two. I drove to divide the teams in two based on the physical constraints we have right now."*

A: With the existing design that you created based on physical constraints, were you able to think about what the best team might be, for example: six primary care physicians, two nurses, one physicians assistant and four medical assistants?
C: *"We did it first based on space because there is not an opportunity to reconfigure this anymore. It was just redone. There are only two up-desks, there were some physicians who were on one side but were using a medical assistant on the other side. The other up-desk was using nurses on this side. We just said that because of the constraints that we have, lets move physicians onto this team, lets divide the unit in half, and lets get the teams oriented around the geography of the unit as it currently exists. What I am going to strongly encourage the team to do is to improve the quality of their work, achieve high levels of member satisfaction and find opportunities for innovation and efficiency in the systems and structure of the department.*
Knowing that each team has the obligation to get there, I want each team within itself to innovate as best as possible for team functioning. For all I know, the structural design they come up with on 'Team 4E' may be different than the structural design they come up with on 'Team 4W'. Because they are not basing it on structure they are basing it on outcomes. So, whatever you feel your team needs to get higher levels of service, quality and efficiency do it. I will support you. It does not have to be the same as the other three teams in the department. So we may find that the four teams end up looking very different. I would envision though that one team will say this worked for us and other teams will adopt similar things. But it is very possible that because personalities are different on different teams, they will ultimately end up looking different. The up-desks may be different. The appointment follow-up process may be different, how they use their follow-up nurses may be different."

A: Learning will be part of the job?
C: *"Yes. There will be a spillover of knowledge from team to team. Hopefully, if one team sees that another team performs highly, they are going to go over to that team and say what are you doing? And they will do it, hopefully."*

A: How would you strategically solve the problem between what I see as a gap between the medical assistants and clinical staff, and high turnover? My perception is that there is a breakdown in the team players between the MA, RN, PA and MD? One comment, my perception is that there might be high turnover because the MA's do not feel like they are contributing to the team.
C: *"Well that is a teamwork behavioral issue. The team needs to get to a place where everyone's position is valued and where it is working as a horizontal team not a vertical hierarchy. The doctors on the team must realize that the MA's are working just as hard and are just as important a player. Let's say you were on a team. Doesn't matter what role you are. I got the team in a room and said, we are in a budget crunch. And I need to cut 20% of the budget from your team. Now you need to decide how to cut that 20% because if you cut service or if you cut clinical quality, membership continues to fall, and I am going to come back to you in six months and have to tell you to cut 20% again because membership is falling. So, you have to be very careful about where you make cuts, you have to make cuts in those areas where you have inefficiencies. And inefficiency is found in areas where people are doing work that is lower than their skill set. People should be doing work at their skill level and no lower. On your team you would have a very careful discussion. If we cut a medical assistant, then the telephone access is going to go to hell and members will be very unhappy. If we cut a nurse, then we have no triaging. The patients will come in for more visits, access will go down and we will be in trouble. If we cut a physician, panel sizes will be a little larger. If we cut some of the physicians and hire another nurse, triage is better because the visits are less, lets do that. The team may have a hard time getting to that point, but that is where they have to get."*

A: But in some cases , and I do not know, this is just three weeks of observing and hearing, it seems like there are some domino effects that are increasing the workload. It just goes trickling on down.
C: *"That is why the team needs to evaluate its structure and figure out where there are opportunities for improvement. I think the teams are going to get to a team think mode. Now, I think that at least our team on this side is going to get there very quickly because we have already brainstormed around problems and we are going to try to find solutions. And I think our team will become a desirable team for people to want to work on."*
"...But there will be TEAM-THINK. There has been a culture here for many years before I came. Hierarchy. MA's fighting with doctors. It has just been like that forever."

A: Does the Hierarchy exist today?
C: *"It is better. Much better, in that regard, people are more interested in working like a team. I think the doctors are least receptive, but I think the MA's are very receptive. If we get the team right, it will grow and there will be a lot of opportunity."*

A: Would a preceptor and resident relationship exist in the team? Will the opportunity to have a resident introduced into the team for learning the necessary skills of a primary care practice be available?
C: *"I think that the poorest team players are the residents in terms of physicians. For example, one of the residents just told us two weeks ago that he is leaving for a month to do a preceptorship in Maine. No forewarning. What are you going to do with your patients? There is no concept of accountability. That is the problem with the residents. That is the one thing that hopefully Gordon's model will promote. In time there will need to be a premium to teach so the costing benefit to teach will clearly be a lot more weighted than it has ever been before.*

So what I am going to leave to the team is, as a team your outcomes are still the same, you still need to care for the same number of patients. You still have the same access expectations. As a team you decide whether you want a resident or not."

A: Would the vote be unanimous or majority?
C: *"It has to be whatever the consensus is on the team. Decide whether that individual is going to add value to the team. If they are going to hire an individual who is unaccountable, very unproductive, time is held, pending schedules, whether it is just wasted time, or the members are just unhappy because there is a resident on the team. The team may decide forget it. It is not value added to our team. Because it incurs a cost on our team to have this resident whereas another team maybe say, It may be a value, we get someone who has there own panel, certain defined visit rate. It Incurs a teaching cost on our team, but you know we are going to dedicate as much effort to this individual because if we can get them to be as good as we are then they will be just like us and they will definitely be an asset to us. It needs to be that tradeoff. Because what I will do in time is tell a team you do not get anything for having residents. No time. It is on your own time."*

A: Are you for or against having residents in the HMO in general?
C: *"It depends on how you are asking me that question. From a business standpoint I am all for having residents. I think it is a good investment. The way it works now it is a bad investment. I am all for teaching. I like to teach but knowing the economic pressures that we are under, it is not a good idea having residents here right now. The reason is the incentives are all wrong."*

A: It is costing you too much money?
C: *"Let's put it this way. Residents and medical students are different. Medical students cost us a lot of money. The residents they do not cost us a lot. Mainly because they have a certain visit rate. So they do some work. If I actually calculated it out, I count up all of the time that physicians earn getting their practice held, so for first year residents, the physicians get 1-1/2 hours per session held. That is a lot."*

A: When you say held, could you define it?
C: *"No patients can be booked in the precepting physicians schedule. That is 1-1/2 hours of four hours. For a junior resident it is 1 hour. For a senior resident it is .5 hour held. I add up all that time in the department, and I add up all of the visit rate for the resident for that year. So assuming that it is three visits per hour for an attending, and I add up all the hours that were held, multiply that by three. Track the number of visits that the residents have done. And I end up with numbers of lost visits in the department per year. Which I suspect is a substantial number. So, it is an inefficient practice. It is not benefiting the practice having residents here. That is why I want to take away this time held concept and have the team decide. None of your time gets held. So if you get time held, you better make sure that it is a small amount of time and that the residents are seeing as many visits when they are there as the amount of time you have held. So that it is a wash or even better that they are seeing more patients. Now if your productivity is very high as a team with a resident there because you really train the resident, got them to go down to 15 minute appointments, got them to work independently, you do not have to have any time held and maybe they can curbside you for a minute. But you do not have to have any time held so you can see your own patients simultaneously, then your team is going to look mighty good. And that is what I want."*

A: Comments on scheduling the residents
C: *"There are other costs that are incurred on the department. We are responsible for scheduling the residents schedule. And coordinating the schedules with the specialists. It is not worth it for us to do that. I am spending 40K annually to support the residents schedules. It is not worth it for me to do it. Unless it is clear that I get money into the*

departments specifically for that purpose. From the hospital, the teaching center, the medical school. I now need to compete with practices that do not teach. So, if I am going to teach, it cannot have a negative value on my practice. It can only have a positive value. I add up the work that they do, plus maybe the money that we get to do the scheduling for them and to support them minus the cost it incurs on the practice to have them here and other ways like held schedules. It has got to be at least equal to zero or slightly positive."

A: Could you comment on the patients. How do you perceive the patients quality care? What you would like quality of care to be?
C: *"I think it will be tremendous. I think the quality of care here is already outstanding. If you look at quality measurements, our HMO compared to others, they are higher. Quality of care is outstanding. I really do not have an issue with that."*

A: Is there any public information that I might be able to read about quality?
C: *"Newsweek Article HMO's and Quality. The issue in healthcare has always been like any other service industry. What makes people come to you? What attracts members? Its numerator has some component of quality and service. And the denominator is cost. The problem with healthcare is that quality is hard to measure. It is not something that is easily measurable or documentable. Service is much more important in healthcare. And easily measurable. And then obviously cost. So from that standpoint, THE HMO is in the middle of the road cost-player, maybe a little bit higher. We really do not do too well in terms of service. Service, access, seeing your own doctor, having a private practice, we do not have all of that. All those things go into the quality and the service side. And we do not do well in all of those. We do well in quality. But we only do well in the thing that cannot be measured easily. That has always been the bind that we have been in."*

A: Is competition a factor?
C: *"As competition increases, this concept of value becomes more and more important. Now, value has never really been an issue in healthcare. People went with choice, service. Or only really with service. Or only really with price. Now the concept of value is much more important. Price has become more competitive. Back in the old days you had fee for service insurance or you had HMO. HMO was a lot cheaper. With HMO you could not tell whether the quality was different, it seemed adequate, But now as fee for service comes much closer to the HMO price, It becomes more important that people are actually looking at value. So the only way that Harvard Health is going to compete is to do three things: find a way to measure quality and get it out there, improve service and lower cost. Sometimes you do not have to do all three but you choose on and become a niche player. (1)You are the highest quality and the highest service health plan you will find. Yes, we cost a little bit more, but it is worth it. And you will get a certain market. (2) The low cost market is not going to be viable. I think that quality and service are always much too important in healthcare consumers."*

A: Who are your neighbors? What is your market?
C: *"That has got to be our strategy. I would like to build a strategy around this department. We have an urban practice. We are close to the teaching hospitals. We have a somewhat central locale, We have all services under one roof. So what we are likely to find as our market is sicker patients. We market after sicker patients, assuming you can get more money for them.*
"It is counter-intuitive to where people are going in healthcare. But in a large company such as this. It is possible. I am getting together with all the other department chiefs in this division and I am saying to the 14 different health centers. This is my strategy, I can take care of sicker people better than you." "I have the resources, I have urgent care open all night, I can have an infusion unit, I can treat asthmatics, The sicker patients should be in a panel here in this health

center, which leaves me to send healthier patients out to your site. But that is negotiating, I need you to give up some of your money so I can do it. So if we do division think and they will agree to that, it makes business sense. We can all succeed much better as a division if we go that way."

A: So in a sense within the company you are creating strategic alliances?
C: *"That is right. We have gotten off the mark, but if we can do that, it means that I have an appropriate amount of funds to care for an appropriate panel of patients and service will dramatically increase."*

A: General comments.
C: *"There are a lot of things we have to do in this department. My overall strategy, my external and internal strategy, the external strategy is what types of patients do we go after and how do I insure that I get enough money from the department to take care of them. The internal strategy is to say, we have inefficiencies here and we have service problems, but we need to be much more fee for service like oriented for our patients, better access, better telephone service, more receptive receptionists, redesign the waiting rooms to make it more doctor office like, a lot more service oriented work plus there are a lot of things we do inefficiently in our practice and if we cut out the fat, you can dedicate more time to improving access, improving telephone time, we can save some resources too. Spruce up the place. There is a lot of opportunity for that now that you have actually watched some of the operational dynamics, I can give you a quick example: Prescription refills. The way the prescription refills work . The patient calls in for prescription refill. They have none. So they call the pharmacy, the pharmacy says, You have no prescription refills, you have to call your doctor, The patient hangs up, the patient calls the doctors office, this is now the second phone call. The MA takes a message and writes down the prescription they need, and for every call about a prescription, the MA looks up information on that patient. The MA looks up the last time they had a physical, the last time they had a blood pressure check, pap, that stuff is not easy to look up, it takes two minutes, it is time. The MA takes that message and puts it in an out box, to be picked up by a runner, and brought to the nurse. The nurse looks at it, reviews the patients records (there may be other things they need to review), Why are they on Seldane it is an expensive drug, etc... The nurse fills out the prescription for thirty days, calls the patient, the patient has not had a physical so the nurse books the patient for a physical, even if it is a 23 year-old man. The prescription is then put in the outbox again, runner picks it up, it goes to the physician. The physician takes it and signs it. Puts it in the out box, the runner picks it up, brings it to the pharmacy box, Puts the prescription in there, Waits for the runner from the pharmacy to pick up the prescription, bring it to the pharmacy. The pharmacy fills the prescription and the patient picks it up. That is the prescription refill process."*

A: What about technology?
C: *"Even without technology there is a simple way of doing it. You have department standards for when someone needs, which medications, needs some kind of regular follow-up before you can re-prescribe it. Or you have a patient reminder system, that reminds people when they need to come in for a physical, blood pressure check whatever. But all it needs is one phone call to the pharmacy. What it saves is for the patient two other phone calls, three letter trips, it saves two computer scans, plus MA and nurse time. Plus it saves the patient a four hour wait."*

A: And how much risk do you incur if you are reducing the difficulty of obtaining the drug?
C: *"People only call when they need medication. I do not want there to be a barrier for people to get there medication. The other thing we do is give them a 10 to 30 day supply, which means the process starts all over again 30 days later. Whereas the automated refill process*

gave people a 90 day supply. There are a lot of things like that in this department. The team will figure those things out."

A: Actually it is difficult to get people to change patterns.
C: *"That is why you give them motivation piece. Second example: Conflict resolution. There is an argument between an MA and a doctor. The doctor's side of the story is that the MA is taking bad messages. The MA's side of the story is that this was the third message that she had taken on the same patient in two or three hours. The first message was complete, well-written. The doctor didn't call the patient, so the patient called again. The message was a little less complete. "Please call again." This is the issue, put it in the doctors box. No answer. The third message had a time, correct member number, and said please call.. Put it in the box. The doctor got the third message, came out, and said what kind of message is this. Inefficient Practice. Lacking teamwork. And a simple decision that is , the MA had the responsibility of triaging messages, And if the message has to be answered within an hour, there is a red sticker that is put on the message. The doctor would know that this is one that he would pull out of the rest. If I see a red sticker on the form I need to do this first. A Simple solution that would prevent conflicts in the future. There are all kinds of opportunities like this in the department that no one is going after. It may partly be because people are a creature of habit."*

A: Motivation and learning
C: *"It is not long to get people to start thinking innovatively. All I want is each team to start tallying a few things. Start hearing from other teams, This team already has a bunch of ideas. I am going to have department suggestion boxes, and team active issues boxes. Saying we should discuss this in the next team meeting. And I suspect that teams will starts functioning very tightly. People will start to wake up and say, This does not make any sense, why do we do this way. This is ridiculous. This was inefficient."*

DATE: FRIDAY JULY 26, 1996
SETTING: INTERVIEW AND OBSERVATION OF BERNARD WALKER, MD
Second year resident.

What is happening?
Bernard commented on the communication gap. Dr. Walker was in seeing a patient and spent more time on one due to the fact that he thought he had an opening in his schedule. After finishing with that patient, he returned to his desk. On his desk was another patient that he had not anticipated. Yes, he was a bit frustrated because he had spent more time with one patient and was now running late. Bernard is moving fast trying to get back on schedule. And he is aware that the patients have been waiting for 30 minutes.

Preceptor: Bernard had a question about a patient and his preceptor was in with another patient. So he was unable to speak to the doctor. In fact, the patient was a patient of the doctor. Because Bernard was giving the patient a new medication, he wanted to discuss the treatment with the doctor. Because the doctor was unavailable, Bernard prescribed the medicine and let the doctor know of the new medication, Bernard found Dr. Bennett in the hall by chance. The problem was solved. Quick .

Review of schedules. Bernard had to see a 72 year old man. When he returned from the visit, he told me that he was going to admit the patient. It had to be done. Whenever, Bernard was spotted in his office, it seemed like someone had something to tell him. During that time people left things on his desk. Messages.

Space
Bernard said, Have you ever been in an exam room when one is trying to examine a patient? Bernard said this to me in a way that clearly indicated his frustration with the space. I agree the exam rooms are small, but I think that they are adequate given the number of exam rooms within Internal Medicine.

DATE: MONDAY JULY 29, 1996
SETTING: INTERNAL MEDICINE JOB OF RUNNER

What is happening?
Today I was delivering messages for eight hours. My feet are killing me so I am going to take a long shower and lay down. I think that I am going to do this again before the week ends.

DATE: TUESDAY JULY 30, 1996
SETTING: INTERNAL MEDICINE JOB OF RUNNER
My observations as a runner or message carrier

What is happening?
Patterns of patient exam and consult given by doctors.
There are four different patterns of work that I have observed pertaining to the patient's visit with a doctor:
(1) The patient is escorted to the exam room by the medical assistant. The medical assistant verifies the purpose of the visit, takes vital signs and tells the patient how dress for the exam. The medical assistant leaves the exam room. Then, the doctor enters the exam room, greets the patient, and examines the patient.

(1a)In this case the doctor completes the exam, leaves the room and allows the patient to change into his/her clothing. The doctor re-enters the exam room and conducts the consult. So, the patient never goes into the doctor's private office. This pattern does not permit the Medical assistant to clean the room and prepare it for the next patient. I do not think that this is the most efficient routine.

(1b) In this case the doctor completes the exam, leaves the room and allows the patient to change into his/her clothing. The doctor invites the patient to join him/her in his/her office after the patient has changed. This pattern allows the room to be cleaned and prepped for the next patient and it is in fact very efficient.

(2) The doctor goes to the waiting room, greets the patient and takes the patient to the exam room. The doctor examines the patient and then has a consult with the patient either in the exam room or in the doctor's private office as described in (1a) and (1b).

My interpretation of this
I think that the team would perform more effectively if the doctors would have the consults in their private offices. This would allow the

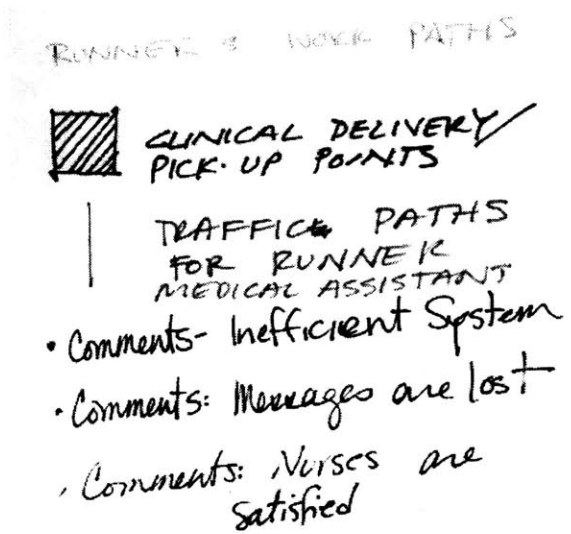


Fig. 7.17 Comments from department made during informal interviews. relating to runner position or message delivery system.

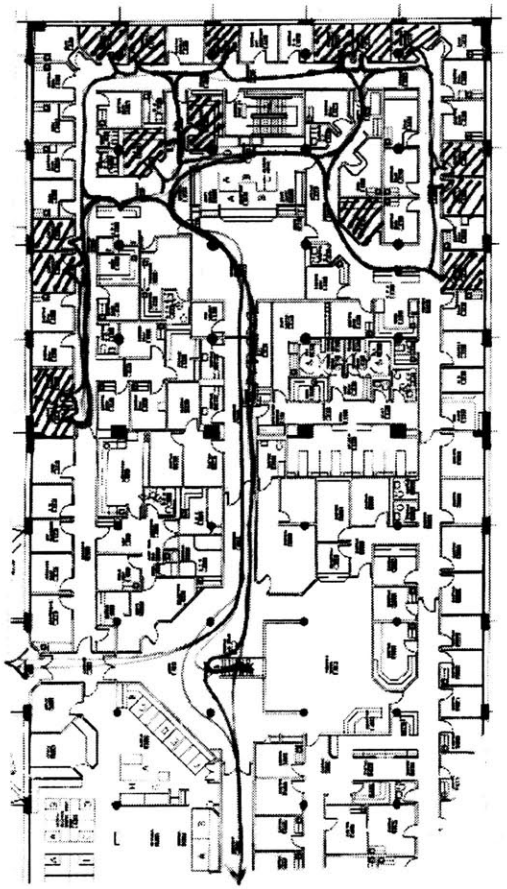


Fig. 7.18 Drawing of runner's circulation paths. Sketch is limited to the fourth floor and shows the clinical delivery/pick-up points.

MA's to be able to work at an even pace and possibility increase the patient's care experience. How would this increase the patient's care experience? Time would be saved and this is a big issue. On the other hand, if the doctors do not want to use the office for a private confidential space, maybe the exam room should be increased in size and the physicians should use the space for both the consult and exam. This would allow the physicians to work in a more open environment - possibly workstations.

Reflection

What are the implications of defining how a doctor should or should not perform his care giving to the patient? Is this type of recommendation a set-up for revolt?

The Runner:

The pressure in the phone room has increased due to the reduced staff. Today, I helped the medical assistants by working as the runner. It is the second job that I have been able to effectively perform. What I have enjoyed about the position is that I am able to walk around the floor and watch what happens. For example, Dr. Rawson, Yin, and Whalen all have conversations with their patients with their office doors open. Maybe I should ask what types of conversations are open door versus closed door. From my observations, the doctors tend to keep their office doors open during their sessions. The individuals who close their door most are the management staff. For example, I have seen Donna, the Clinical Supervisor close her door a lot during the day. Dr. Bennett had his door closed for a good portion of the day as well. Anne Bishop closes her door sometimes. Mary a physicians assistant does not close her door either. The nurses never close their door. They may be attached to the phone for a large portion of their day; but they always have an open door.

Exam room doors are always closed when a patient is inside unless the patient is in transit, or waiting. For what, I am not sure. I guess it

could be many things.

Dorothy Taylor:
Dorothy's office has been cleaned out. Staff members talk about Dorothy and express their shock. Two months ago Dorothy was in China climbing the great wall. No one thought that she had a health problem. In Penfield NY, Dorothy's funeral was today.
Monday:
Today two new employees were introduced to the staff. One will be trained to be a receptionist and the second will be trained to answer incoming phone calls. Because of the training taking place within the office I was trying to help out with the job of running messages. Running messages does mean walking around the office all day. It is still a sort of thankless job because as a runner you are not really solving any problems; you are carrying and distributing problems to others. And if one of the deliveries gets lost, watch out. You, as the runner are responsible.
Since the fourth floor is divided into two halves, each side is a bit different. Here is an example of a difference. Dr. Lee Yin likes to take all of his messages. What does this mean for the runner? It means that all messages go to Dr. Yin if he is in the office. No nurses will be responsible for caring for his patients. This unique characteristic is different from all the other physicians.

Reflection
How can one alter the behavior of an individual with well rooted patterns without destroying one's concept of care to the patient?

Dr. Whalen:
For a few minutes I chatted with Dr. Whalen about architecture. I enjoyed speaking with him; yet, I sensed that he wanted to ask as many questions as I did. We briefly discussed three issues: space, technology, and physical communication. In terms of space. The main points he made concerned adjacency of the nurse to the doctor, ability to communicate with the nurse easily (unlike the existing conditions), and visibility of the team. This concept of visibility was important to him. In the past I have watched Dr. Whalen look for the medical assistant. Due to the existing plan, a doctor cannot see the support staff easily. My interpretation of this is that the conditions which are present are not satisfactory and the layout has effected the inability of the doctors to communicate with the nurses and medical assistants. However, Dr. Whalen stressed that it was not the physical layout that foster the change, it was the behavior of the individuals.

New Employees: Dr. Whalen had not been introduced to Cordella, one of the new medical assistants. Cordella is a young woman who has been trained to answer the phones and be receptionist.

Technology: I asked Dr. Whalen if a new computer system might be one possible solution to the inter-office communication improvement. I asked him what would happen if there were windows which could perform different tasks, like Microsoft Windows. Dr. Whalen said that would mean we would be living in the 25th century.

Space
Well I have been an intern here for three weeks now, and there is no space for me. I float from desk to desk and keep my belongings in a lateral file in an office. Space is tight for open worksurfaces within this office.

Dr. Whalen's comment referring to visibility reminded me of Anne Bishop's diagram. Anne did comment on visibility as being one of the more apparent flaws of the interior space.

DATE: WEDNESDAY JULY 31, 1996
SETTING: INTERNAL MEDICINE JOB OF RUNNER
My observations as a runner or message carrier

What is happening?
Mr. Flynn comments on the workbook:
Patient was confused by the concept of color the things you like yellow. He was a publisher so he was basically commenting on grammar. He was picky. He was critical of the photos; yet he said he would be happy to fill out the workbook. Time will tell. When he commented on the photos he said, how can you use these photos, they are dark, they are not in focus, and I thought that maybe he saw something totally different than I did. It was interesting that he did not perceive the dark photos as places that were void of natural light. My perception is that he actually liked the physical space. I already know he loves his doctor and physician's assistant. Mr. Flynn is a very articulate and very sick patient. He probably sixty years old and has severe cardiac problems.

What is happening?
As runner, I must have walked around the department twenty times this morning. I delivered and collected messages. Of course, I talked to people and saw everyone in their own element. Twice, I had to run to medical records to pick up hard copies of patient charts. This trip was five minutes each way. First, leave the office, next take the elevator to the first floor, walk through the main public space of the building and into medical records. What a pain in the _____. This space is not strategically located. Think about strategic location. All the medical treatment facilities are on the fourth, fifth and sixth floors. Why would anyone put this space on the main floor. I can think of another department that would be much more logically located there. This department is Urgent Care. By the end of the day I had traveled to Medical records five times. So now what is the facility to do? Hire another runner within Medical Records to deliver hard charts to all the departments above? One of the only reasons I can think of for putting the department on the main floor is the weight of the high density files.

By the way this main public space is dead. As I looked at it, the potential to have designed a more sensitive environment would not have been to difficult to achieve.

How did I feel doing the job? To begin some medical assistants have been very helpful and willing to answer my questions. Others are not as helpful. It is uncomfortable to ask a question to someone who really does not want to answer a question. I would guess that this is probably the way the medical assistants really do treat each other. Or maybe due to the job, my perception of un-teamlike performance might in fact be the opposite. Why? Because if a person left their desk, then others would have to pick up the phone for them. This argument is bogus in my eyes. If the medical assistants want to get respected by the physicians, then maybe they should try to help out if they have a second. This means that if the phone room is slow, then the phone medical assistant should work as team members. My reasons for this type of work ethic relates to giving the customer/patient the best possible service the company can offer. And for the customer, prompt service is very important.

My interpretation of this
The runner is a thankless physically demanding job. The runner is walking all day long and can never seem to accommodate all the staff members who benefit from his/her job of physically moving information and documents throughout the department and building.

Reflection
What would happen if a sophisticated computer system were intro-

duced to the staff? Could they adjust to the benefits of virtuality?

Space
One comment on Medical Records. This facility cannot be decentralized to confidentiality. The files must be locked at night. If the records were within departments, then possible viewing of the files might occur. The risk would be too great.

What is happening?
Jan Sudman, Christopher Sadler and I met today to analyze exam room layouts. Within the department there are a number of good designs. But there are a few poorly designed spaces as well. Christopher described how the right side of the patient is the side a doctor wants to examine a body on. This is where the liver is. Anyhow, if the circulation space is on the right side of the body, the doctor can examine a patient easier. If the chair is adjacent to the exam table and on the right side another use can be incorporated into the design. This feature is the blood pressure tools which can be mounted on the wall. The point is that the doctor can either take one's blood pressure while the patient is on the bed or on the chair and still be in the optimal position in relation to the patient. On the left side of the exam table and at the foot of the table mounted to the wall should be the lamp. The lamp moves and is necessary when performing physicals. Another issue discussed included natural light. The light is nice, but the view can be a negative quality for the patient. The patient does not want to be undressed in a "visible space". If a patient has a headache, the doctor would prefer a windowless space. The location of the door might be considered as well. If the hinges are placed four inches from the wall, then the least privacy possible is established for the patient, unless the curtain is drawn. The better location is to place the door hinges at +/- 42 inches into the space. Some of the existing spaces are designed this way. Others are converted consultation rooms so they are not. If the design of the room could be standardized, then progress would be made. Why? Because their are exam rooms that the physicians hate to use.

My interpretation of this
I think the employees know what works and what does not work. Jan and Christopher were quite vocal.

DATE: JULY 31, 1996
SERIES OF EXAM ROOM SKETCHES

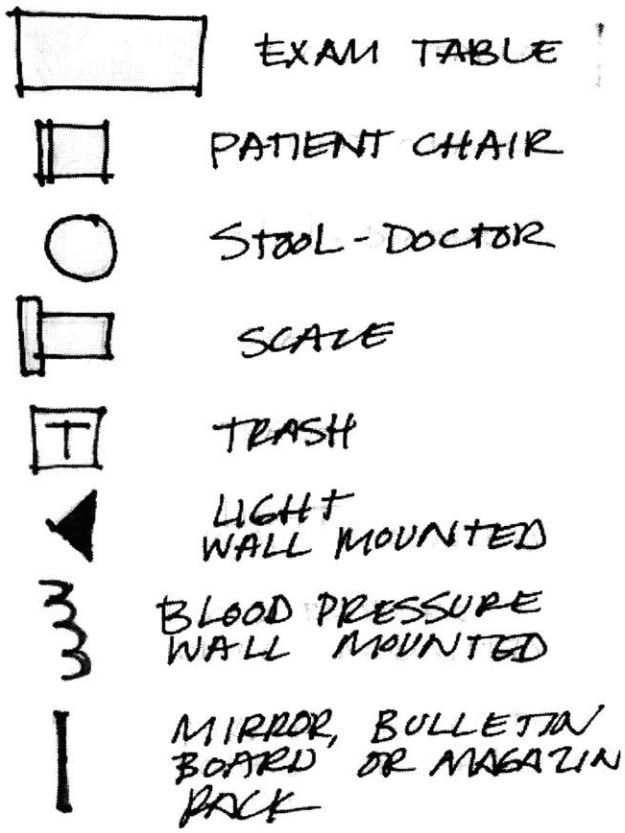


Fig. 7.19 This drawing is a legend which describes the equipment and furnishing typically found in an exam room. The following pages show an inquiry into exam room typologies that exist today. Based on informal conversations the layout and size of exam room s#6 west is the preferred design.

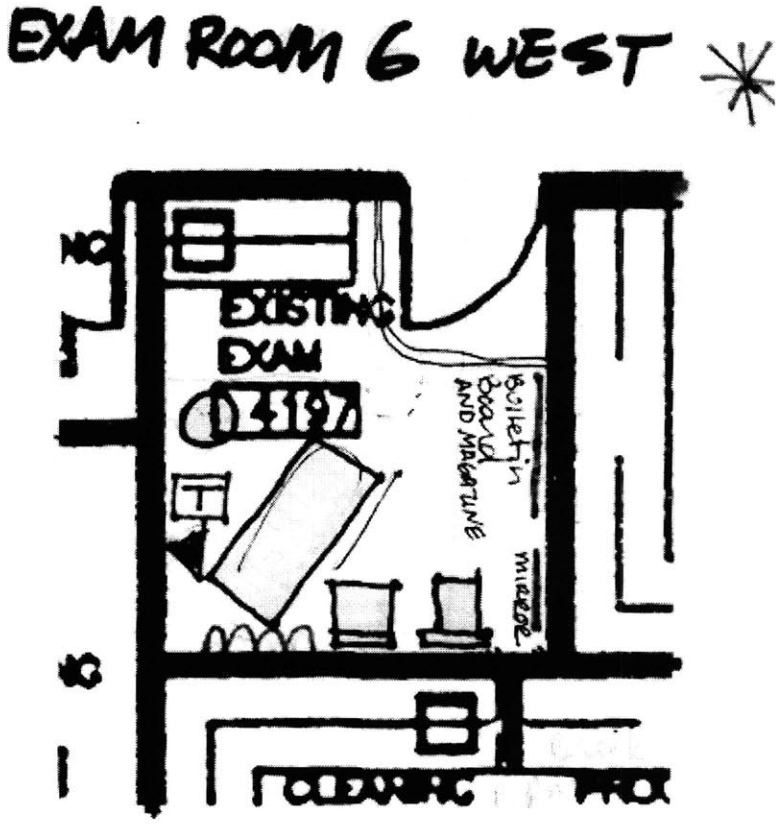


Fig. 7.20 Drawing depicts the preferred exam room #6 west based on numerous informal interviews.

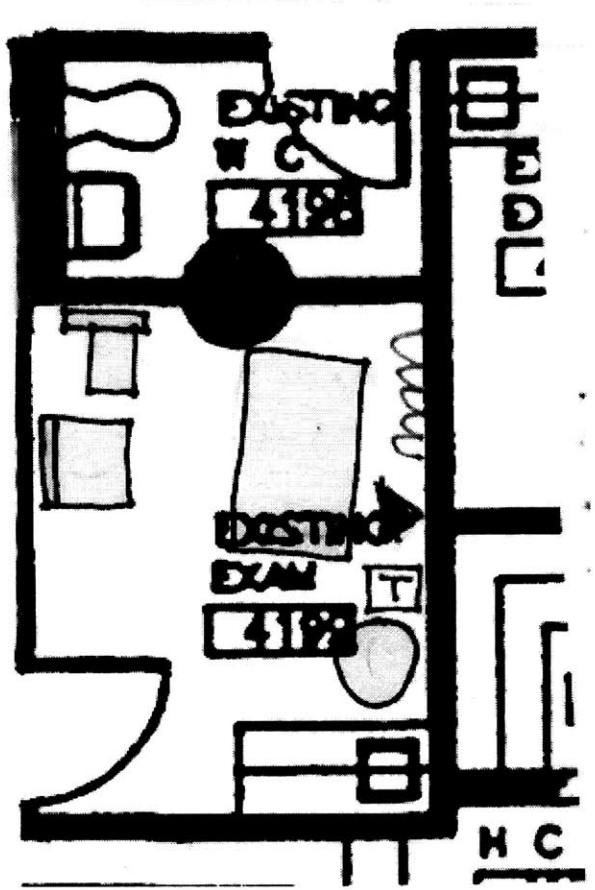


Fig. 7.21 Drawing of exam room #1 west.

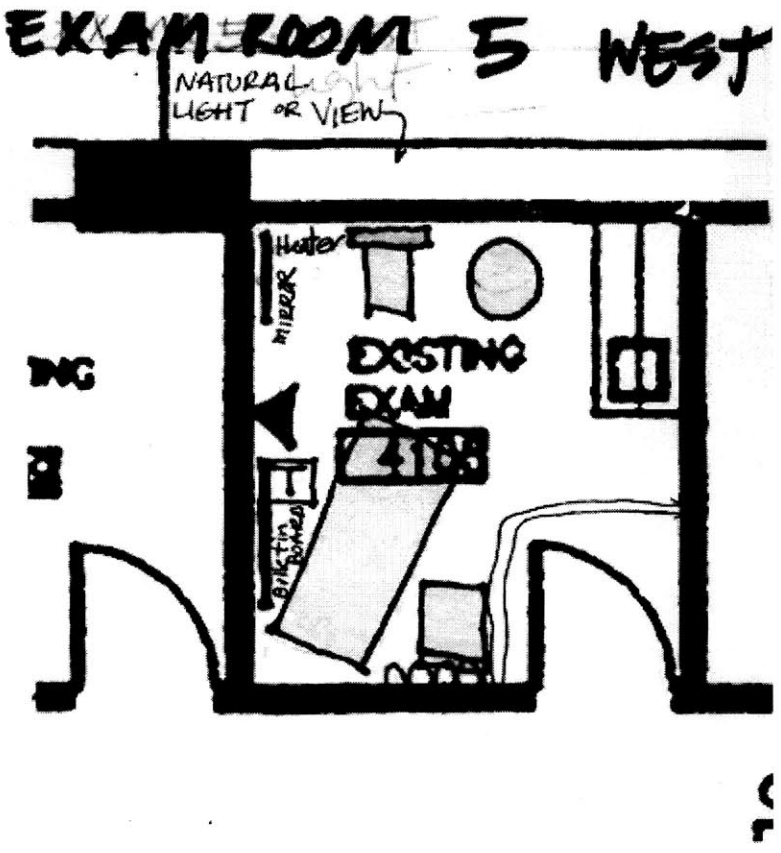


Fig. 7.22 Drawing of exam room #5 west. Focus of drawing is furniture layout and location of space on perimeter wall.

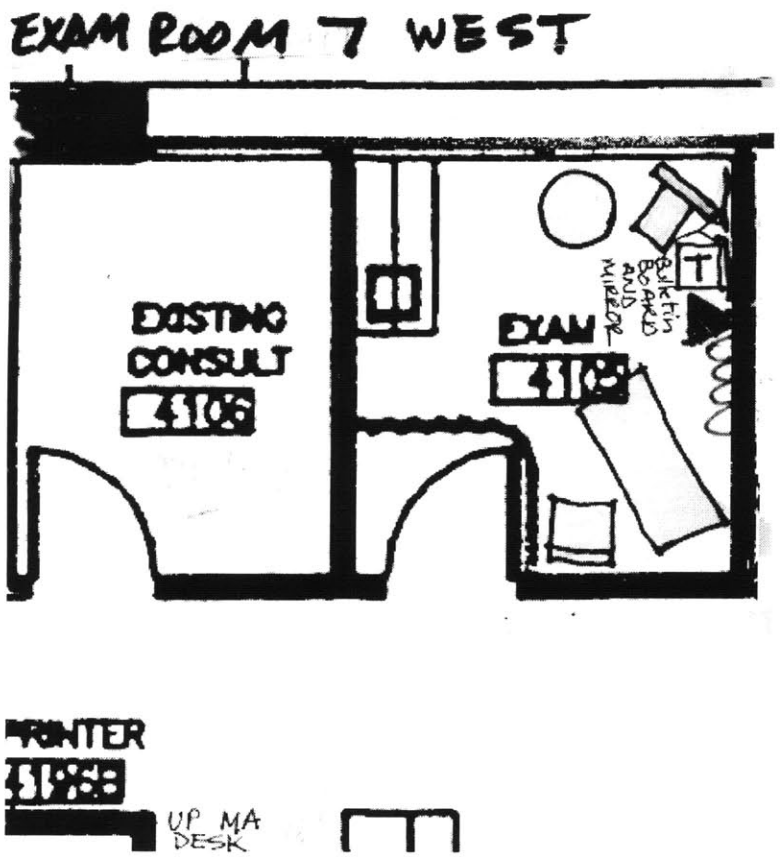


Fig. 7.23 Drawing of exam room #7 west. Focus of drawing is furniture layout, perimeter location and adjacency to up-medical assistant workspace.

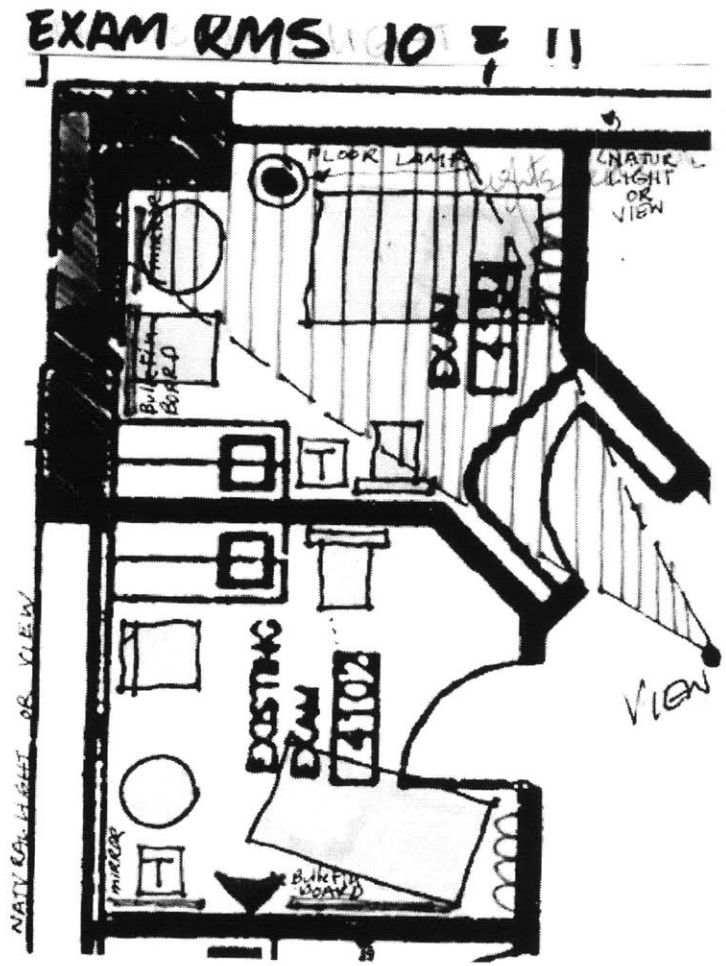


Fig. 7.24 Drawing depicting exam rooms #10 and #11 west. Focus of drawing is furniture layout, shape of space and view corridor. View corridor is not a desired quality.

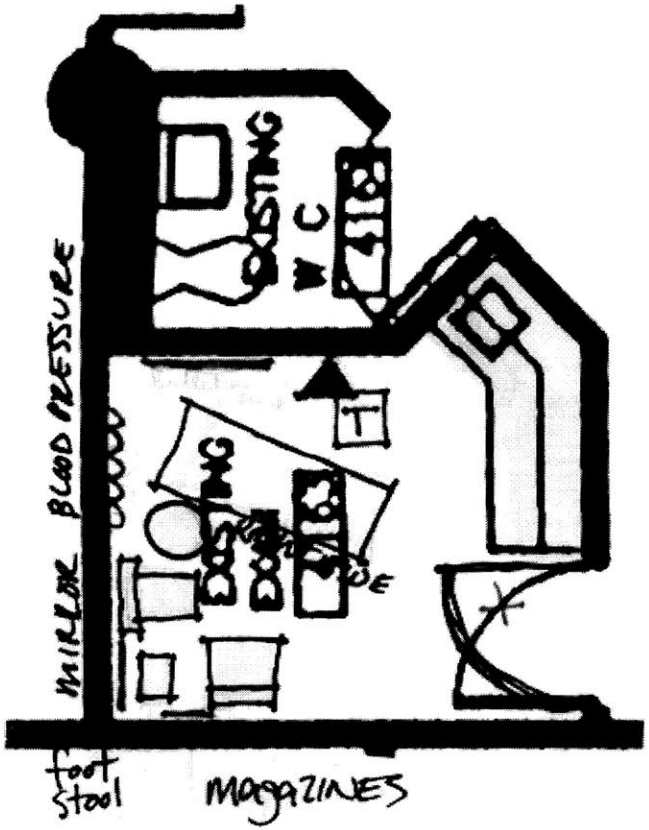


Fig. 7.25 Drawing of exam room #2 east. Focus of drawing is furniture layout and shape of space.

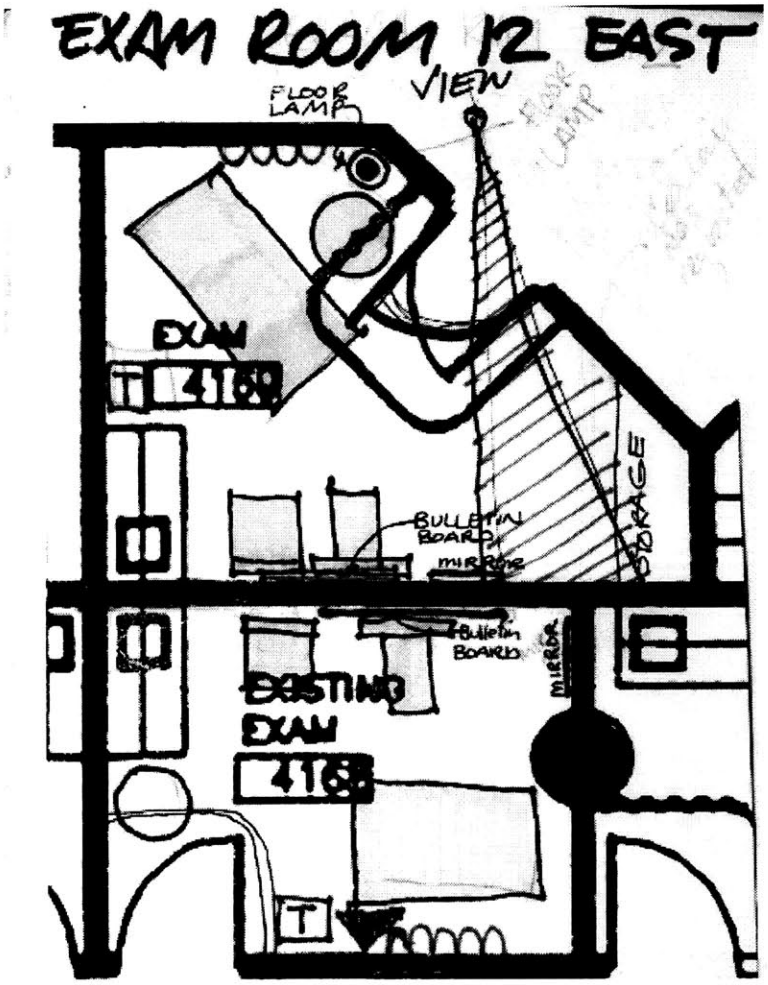


Fig. 7.26 Drawing of exam room #6 and #12. Focus of drawing is furniture layout, shape of space and view corridor.

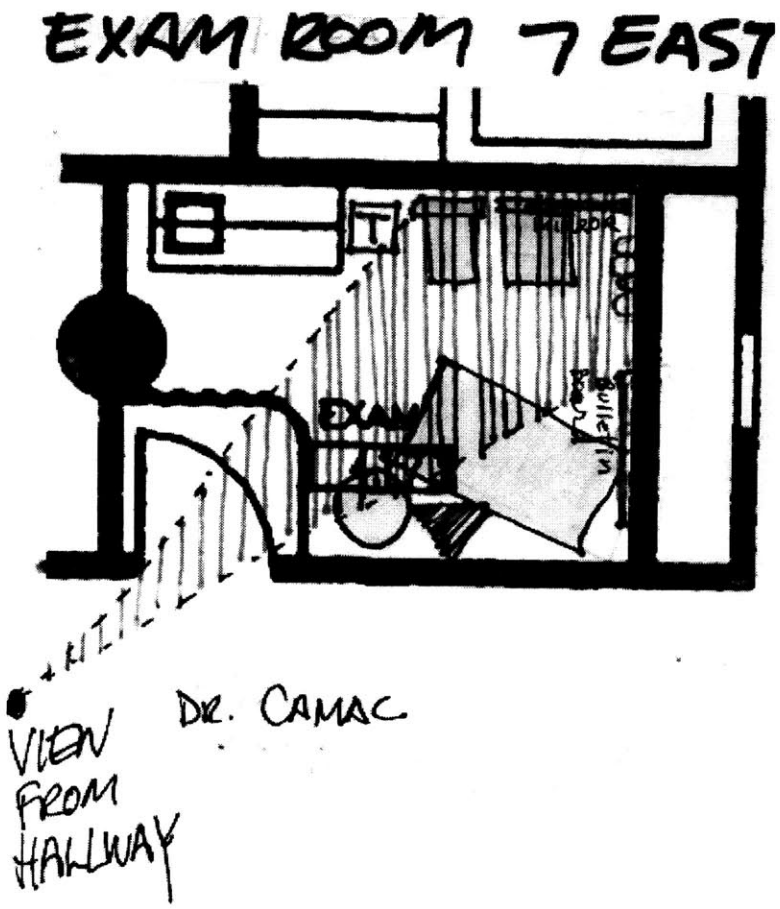


Fig. 7.27 Drawing of exam room #7 east. Focus of drawing is furniture layout and view corridor. View corridor is not a desired quality.

DATE: THURSDAY AUGUST 1, 1996
SETTING: OBSERVATION AND INTERVIEW WITH LESLIE FULTON, MD
Resident

What is happening?
One of the first issues that Leslie discussed was the difference between the male and female residents. Leslie said, *"I think the women have it more difficult here when examining women for physicals."* Why? The men will have a female medical assistant in the room for legal reasons and the MA will also assist in the procedure. The women perform physicals alone. This difference means time is added to the female physicians exam session. What might a MA do in the room for the male physician? The medical assistant might take the pap slide and fix it with the spray. Leslie said that one physician said he did not know how to prepare the slide. She laughed, and said, *"You're kidding!"*

Another economic reason that the women physicians are not accompanied in the exam room is because there is a shortage of medical assistants on the sixth floor. So, the medical assistant is present in exam rooms only when she is absolutely required.

My interpretation of this
The women are under more pressure to do their work efficiently since they do it alone.

Reflection
The women are aware of this inequity in the system. Why does the system allow it to continue? If the system is going operate in this fashion, should the women be compensated with a few more minutes to perform their job to ensure that an adequate job is being preformed?

What is happening?
2:00pm: The first patient to see Dr. Fulton has high blood pressure. This was a 15 minute visit. During that visit the MA placed a check-in form for her second patient in her office. The next patient has an orthopedic problem. The patient was seen in Urgent Care and has come to his/her primary care physician for a second look. Apparently, the ankle is not better. What will Dr. Fulton do? She will examine him, Order an X-ray, and refer him to orthopedics if necessary. One question Leslie had was, why didn't he get referred to orthopedics already after visiting Urgent Care. At 3:50, Leslie re-entered the room to think about a patient. She called another department for a tele-phone consult. The resident describes the symptoms of the patient, conveys data about the health, and tells the consult everything she knows. The consult talks, Leslie writes down the advice. Apparently, she consulted with another doctor here at Internal Medicine 6. Leslie's last patient claims that her blood pressure goes up when the primary care physician is late. It is 4:11 and Leslie is reviewing her chart. Still on the phone, Leslie is reviewing more information. After hanging up the phone, she quickly moves out of the office to her 4:00 appointment. She is late. And she has not taken a second to breath since I arrived at 2:00. She sent a man for an X-ray at 3:45. It is 4:40 and she is going to find him to review his X-Ray. At 4:50 she is reviewing the X-rays which have been reviewed by Radiology. Then she will go back to see the patient. Leslie said the pace is always this fast.

I asked her if she always want to be a doctor?
Leslie replied, "Yes, ever since I was in college. I am not sure if primary care is for me, I think I might have liked OB/GYN better."

What is happening?
I asked one of the medical assistants a few questions. I guess my intervention is a bit too demanding. The medical assistant requested that I stop talking to her. She works for a number of demanding

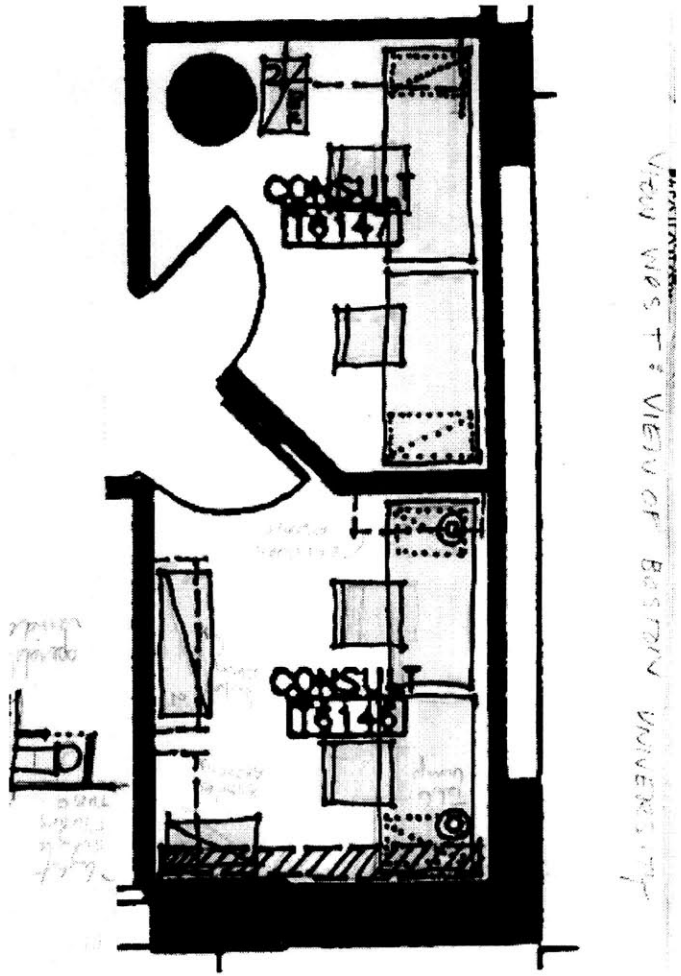


Fig. 7.28 Drawing of shared office space for Dr. Leslie Fulton, resident. Focus of drawing is layout of workspace.

doctors and she does not want to be disturbed. My interpretation of this. She is busy and under pressure.

Space
The view from the sixth floor is very peaceful. I can see birds fly by. I am very aware of the view because I have been in windowless spaces for days. I think there is something therapeutic about looking out to the city. And I disagree with the current layout that eliminates the penetration of natural light to waiting areas.

Leslie Fulton did not know which exam rooms would be hers for patient visits. Because she is the resident she is a low priority physician and must take what is available.

e-mail to accomplish medical problems at the Brigham and Women's Hospital. The chiefs will send messages. She does not use it to communicate via the internet.

The sequence of years for residents: (1) Intern (2) Junior (3) Senior. The first year or a intern resident has the most difficult year. Every three or four days a intern resident will stay up all night.

What I see observing the resident at work. She is reading a chart in deep thought and she is moving towards an exam room.

DATE: FRIDAY AUGUST 2, 1996
SETTING: OBSERVATION OF DR. LESLIE FULTON, MD
Resident

What is Happening?
Dr. Fulton's first patient was late by 20 minutes. Twenty minutes is the limit for accepting a late patient. So, that means that Dr. Fulton had to see the late patient and fall behind in her patient schedule. This patient was complaining of a sore throat. The patient had recently gotten dentures so Dr. Fulton had a question which was possibly related to the patient's dentures. Leslie called dental on floor 5 for a consult and dental is sending a dentist to take a look.

After the patient visit, if Dr. Fulton has any doubt, She walks to the end of the hall to speak with her substitute preceptor, Dr. Jan Preibisz. Today, one patient had a lesion and Leslie did not know what it was so she asked Dr. Jan Preibisz to take a look. The preceptor did not know what it was either so the patient was referred to dermatology. The dermatology unit is located in Kenmore.

After moving quickly during the visits of two patients, the resident caught up in terms of time and took a few minutes to review a patient's hard chart in preparation for a dictation. The dictation was done slowly and with a lot of thought. Then, Leslie called another doctor to discuss the diagnosis of a patient. Next, she began her second dictation. This appears to be a difficult task, due to the time it takes to verbally describe the visit. What I mean is that the dictation does not come naturally to a resident.

The substitute preceptor stopped by to check on Leslie and answer any potential questions. Leslie Fulton talked about another patient. This relationship seemed to be comfortable, open and constructive.

Spatial
Looking at computer screen on west side of building is difficult when natural light is shining on oneself. I felt very uncomfortable using my computer.

My interpretation of this
The problem is that the effects natural light on the buildings users was not considered due to budgetary constraints. If the windows had been designed to admit north light, I think that users of the space would not be affected by the natural light in this way. Reflection: Why do architects allow buildings to be built without considering the negative impacts which are designed to utilize computers in private offices so poorly designed?

Interview
A: How is your relationship with the patient? This could relate to quality of care, will the patient return to see you, and how the relationship stands as you perceive it. How would you envision the ideal care you would give the patient and how might you change it?
L: *"The quality of care is really pretty good. I don't really feel limited by the fact that I am in an HMO, where I can choose to do or order for a patient. . . The quality is good. It is very comprehensive. I think it is easy to work with the specialists here because the residents rotate through the specialties. The specialists you can just call them up and ask them questions which is really helpful."*

A: And you feel comfortable with the patient and the patient feels comfortable?
L: *"Yes, I think so."*

A: I think it is a difficult question to ask possibly to a resident because you are not getting repeat client yet?
L: *"I am though, the man I just saw. I have seen him about four times now. The other patient I saw today, only one of mine I found him in urgent care, but he is a follow-up. Three others are not my patients. That is unusual. Yesterday afternoon, I saw a patient who I have been following since I first started. He is one of the first patients that I saw over one year ago and he's been coming every month or two. So, he is someone that I have been following closely through the death of his son and through some horrible family issues. Another person I saw yesterday, I just began seeing three months ago but she has been back to see me every two or three weeks. She has so many issues."*

A: So you have a relationship established?
L: *"Most people come back. And someone today tried to come in to see me."*

A: So the relationship is fine, you don't think it could be improved any?
L: *"Well, yes there are a number of things that don't flow so smoothly. One is sometimes I find the time limitations very difficult. But, I understand there has to be a time limitation so sometimes I feel crunched; especially, when one patient is twenty minutes late and that just throws everybody off. I try to limit my time with that particular patient and see if he/ or she can come back for another work-up, if it is a complete physical or something. If I could do some of it that day and send them off, and then have them come back. But, that doesn't always work. It doesn't always work if you make their visits shorter. Especially, if it is something where I have to ask a question, where I have to show someone (i.e.: today a patient with something on his skin) something that I did not know what it was. I ran it by another doctor. This means potentially interrupting someone. Some doctors do not like to be interrupted. My preceptor tells me to interrupt her which I do not always feel to comfortable doing. But, sometimes I will. But, other physicians have made it clear that they do not want to be interrupted. Then, I get even further behind. I do not know whether that could be improved. Maybe somehow making time for*

preceptor, preceptor time, I do not know how that can be improved. Like one of the MA's I think is very good. I can . . . all my time but not all of them are. Sometimes the patient will be here for ten minutes . .. . . before the patient is put into the room. And I will not always know that because the patient I am with was twenty minutes late. Where as if I knew the next patient was in the room, if the exam door was closed when I left the first exam room, I could at least poke my head in the room and say I am going to be a few minutes late. But, the next patient is not always in the room yet. For the most part as far as patient follow-up and liking the patient population, I feel the patients do get quality of care."

A: Service. If I were to ask myself a question I would ask where is the patient responsibility?
L: *"It is not every patient that is late. When a patient is late, some doctors are better than me at limiting that first visit."*

A: What if the patients were charged for being late or for not showing up for a visit? Work is done for the patients to come in. Records are retrieved. The staff is prepared for that visit. There are a number of people who are effected.
L: *"I think it is a good idea. I think there should be some incentive for people to be on time or something to deter them from being late or not showing for an appointment. It is true that the patient's should take some responsibility, but how do we enforce that? It would have to be a system. I wouldn't feel right asking the patient, well you are twenty minutes late, so you have to pay me, Or I am limiting you visit to five minutes, because it is now twenty-five after the hour. I have a patient at half-past the hour, so you have five minutes. I do not feel right doing that."*

A: How about the space? I will show you a few sketches that I have drawn of the exam rooms on the forth floor. Which rooms do you use?

L: *"I rotate to all rooms. Sometimes I get rooms 14 and 15. Sometimes I get 22 and 23. Sometimes 23 and 24. Sometimes I get 15 and 20."*

A: So how do you like working in these rooms? What about room 15?
L: *"I do not like room 15. I like the room, because I can reach behind me. The only thing I do not like about it is that the light doesn't reach when I am doing pap smears. I have to have them move the table. We have to push the table against the wall for the light to reach. I do not know why in room 15 that problem exists."*

A: Christopher Sadler said that too, that the light is problematic. Christopher likes exam room 6 west. I am trying to figure out the optimal layout. Briefly the reasons why he likes these room is: (1) the position of the exam table, the right hand side of the body can be in the most spacious area of the room. The stool, the light, BP can be taken in the chair and in the table, The curtain and door location is good.
L: *"This sketch reminds me of room 20 which I like."*

A: 20 is a similar set-up except it is along the perimeter of the building.
L: *"Room 14 I do not like because there . . . and the counter is not right behind you. It is way over. You have to move over to the counter, then move back to the patient. So Exam room 20 I like a lot."*
A: So if you were to think about that as a model that was repeated, it might work.

A: You do not have the MA in the room to help you.
L: *"No that is another thing. I think that makes things a lot easier when you have an assistant. That is how it was in medical school. In fact I never did the GC, Clamdeya, or pap smear. I did not actually apply it to the culture. All I would do is hand the stick to the MA.*

The MA would take care of that. I learned these techniques when I began my residency here. And it is interesting that a lot of the men that I work with do not know how to apply the pap smear. They did not know how to fix it, the hair spray."

A: That is an issue that I think would warrant a longer visit if you are going to perform it by yourself.
L: *"The physical takes a lot less time than when I first started. There are occasions when I do not know that I will be performing a GYN and I will have to set up the room myself."*

A: So with the medical assistants the men have more of a relationship with them? And actually, what is the MA doing with you? She is just getting charts for you and running things? On the fourth floor, the MA's have real relationships with the doctors.
L: *"Yes, the problem is that having the MA in the room during my exams is not cost effective. I do not think this will change."*

A: The MA's, then your relationship with them as a female is quite different?
L: *"I do not even know what the difference is because I do not even use . . . ..Our area here is mostly women. The other side of the floor has more men."*

A: So is there one MA on this side and or two MA's on the other side?
L: *"Sometimes there are two."*

A: Is there a high turnover rate with the MA's?
L: *"I think so."*

A; Do you think of the MA as part of the clinical team or part of the administrative team?
L: *"The MA's do both because administratively . . . phone calls, and secretarial type work, then on the other hand blood pressure, temperature and weight."*

A: So you trust the MA's do blood pressure for you?
L: *"I trust some MA's. If patient's come for a follow-up blood pressure I will always check it. On some regular visits I do not always recheck the MA's blood pressure. But there are some MA's reading of blood pressure that I will always recheck. If I see that a patient has a high blood pressure on the form , I will always recheck the blood pressure reading. If it is particularly high or low."*

A: How about the relationship you have with your preceptor. Is the relationship good or bad?
L: *"Great. I am really lucky."*

A: So you are one of the lucky ones, I have heard through transcripts that the overlap in clinical time does not happen. Some residents do not get to interact with their preceptor all that much.
L: *"We do miss each other. . . . . but knock on the door if . . . . If I am really rushed. If I have time I will wait. And do other things. Or try to figure out the problem myself."*

A: Is it good to have one preceptor? What if you had more than one preceptor. Would that improve your experience?
L: *"Yes, I kind of am. My preceptor is part-time. And . . . takes a lot of time Dr. Maude and Dr. Previksksk . . I think it is good that I .. but I actually like having one preceptor more. You find that doctors have very different approaches. And no one approach is better than the other."*

DATE: FRIDAY AUGUST 2, 1996
SETTING: INTERNAL MEDICINE CLINICAL AREA FOURTH FLOOR.
My violation of the OSHA policy

What is Happening?
It was about 12:30 and I was a bit hungry. I had not brought my lunch today due to a busy schedule. This was not my standard routine. So I had a yogurt which did not satisfy my appetite and was still thinking about food. I was walking to the fourth floor east side of internal medicine and began chatting with one of the medical assistants. What I have learned over the past four weeks is that the medical assistants are not permitted to eat at their desk due to OSHA regulations. Do you think the medical assistants adhere to this policy? No, they do not. The medical assistants and receptionists hide their food. Some of the creative locations include their designated drawer, behind a book or even under a napkin on their desk. The reason I have been told that the medical assistants must obey this regulation and that the nurses and doctors do not is because they work in the open public spaces versus private enclosed office spaces. I am conscious of this issue because on a number of occasions I have found myself hungry at 11:00am and must go into the awful break room to satisfy my appetite. Is this possible for the staff who answer phones. No, from my angle just walking away from one's desk is not fair team work. A person has to wait for their scheduled break. I have problems with this employee distinction because it gives the doctors more fuel to criticize the medical assistants' behavior. Here is my personal example. As I said it was about 12:30. I was talking to Dalia and she offered me a scone. I was hungry so what did I say, "Thank you." Well, I guess I should have obeyed the rules, but I was hungry so I took two bites. I had to tell her how I liked the flavor of the scone. Within a two seconds, Dr. Douglas Caulley appears. He quickly states, *"Dalia, haven't you discussed with her the rules pertaining to eating within the unit?"* in a sarcastic and what I perceived to be authoritative tone. I felt very uncomfortable by his statement and I am sure I had received an indirect reprimand that is characteristic of this doctor. Within five seconds the incident was over. Why did he blame Dalia?

I have been thinking about how to translate this situation to architecture because it raised feelings within me.

My interpretation of this event: Why did he blame Dalia? Don't you have better things to complain about than regulations. Why do you have to reprimand a person in a humorous, yet hurtful way. I would never want to work for that doctor. You are not my father.

How did arch make this possible? To begin, the physical location of the break room is left-over space. The phone room medical assistants are not really in a location that is visited by patients. If one really did a study on how many patients visited the phone room to how many patients visited the doctors and nurses offices. Guess who would score much higher? The doctors and nurses. So where is the logic in this policy? As far as I am concerned this is another way of creating a gap between the team. Is this type of differentiation good for the medical assistants. I would say not. It is as if the medical assistants are treated like children. Maybe they need something added to their job, but I do not think negative reinforcement of this nature is helpful to creating an effective team.

DATE: MONDAY, AUGUST 5, 1996
SETTING: INTERNAL MEDICINE FOURTH FLOOR
My observations as a runner of message carrier

What is happening?
Today is another day of running messages around. I am getting very familiar with the tasks required to do the job. I think some people are even treating me like a medical assistant. Today's classic example occurred with a nurse. Let me describe the situation. In each of the designated shared nurses' offices three boxes are hung on the exterior of the door. Two of the boxes are labeled with a nurses name and is considered the nurse's personal "in" box. Notes to be reviewed by nurses are placed in these "in" boxes. One example is a phone message. The third box is the out box which is shared by both nurses. For a note to be placed in the "out" box, the note should have a signature at the bottom or a post-it note with a further destination or task explicitly labeled. What happened today was a simple mistake. A nurse might have placed a message in her "out" box, or maybe someone else put it there without a signature or post-it message. I as the runner noticed the lack of information and I said to the two nurses in the room something like this. *"Excuse me, there is no signature on the bottom of this message. Have you reviewed it because it was in the "out" box?"* In what I considered a rather aggressive tone, one of the nurses responded, "*Well, put it in the "in" box."* I said in response, *"I do not think you understand, the message was in the "out" and was not signed."* I think she looked at me without a smile and I said back clearly, *"The fact of the matter is that the message was in the "out" box and I am trying to find out if someone has reviewed this message. I am only trying to help out."* I put the note in an "in" box and walked away annoyed thinking can't she admit that she might have made a mistake? Since these are my notes, I said to myself what a .....

Was this person actually listening to what I was saying or was it another slam in the face that the medical assistant must have to face all the time from this annoying clinical staff member. Why snap at someone who is in fact trying to avoid an error? If I were in that nurse's shoes I think I would have said, "Thank you for pointing that out, I do not know how it got there. Good job." Instead, the nurse chose to make me feel as if I had created the confusion. Sorry, but I do not appreciate unwarranted comments which are totally illogical.

Maybe the nurse is having a bad day because I heard her snap at a medical assistant earlier in the morning. That conversation which I heard was in the same tone of voice.

Reflection
One of the questions I still have is how unfairly some individuals treat other co-workers. Don't the nurses realize that the medical assistants are instrumental in facilitating the daily operations within Internal Medicine.

If one medical assistant is not as efficient and may not work as hard, should all of them suffer?

Reflection concerning Friday
What are the OSHA regulations?

OSHA: Infection Control. The goal of the regulation is to prevent the transmission of Disease. If a patient coughs and there is food the risk that you put yourself under of transmitting the disease is greatly increased.
There have been discussions within the department concerning this issue of infection control and food within the public spaces. The main question seems to be what is Public and what is Private. The physicians are claiming that their offices are private spaces and are therefore not required to follow the regulation. However, I see this situa-

tion differently. There are some physicians who always use their private office for consults with patients. Then is their office public? I think that if a patient is entering the enclosed office of a physician, then the office is a public enclosed space which provides confidential meetings. And should therefore abide by the regulations of OSHA unless the physician decides that patients will not be permitted into their enclosed private space.

My interpretation of this
The doctors rule.

DATE: TUESDAY AUGUST 6, 1996
SETTING: INTERVIEW WITH DONNA ECKSTEIN
Supervisor

What is happening?
A lunch gathering was partially sponsored by one of the most generous people I have met here at Internal Medicine, Mary Swain and Donna Eckstein. They ordered pizza for the department. What was nice about the experience is that it brought the staff together. Unfortunately, these friendly gatherings must occur in the claustrophobic lounge. Doctors were discussing subjects such as real estate in the south end and the career path of the primary care pharmacist were positive steps towards breaking down the wall. At least this was my perception of the situation.

During a meeting with Donna Eckstein, I learned about changes in the medical assistants job. One of the most significant topics was the effects of standardization on efficiency within the workplace. Humanization was sacrificed for increased productivity is how I understood Donna. Donna has worked here for eleven years and is now the supervisor of the medical assistants on the fourth floor. "She remembers a time when she knew the patients who came to the office. The old phone system had four extensions. Those extensions were specifically dedicated to doctors and the medical assistants who scheduled the week for the physician. Yes, there were problems, but the personal level existed. The physical space was different too. It was open and the medical assistants had more contact with the physicians."

What is my interpretation of this
Donna's voice remembered the smaller more intimate environment of Internal Medicine. She was part of the old and part of the new. Because of this past knowledge she was clearly able to compare and

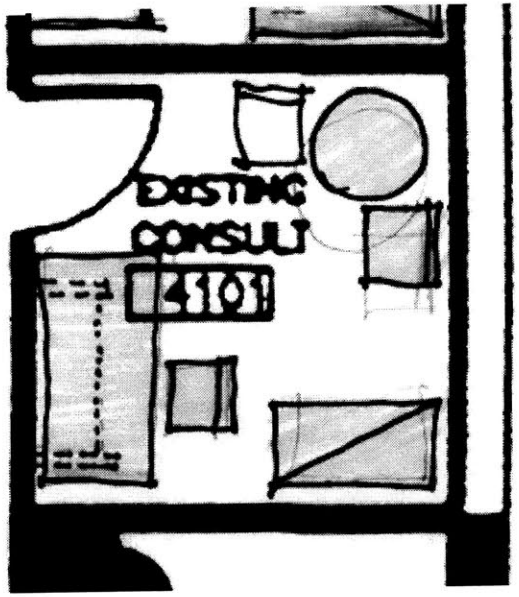


Fig. 7.29 Drawing of Ms. Donna Eckstein's private office. Focus of drawing is furniture layout.

contrast the two environments.

Space
Donna said she would work on a diagram depicting the ideal work environment for the medical assistants. I showed her one of the diagrams by Dionne Davis which addresses the issue of workspace requirements. I anticipate that Donna might be able to illustrate a significant change if she really tried. Of all the medical assistants she has the ability because she understands the job.

Interview with Donna Eckstein
A: How you perceive the relationship that exists between the MA and the doctor as it exists and how it could be improved in the future? How do you perceive the relationship between the patient and the department, existing and future. And how you think the architectural space could change for the better? Could sketch something out which is a new physical space?

D: *"It is pressure from all ends unfortunately from the patients, and from the clinicians"*

A: How is the relationship between the MA and the doctor?
D: *"I think you have to go on a case by case basis. I think some of the MA's have better relationships with the clinicians. Some clinicians interact more with the floor staff than others. Some see the medical assistant as being there just to serve them. And, other clinicians see them as part of the team who are here to accomplish something. Not just to get a job done but to get something done. To feel that you have helped someone. Or really feel that you have gone out of your way to do your job."*

A: Right.
D: *"Most clinicians avoid the phone room, unless they have a*

problem. It is quite different from the old space. Did you ever see the old plan?"

A: No. But, Randye did a sketch for me.
D: *"Randye and I have been here. We went through the renovations. All the design changes were done for efficiency reasons. It was the model clinical unit. They came in here and tried to design something that would help work flow. I think that was all that they were looking at was work. So, we put in a new phone system. With the old phone system, the phone would just keep ringing until we put them on hold. We had four phone lines. In the past, we had more interaction with the clinicians that we worked with. But again it was still, they (the doctors) thought that you worked for them."*

A: Is it because you could see them?
D: *"That is part of it because the doctors would come out more. But now they come out to the up desk. But you do not see the doctors come out to the up desk unless the doctors need something or somebody."*

A: And sight can be a problem. I have seen Greg Whalen come around looking. He has to come out of his office, all the way around, he does the loop. Where Anne commented upon it, she said "line of sight." So you are saying the same thing.
D: *"Unfortunately, with this, line of sight would mean having to gut this place out. I do not think structurally it could happen. If it were a smaller unit. You know the stairwell is right in the middle of the unit. So, I think the interaction with the clinicians is, part of it, having to deal with these new systems, has really put them away from the support staff where if they were more involved with the support staff, I think they would have better control of their practice. They would know more of what is going on."*

A: And that is how you felt with the old way.
D: *"Yes."*
A: So the customers were more satisfied with the service?
D: *"I think so because it was more of a personalized service."*

A: And the patient was calling you and the patient got familiar with you.
D: *"Right. Because there were actually four different sets of extensions. It was Dr. Yin and Dr. Whalen practiced together so they had one number. As a medical assistant, you kept the books for both of them. Dr. Duffy and Dr. Rawson practiced together. You got to know the patients and you got to know their needs, you got to know how the clinicians liked their schedules booked. Things like that. It is very hard to do that now because everything is centralized. We had to make very generic rules. Standardizing has it merits, but you get away from the personalized service that people really look for. You get away from the human effect. And the relationship is stressed between the medical assistants and the clinicians. Just because of the physical set up, because of the phone system that we have put in, the phone room, and we moved from a central area."*

A: I think of it as us and them. Versus we.
D: *"The medical assistants are a group. The clinicians are a group and the nurses are a group. And I just kind of stand there and put band-aids on everybody."*

A: It is tough. What I see is that the medical assistant is always wrong. No matter what because of the vertical hierarchy.
D: *"Some of the physicians and clinicians don't see the work that the medical assistants You have to walk a mile before you get in someone's shoes."*

DATE: WEDNESDAY AUGUST 7, 1996
SETTING: INTERNAL MEDICINE
The job of reviewing labs

What is Happening?
There was a potential disaster that I was involved with today. Over the past two days, I have been reviewing normal lab papers and preparing a standard satisfactory note regarding the specific tests which a patient might have had. The note is then mailed to the patients to inform them of their medical test results. Well, yesterday a pile of Dr. Rawson's lab results were placed on the desk that I was using (she was on vacation) while I had stepped away from the private office. The problem with Rawson's lab results were that they had not been reviewed by the Dr. Rawson in detail. In fact, these lab results were placed on top of the prepared lab results that I was working with. I assumed incorrectly that Margaret, one of the medical assistants had put Rawson's lab results there because she had given me the work earlier that day. Unfortunately, it was Dr. Ruga who had put the stack on top of my current work. This error created a minor mess in the office this afternoon. Dionne Davis, the senior medical assistant kindly told me not to apologize for the mistake. It could have happened to anyone. Nevertheless, I felt bad and apologized for my error. Through a thorough recheck, it seemed that two letters might have gone out with the incorrect information. Those patients were called and told to disregard the soon to be received letter.

My Interpretation of this
One of the problems which occurred here is that I was forced to perform this work in a private office due to the lack of space within the phone room. Had I not been using a physicians office, I would not have been in a location where the information would have been distributed and the problem would not have occurred. I would have been with the medical assistants and Dr. Ruga would have left Dr. Rawson's lab results on her personal space.

Another difficult issue is that important medical information is being transferred from the medical expert to the untrained clinical team member, the medical assistant. Why is this a problem? Sometimes doctors do not note on the lab that an abnormality is OK or they make mistakes (I do not know how the doctor would respond to this statement). On occasion, the medical assistant will see a high cholesterol level or an out of range blood test. If the medical assistant catches these abnormalities, then the question is rechanneled through the hierarchy. If the doctor had initialed or checked the issue, time might be saved improving the efficiency and reducing the likelihood of error. So, if the lab is questioned by the medical assistant, then the lab will go to the nurses office. If the nurse cannot solve the problem, then the problem will be sent to the primary care physician. This is an example of another inefficient work process.

Reflection
Why is it not possible for this process to be standardized by the doctors? Even if the doctors physically marked a check for each issue on the lab, then the medical assistant would know that the doctor reviewed the result and found it to be satisfactory. I guess I would appreciate a system that would reduce the ambiguity of the work because as a medical assistant you are only to pass information and not make judgements about a patient's health.

Why can a doctor treat an medical assistant as a servant when this is another case of the medical assistant participating in the success of the medical care experience? The mistakes that the medical assistants catch are in fact an example of the quality of care that is given to all patients.

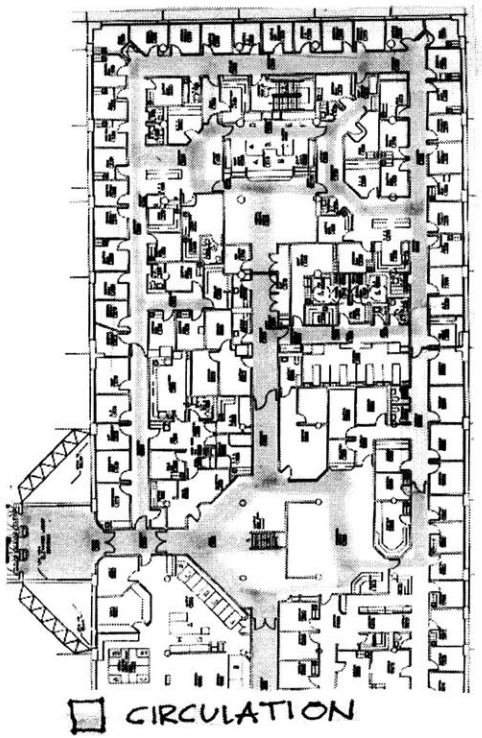


Fig. 7.30 Drawing of fourth floor circulation patterns based on observation and personal use.

Space

As I stated, there has not been space for me to work never mind adequate space to do anything that requires one to spread out their work along a spacious worksurface. Every medical assistant is cramped for space. Every medical assistant works in a windowless space.

What is Happening?

Today I briefly spoke to Dr. Ruga. He began to discuss the subject of preceptor and resident. It was a brief discussion which touched on the issue of systems which do not work in teaching.

Space

Dr. Ruga had previously had one of the offices with a column in it. The problem with this office is that a preceptor and resident would not be able to have their own desk. Yes, by changing his office he does have the second desk, but the space is still not adequate for the work that Dr. Ruga does have. His four drawer lateral file is filled. And he shares his computer with his resident. However, he says that there are merits to sharing a space. From his tone, I think he really liked sharing his office with Bernard Walker.

DATE: THURSDAY AUGUST 8, 1996
SETTING: INTERVIEW WITH DR. EVA JONES, MD
Primary Care Physician

What is Happening?
Today, I met with Dr. Eva Jones to discuss her ideas concerning the ideal Internal Medicine unit. She spent five minutes sketching her ideas and then we had a thirty minute meeting. The main concepts we discussed concerned the following issues:

Open versus Closed
"What doesn't work is that doctors are stuck down hallways and patients are stuck down hallways and the up medical assistants are the people moving in and out of rooms ; but, they don't know when patients have come and gone, they don't know if a doctor needs help. I have to walk all the way down there to try to find help from a medical assistant or to ask a nursing question, that kind of thing. Although there is one advantage to being down here, in that I can be left alone. And that I don't have patients trooping by me,like if they see I am in my office, I am on the phone, maybe I am behind and seeing some of the other doctors a patient may be walking by, the doctor is sitting in the office probably wondering why that is occurring, And that doesn't necessarily take care of that problem, but it opens things up a little more." Dr. Eva Jones

Privacy for the patient at the receptionist desk
"In this design, essentially it is two half circles, because I was thinking about a circular arrangement.. I think the most important thing when a patient walks in is to walk in and see the receptionist. I don't like people to have to walk through the patients who are waiting, they are looking at you. I think you should be able to walk in privately and tell the receptionist I am here for my pap smear privately. A lot of people have private questions they want to ask And then I would have

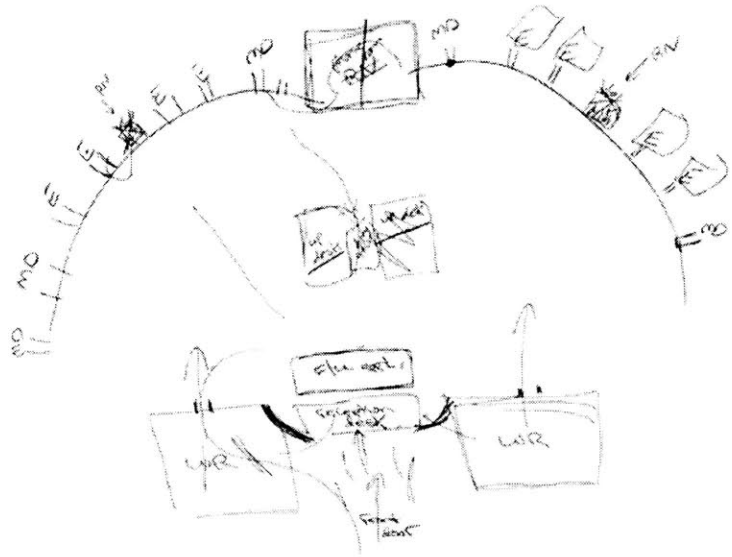


Fig. 7.31 Ideal workplace drawing by Dr. Eva Jones.[1]

[1]Eva Jones, personal drawing, August 8, 1996

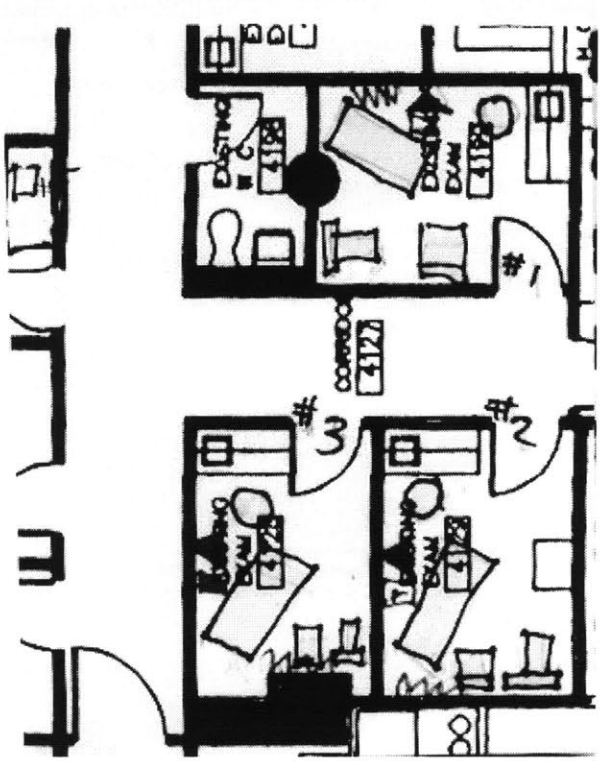


Fig. 7.32 Drawing of the exam rooms that Dr. Eva Jones uses for her clinical practice. Focus of drawing is the dead-end corridor which accesses these rooms.

two waiting rooms on either side, instead of one big waiting room everyone is staring at each other." .Dr. Eva Jones

Ideal unit size
Dr. Jones commented on the ideal number of doctors for one unit. She said that four doctors, two registered nurses and two up-medical assistants would be her ideal number.

Ideal support spaces for the doctors, office location and exam room location for the patient
"Essential numbers are that each doctor should have two exam rooms. The other thing that needs to change here is the dirty utility room and the microscope are way down the hall for me. And that room should be readily accessible. So, I can walk out of the exam room, look under a microscope. Dr. Eva Jones

Comments on being away from the main circulation loop
"I like the patients not tripping by me. I am private from the patients. But, In terms of the up medical assistants trying to know when patients are going, or if patients have questions, I think the patients would feel less isolated if they were not down an empty hallway, I mean sometimes the patients get left on their own for a while, when a doctors is running behind. If a patient could ask the up-medical assistant what is going on, then the patient would not feel so isolated." Dr. Eva Jones

Comments related to the exam room design
Dr. Jones told me she likes windows and likes to be able to reach the tools she uses. In some of the exam rooms that she uses it is quite difficult to perform her work.

Best and worst qualities of precepting students in terms of the quality of the learning experience for the student?
"For the student, it is an incredible learning experience. They get to

have exposure to primary care and you don't get that in a medical school. Or you used to not get it all in medical school and rarely in residency. But now, students have the need to have more experience in ambulatory care, which they do get here. So that would be the number one advantage. Number two, the advantage is that teaching for both the student and for the physician is a very rewarding experience to both. Not only does the student learn from the preceptor, but the preceptor always learns. You have to keep up with things. The resident will ask challenging questions. Intellectual y stimulating. The disadvantages is .....that you get behind. I mean you just don't have enough time to teach the student or the student holds you up. pace of your practice. Here it hasn't mattered as much because we are not reimbursed by how many patients we see personally per hour. In a private practice, you do not have that time. It is not cost effective." Dr. Eva Jones

Reflection

My perception of Eva Jones's drawing and comments are that they reflect existing patterns. I wonder what a drawing of hers would be like during another conversation.

Spatial

I think I might propose that the exam rooms be designed with the female doctor in mind. This would maximize the efficiency and usability of exam rooms for all physicians.

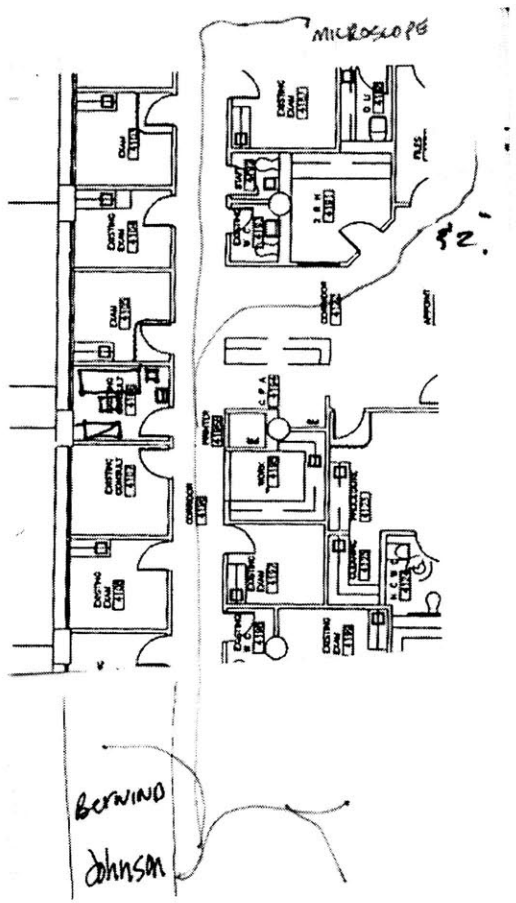


Fig. 7.33 Drawing of circulation paths typically made by Dr. Eva Jones based on observation and informal interviews. Focus of drawing is excessively long distance from work area to microscope.

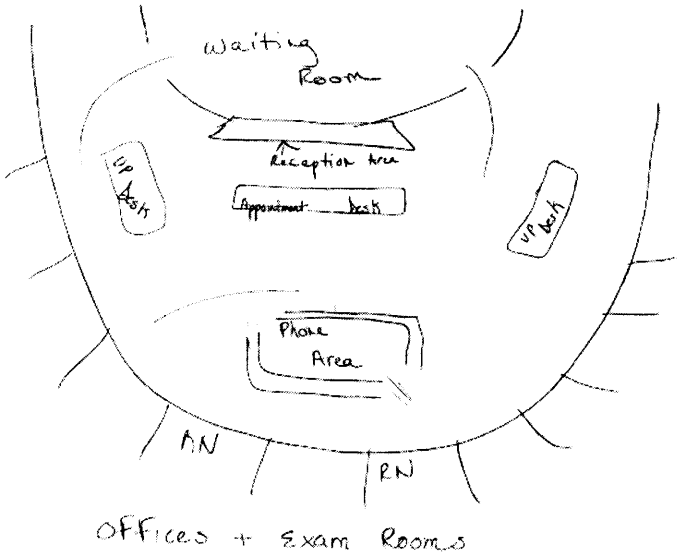


Fig. 7.34 Ideal drawing by Ms. Donna Eckstein.[1]

DATE: THURSDAY AUGUST 8, 1996
SETTING: INFORMAL INTERVIEW WITH DONNA ECKSTEIN
Supervisor

Donna's Drawing
D: *"Actually, Jan and I have been trying to get them to put up this glass partition for privacy."*

A: You want the glass partition for Inga and Katie?
D: *"So they can kind of bend into the glass, and —- go behind . They have them in other departments. We don't have approval for it."*

A: Do you think that increases the personal or does it distance Inga from the patient?
D: *"It can be either way. I think the people would appreciate it for the confidentiality and for the privacy. Um. but it does make kind of a barrier. You know it does —- like a little barrier there. But, I really think the patients would feel much more comfortable. For whatever reason, I need to talk to someone. There is no privacy out there at all. So, that would be the reception desk. And I think waiting room, tvs or something to keep people occupied. An appointment desk right behind them so they could kind of cover for each other as needed. On the unit, it is pretty open. It is all open. Back here would be the exam rooms and offices and kind of mixed in, but there are no big walls here. Maybe just like the support beams."*

A: Sure
D: *"A desk on each side so they have vision or sight all behind them or in front of them depending on where they are. The phone room area would be kind of like a nurses station in a hospital where they have the entire desk, but they don't have the partition."*

[1]Donna Eckstein, personal drawing, August 8, 1996

A: The full height partition wall.
D: *"Right. So it would be kind of like openings on each side and they could still talk to people or see if someone needs help. So there is that sight, so if someone needs help or if they see that someone is just wandering around, quickly they can direct people, tell people whatever, That would make it more of a everyone would kind of interact with everyone else."*

A: How many people, doctors, nurses PAs and MAs? What do you think a team is?
D: *"We could do it with the number we have now. There are six to eight doctors on each side."*

A: Do the doctors total four full-time people?
D: *"They total four people."*

A: And then two nurses, one nurse practitioner,
D: *"Per team."*

A: And four medical assistants?
D: "Per team is more like eight medical assistants. For each side, we now have two teams."

A: So the doctors could actually be six doctors representing four full time physicians?
D: *"Yes."*

A: Would you want to see residents in this ideal space?
D: *"I don't have a problem with residents. Actually I like residents. Because they kind of take anything on."*

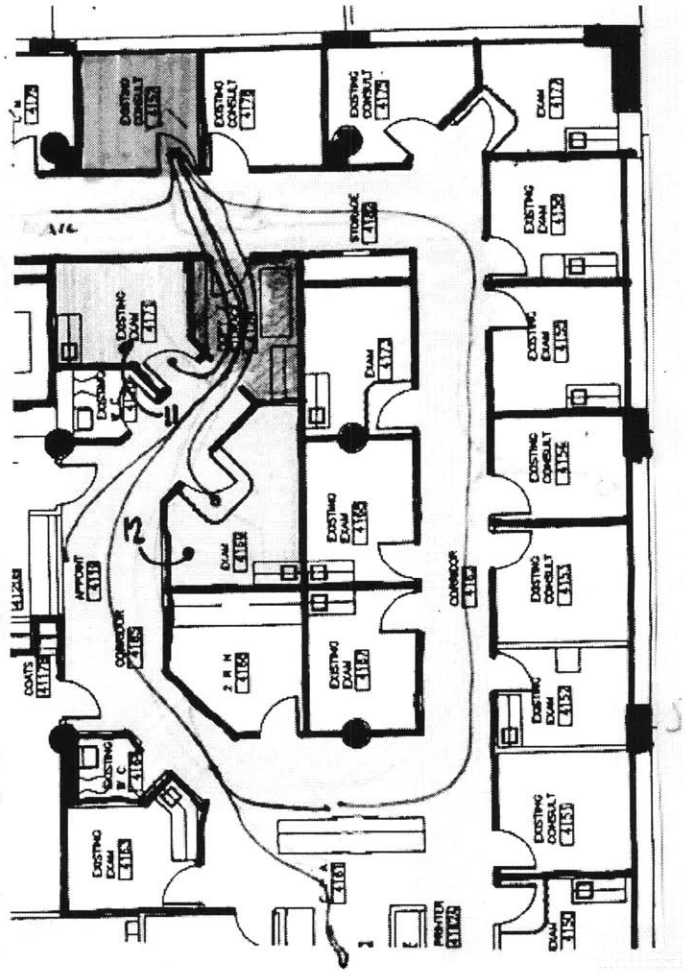


Fig. 7.35 Drawing of circulation paths typically made by Dr. Greg Whalen based on observation.

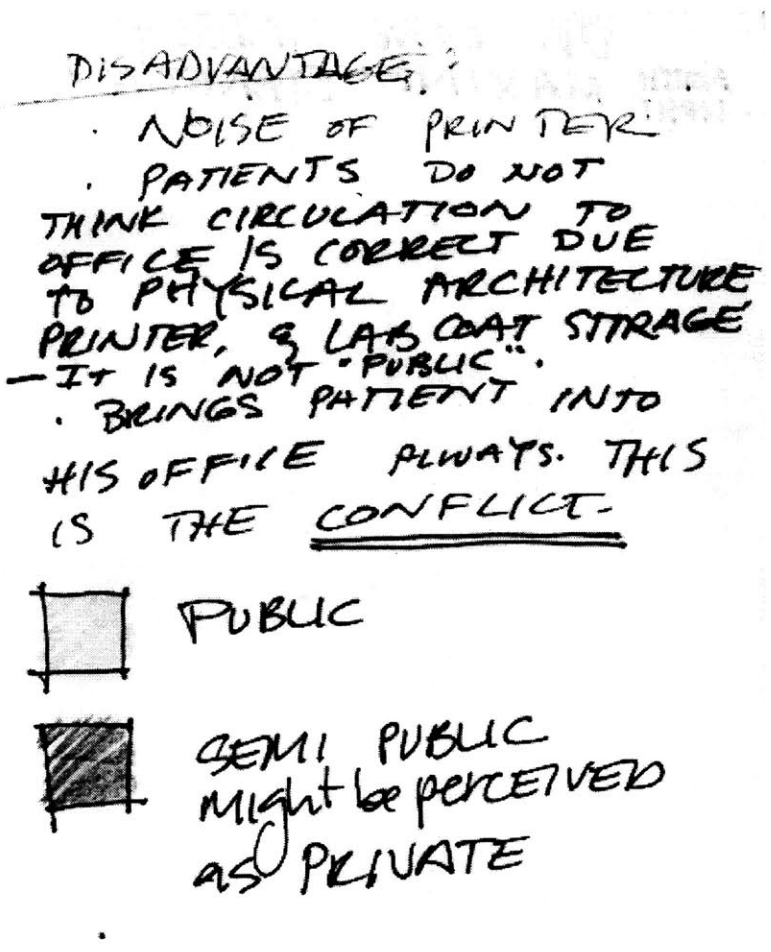


Fig. 7.36 Comments from Dr. Greg Whalen during informal interviews which reflect criticisms of the physical space.

DATE: FRIDAY AUGUST 9, 1996
SETTING: INTERVIEW WITH GREG WHALEN, MD
Primary Care Physician

What is Happening?
I met with Dr. Greg Whalen for a brief discussion about the spaces that he uses daily and any other issues that he felt relevant.
Comments on exam rooms that he uses every day.
"What I like about the exam rooms is that they are compact and I can reach things. I do not think that windows are a plus or minus. I do not feel that strongly about having a window. The advantage of not having a window is that the room can be perfectly dark, If you do an eye exam. And in the other rooms, you can not do that. This thing , the bio-hazard trash, does not work that well. I think people use it the wrong way. People stuff paper jonnies in it. And, it is never emptied. I think the floor light is better. On the others the screw always get loose. And with the floor lamp, you can look in someone's mouth." Dr. Greg Whalen

These comments pertain to the workbook which I prepared for the model teaching practice.

Medical assistant area: *"I think it would be better to have the literature organized better because I can never find what I am looking for." Dr. Greg Whalen* We discussed the possibility of organizing the information in alphabetical order.

The appointment desk: *"This is a good spot. It works out. However, people have a tough time finding out where I am located. They do not know where to go. Dr. Greg Whalen*

The break room: *"There is a microwave in this room. It is a break room. I only go here when I am hungry. It is a terrible room. There*

are no windows."
The reception area: *"I think there should be more colorful things on the walls. Make it more uppy and bright.."* Dr. Greg Whalen.

"The dirty room is too cramped." Dr. Greg Whalen

My Interpretation of this
During our discussion Dr. Whalen commented on the medical assistant and what I perceived was that he was frustrated with his relationship with them.

Reflection
Why do spaces get built when they are not appropriate for the job that one works at?

DATE: MONDAY AUGUST 12, 1996
SETTING: BRIEF DISCUSSION WITH DR. RUSSELL RUGA, MD
Primary Care Physician & Preceptor

What is Happening?
Comment about the doctors mingling with the patients. If the patients think they can see doctors without appointments, then they would be in all the time seeking attention. Dr. Ruga did not respond positively to the idea. My perception is that privacy is important for maximizing his efficiency. Patients dropping by would affect the amount of work that the doctors might be able to accomplish in their daily schedule/routine. Efficiency would be affected. One example that Dr. Ruga discussed was the nurses office on the west side of internal medicine four. Their office had been within the line of sight of the patient. What resulted was that patients would quickly stop by, ask a question and invade their confidential space. Calls would not be able to be made and the work process would slow down. Then Dr. Ruga commented on the idea of videos for learning is good. This type of set-up is used by orthopedic surgeons today in practice. Dr. Ruga commented on the diagram of the model teaching practice. He clearly expressed his dislike for the scheme. This open meeting area will create inefficiencies and enable patients to drop in on doctors. Our schedules are tight enough. Doctors want privacy when they are working.

My Interpretation of this.
My immediate interpretation of Dr. Ruga's comments are that he is resistant to the idea of radical change. He is satisfied with the location of his assigned registered nurse and he likes the physical wall that exists between himself and the patients in the current scheme.

I have not observed patients in Dr. Ruga's office. He shares it with

Dr. Bernard Walker, a resident so there is not much physical space for this type of interaction.

Reflection
Why is Dr. Ruga associating the idea of a common space with inefficiency?

DATE: TUESDAY AUGUST 13, 1996
SETTING:INTERVIEW WITH DR. JAKE DUFFY, MD
Primary Care Physician

What is Happening?
Brief discussion about the designing of the space. It was built as it was needed was my perception of the discussion and the unit has sufficiently served its purpose for Dr. Duffy as a physician. So physical space is not the problem. Looking at the floor plan, Dr. Duffy is centrally located with support staff just outside his door. The only group who is not within an arms length transaction is the medical assistants in the phone room. Dr. Duffy does not know these members of the staff. Yet he is well aware that they are the individuals who answer the phones for his panel of patients. *"I don't know the medical assistants who answer the phones for my patients. The medical assistants do not know my practice and the patients I see."*

Before the phone system changed, one medical assistant received calls for two doctors. However, at times one medical assistant would be overwhelmed with phone calls and the other medical assistants would not. The new phone system addressed this problem. In the existing phone system there is a general number for Internal Medicine 4. Calls are answered in the order they are received and are distributed evenly among the medical assistants. In solving one problem, the new system created another problem. Now, medical assistants receive 'any' doctors phone calls. Medical assistants no longer are familiar with a doctors panel and are physically removed from the doctors.

During the conversation, he compared the HMO physician to the private physician who works out of his cellar. I think he is trying to change from a doctor who works with his panel in a "simulated cellar" to a team player unsure of the best strategy. One of the questions he is very concerned with has to do with the medical assistants.

Who are the medical assistants in the phone room? What should be their medical training? Who should answer the phones? What should the phone room employees know medically? I don't know the employees who work in the bull-pen. What if the medical assistants who answered the phones had more education. What if they asked a few questions.

Dr Yin has addressed this problem by returning phone calls to all of his patients. He does not have the nurses perform triage for him.

A lot of time on the phone was not built into our schedules. Now we have time built into our day to discuss medical problems with the patients.

I liked working with one specific medical assistant. If I had my own medical assistant, then my schedule might be a bit more balanced. One example of a poorly balanced day would be: 2 russian patients, 2 - 90 year old patients and a spanish speaking patient. If I had a medical assistant who worked with me on a regular basis, then maybe that person would know to schedule a common cold for me due to the difficulty of previous patients. Or maybe the medical assistant would realize that a 90 year old patient probably requires more time than a 45 year-old patient. If I had a medical assistant, then the professional would know my ideosyncracies.

My Interpretation of this.

Dr. Duffy is the team leader for the east side of this floor's internal medicine unit. He was trained as a doctor, not as a business man. What I think Dr. Duffy would like is to bring the care experience back to a more intimate and personal level. My impression of him is that his panel of patients can get a more improved quality of care from his support staff, if the support staff is familiar with his patients. He was advocating a medical assistant who is his personal or shared assistant.

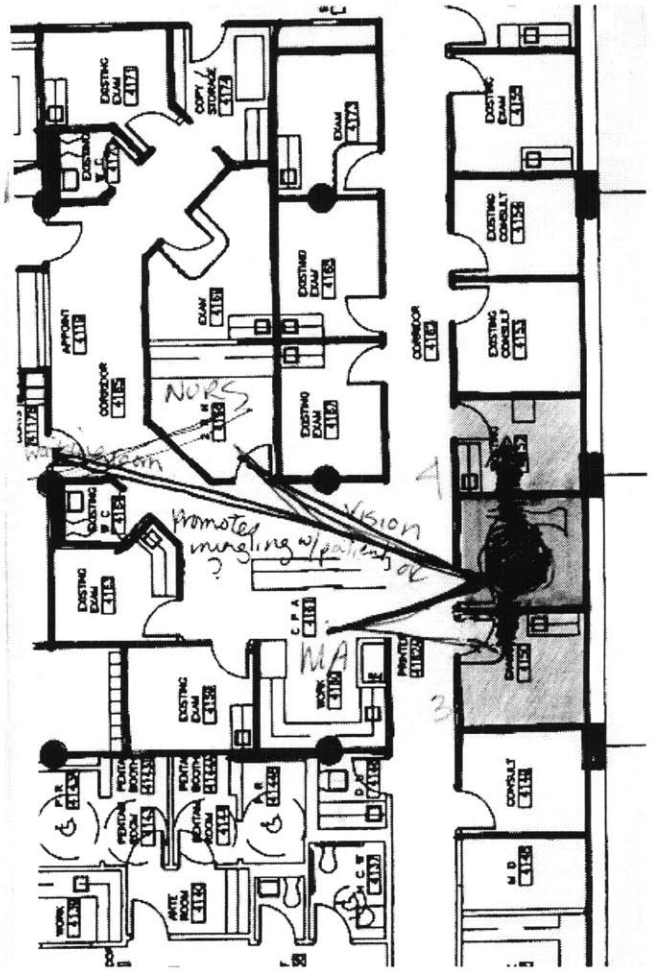


Fig. 7.37 Drawing of assigned office & exam rooms, and sight lines characteristic of Dr. Jake Duffy's work area based on observation and informal interview. Dr Duffy has one of the most visible offices and it has affected his communication with support staff.

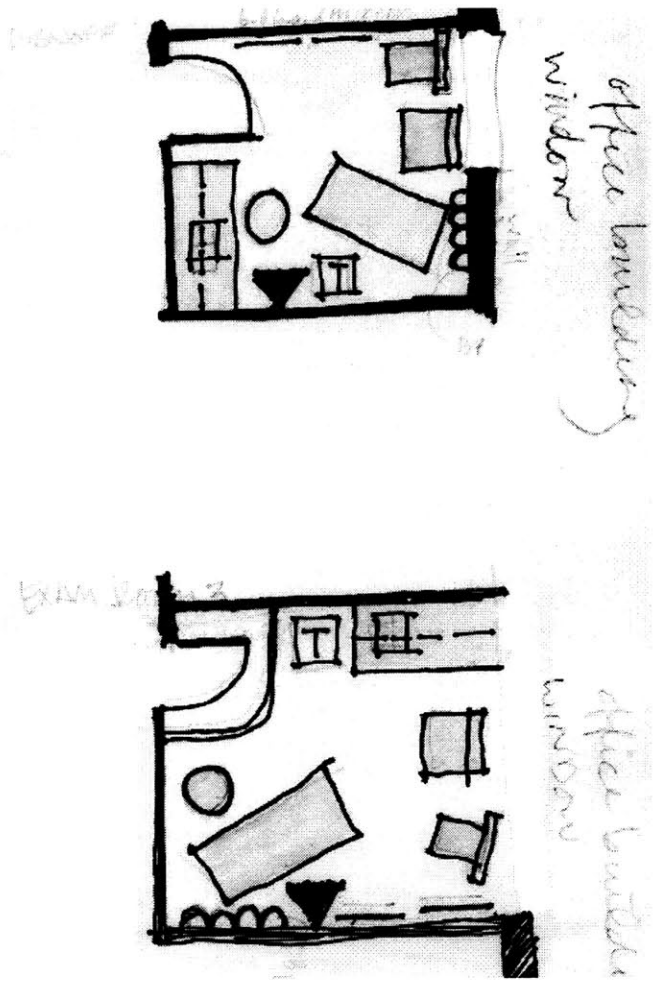


Fig. 7.38 Drawing of exam rooms used by Dr. Jake Duffy. Focus of drawing is furniture layout.

During the conversation, he discussed the benefits of the old system and the old architecture. His comment on the bullpen suggested that he would challenge the centralized phone room due to its depersonalized character.

Reflection

Many member of the staff look back to the personalized characteristics of the old phone system as an asset, not a liability. How could the electronic advancements of the telephone be conceived of in a decentralized manner that reaches back for the qualities of the past while leaping ahead to address present needs?

Space

Dr. Jake Duffy likes where he is located. *"I can see the Up MA's and nurses from my door. If I have a question, then I go to them and ask for help." Dr Jake Duffy*

Conversation with Kim.

K: What would make my job easier. Access to certain things. What I would like is more space. Like a longer desk. You are writing, you are doing something else. For example, when the phones are not ringing one can do normal labs at their desk. You can put them aside and still be able to write your messages.

Conversation with Mary

The medical assistants who are in school are much more interested in learning more about clinical work.

DATE: WEDNESDAY AUGUST 14, 1996
SETTING: INTERVIEW WITH BONNIE RIERA, RN.
Primary Care Triage Nurse

What is Happening?

Bonnie took some time to think about her ideal work space and prepared a drawing for me. Her drawing focused on one unit as she envisioned it working. Her ideas reflected the existing conditions in many ways yet she saw the nurse's role differently in terms of the physical space. The decentralization of the nurses is a concept that Dr. Eva Jones envisioned last week. This physical change would facilitate the interchange of confidential discussions and reduce the time spent looking for a team member. One successful doctor nurse relationship that Bonnie has is with Dr. Duffy who is within her line of sight from her workplace. In this case the time Dr. Duffy must spend walking to see her is minimal. A second concept discussed was privacy for the nurses. In the current scheme, patients filter through the office space in front of the nurses office and they will drop by to schedule appointments, chat, or to ask if they might see the doctor for a minute. These interactions affect the nurses ability to maintain a confidential environment and prove to be disruptive to work patterns. *"What I did was sketch it out and then I decided that what works better is to separate the nurses and put them with the clinicians. So that you have the nurse in the corner office whatever and two doctors on either side. That way the doctors are next door. If the doctor has something that they want you to do, it is an emergency, they would be able to find you. It Is like Dr. Duffy, he comes to see me. Randye is here. But he is the only one that has the advantage, all the other clinicians are on the back side of the hall. On the other side of the department, Dr Diaz and Dr Sadler, if they get out of their office and walk just a few feet they can see the Up Medical Assistants; but, they cannot really see the nurses. Also, (pointing to the drawing) this pulls us away from the exit because part of the problem, that we have is that*

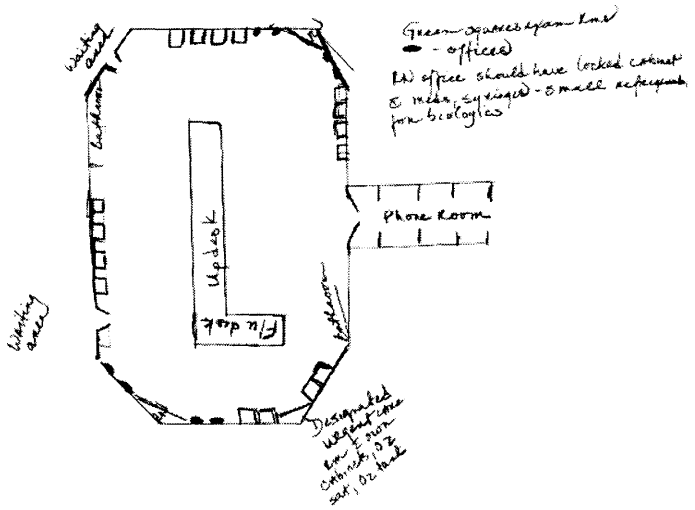


Fig. 7.39 Ideal workplace drawing by Ms. Bonnie Riera, RN.[1]

[1]Bonnie Riera, personal drawing, August 12, 1996.

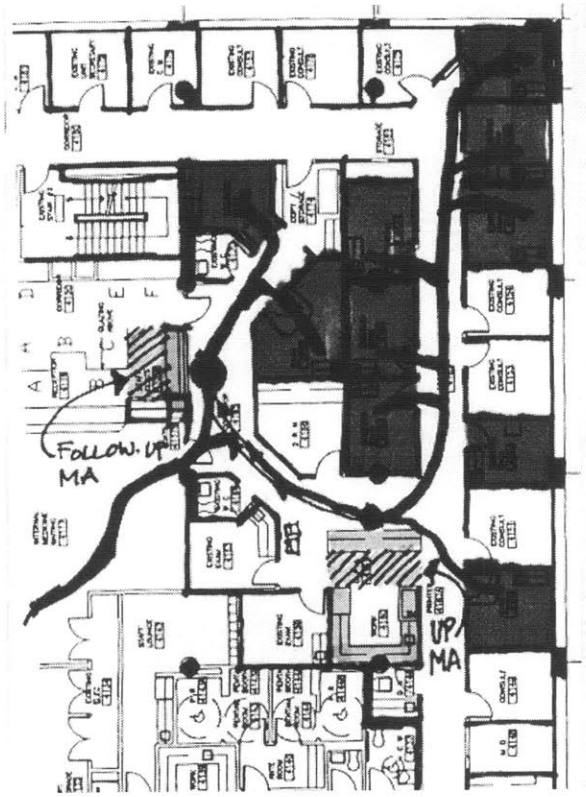


Fig. 7.40 Drawing depicts the two points of conflict for up-medical assistants and follow-up medical assistants. Patients tend to get confused with these two areas when departing from exam rooms or offices and repeatedly approach the wrong desk for service.

people look in the window and they see that there are people in this office, so they just come through. There is a lot of disruption throughout the day. Especially, if someone is not at the up desk, then they will come in here. They come here for an appointment, they come here because they know your face, or if they could talk to the doctor for just a minute. It is disruptive for most of the day." Bonnie Riera

A second change that Bonnie thought might help the patients is to combine the MA up desk and the follow-up desk. Many times patients will enter her office to make appointments for follow up and this physical shift of the follow-up desk would eliminate this confusion. Also, the relocation of the follow-up desk would improve the confidentiality of the patient. Currently, there is no privacy for the patient and Bonnie thought this might help resolve the issue. And finally, by moving the follow-up desk away from the phone room, the patient will not be near all of the noise created by the numerous conversations. *"In fact, I think the follow-up should be part of the up desk. Why? I think it is because of patient access. It is again the issue of people coming out of the exam rooms and they are again searching around for where they should set their appointment for their mammogram. The doctor gave me this referral, how do I set-up the appointment? And the up desk medical assistants end up directing them to the follow-up desk. I do not know if it is a line of sight problem, the way the space is set up or if it is they need a bigger sign. People don't seem to be able to find that follow up desk." Bonnie Riera*

The next topic we discussed pertained to the location of the medical assistants who work in the phone room and the phone system. *"The biggest problem, the one thing I had a hard time with was the phone room. At first, I thought well maybe the phone room will be the center of this, but then you would have the same problem as you have now. And I worry also about patients who are waiting to schedule follow-up appointments if there is no door or some way to separate the phone*

room from people coming to do business. If they can hear everything that is going on.." Bonnie Riera

"I think the phone system works centralized. I am not sure with the phone system being the way it is that you can dedicate one line to one clinician. You know I think it is just easier if people know that there is just one general number that they can call. If they have to speak to their doctor, then eventually the message will get to the doctor." Bonnie Riera

One comment Bonnie made addressed the maze-like quality of the existing facility. She said that patients get lost looking for Dr. Whalen's office. *"Many times patients go to the up desk and not to Dr. Whalen's desk. This is probably due to the type of space which leads to Greg Whalen's office. It is through a storage and printing room. Actually it is a very noisy room because of the printer." Bonnie Riera*

My Interpretation of this.
Bonnie would like to be centrally located to her doctors and away from the main circulation path of the patients. In a nutshell, I think she was implying that she would like privacy from the public and adjacencies to her more immediate team. One issue that interferes with the work of the nurse is the inconsiderate patient who assumes that nurses have "free time." In a time-period of down-sizing and reduced operating budgets, why should a patient not treat the nurse in a professional manner and realize that meeting with her will cost money?

Where does the phone room belong? This question persists. And yet, Bonnie did put it outside of the main work area of the office. When she commented on the noise which comes from the phone room, I wonder if the unprofessional nature of their discussions does effect her.

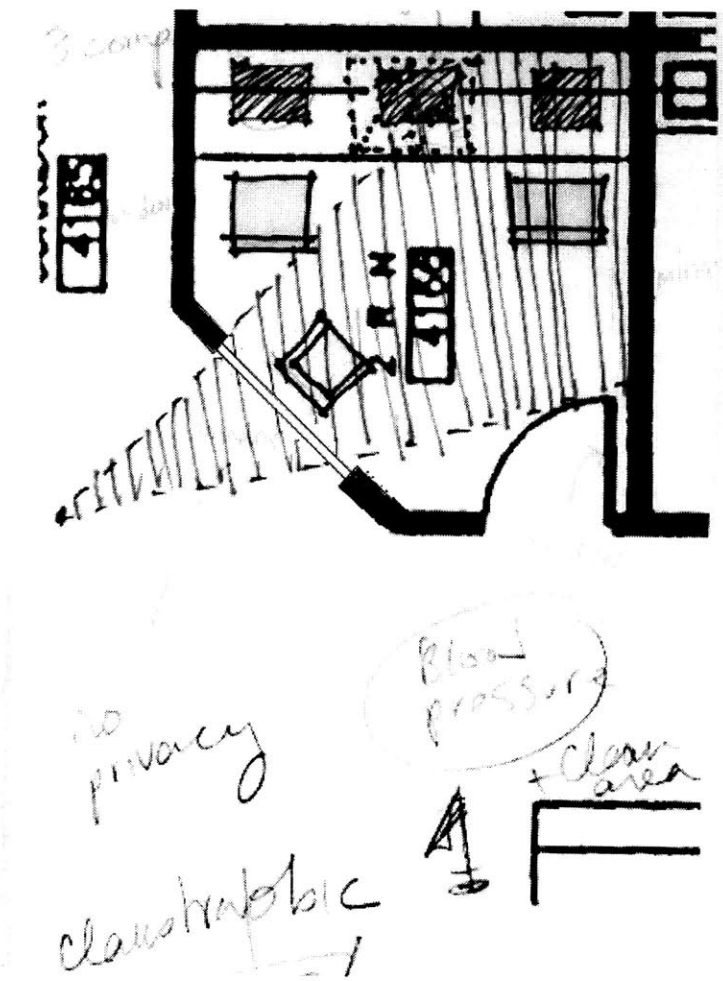


Fig. 7.41 Drawing of Bonnie Riera's shared workspace. Focus of sketch is visibility and computer equipment on worksurface. Comments were documented during informal interviews with registered nurses.

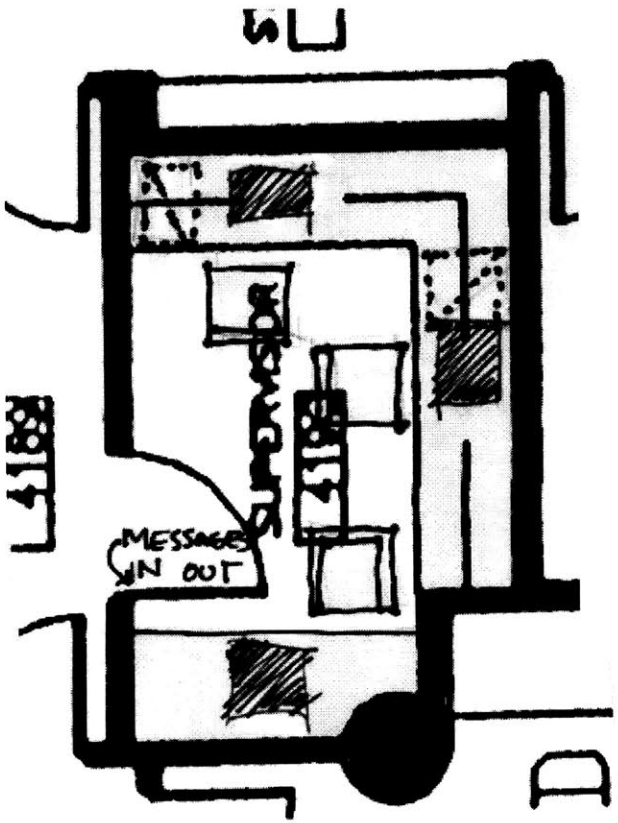


Fig. 7.42 Drawing of registered nurses shared office. Focus of sketch is furniture layout, overcrowdedness, and windowless space.

Comment on the ideal unit size
In my drawing, the patients are coming in from two exits off the waiting room. The Up desk would still be here, but the follow up desk would be attached to it. And the exam rooms would be on either side of the six clinicians offices. So if you have the RN in the center and the doctors on wither side, and four exam room on either side, And I would add an urgent care room or a trauma room. If someone enters with chest pain, this is a space for oxygen, a fibulizer, whatever, we could get stuff going. Again if you have two exits off the waiting room, that it would help patients on that side, to find their way out. So the patient could see the exit.

Reflection
Is decentralization of the nurse a good idea? I have overheard them discussing advice as a group and I think this type of collaboration improves the service they provide. On the other hand, would the nurse receive benefit from more learning if they were dispersed and located adjacent to the doctors?

Who is the ideal phone room medical assistant? To me the position is more like a factory job where one continues to perform the same mundane task day after day in the same chair and where one receives nothing in return for his or her efforts other than a paycheck.

Space
In all of the existing offices, the nurses have their backs to the door and are wearing a telephone head-set. What I think this implies is that they are not available for spontaneous patient service. Bonnie stated that she liked the window in her shared office even though it creates one problem. The problem is that patients can see the nurse.

DAY: THURSDAY AUGUST 15, 1996
SETTING: INTERVIEW WITH DR. LEONARD YIN, MD
Primary Care Physician

What is Happening?
Today, I had a long conversation with Dr. Yin. The conversation began by discussing his relationship with his patients. He described his relationship as personal and from my own observation, I agree. Why? Dr. Yin consistently returns calls directly to his patients. Sometimes I can accomplish quick 15 second phone calls while a patient is dressing. A prescription refill is one example. I think calling the patient back as soon as possible is important to the patient. This is a service industry.

For other patients, Dr. Yin will make sure he has an adequate amount of time to discuss health issues with the patients. Some conversations may require up to one half of an hour for him to address an issue or listen to a patient. Admirable was his described ability to listen. Especially, when patients are experiencing difficult times. Death within a family is one example. In these sorts of cases, he calls the patient on the phone, talks, and then invites the patient into the office for a further discussion. Here, Dr. Yin was sincerely concerned with his ability to act like a classic family doctor dedicated to his patients for a life-time.

In cases of irregular lab tests (i.e., pap smear or mammogram), Dr. Yin will review the lab and give it to either of the east wings nurses, Bonnie or Janet. As he said, *"The two nurses do an excellent job conveying information to the patient regarding irregular lab results."* If a patient is not satisfied with his or her discussion with the nurse, then Dr. Yin will call the patient to reassure the patient of the nurses competence in relaying health information.
The second way that Dr. Yin develops his relationship with patients is

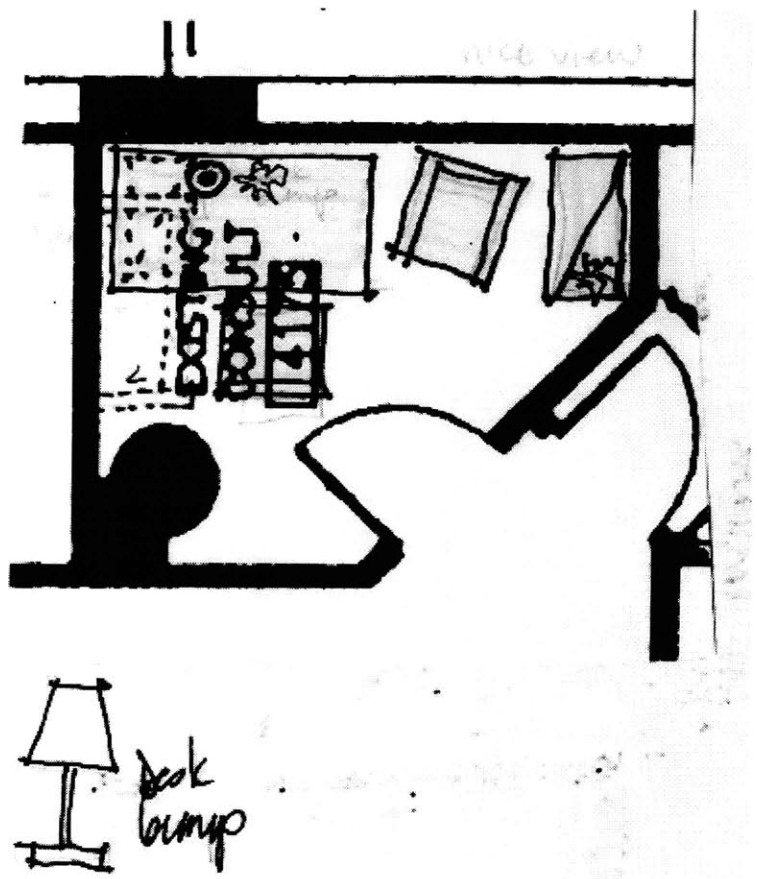


Fig. 7.43 Drawing of Leonard Yin's workspace. Focus of sketch is basic layout of furniture.

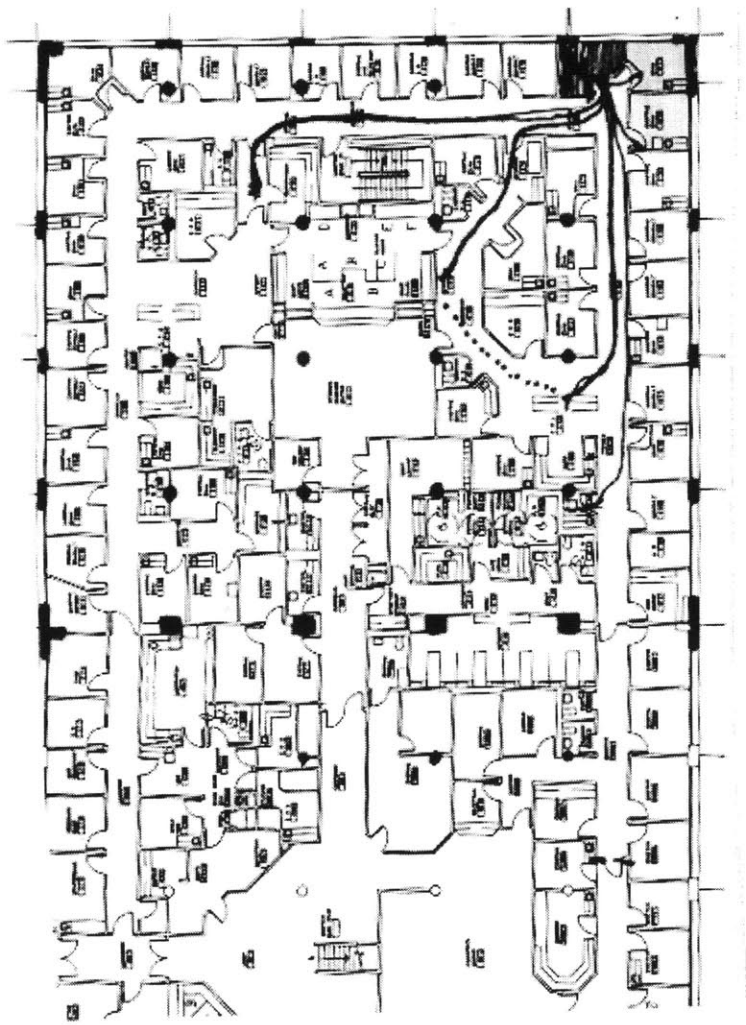


Fig. 7.44 Drawing of office location, and circulation paths typically made by Dr. Leonard Yin based on observation.

through patient visits. He described how he introduces himself to new patients. His initial visits with new patients always begin with a consult in his office, then move to the exam room, and finally close in the consult room. He described how he values the personal service he provides to his patients. After a patients first visit, the pattern changes. Dr. Yin will begin the visit in the exam room where the patient is unrobed, perform the exam and leave the room inviting the patient back to his office for a closing. During the closing, he can give a patient a referral, prescription or say good-bye. Dr. Yin has had patients in his panel for twenty years. Others have left his panel when they moved out of the city. When Dr. Yin described these patients, he sort of implied by his words and phrases that he was upset by the loss of the patient relationship. Again, he conveyed his desire to heal patients like it was done in the past where a patient had the same family doctor for a life-time.

Patients have changed over the years. Initially, the people at Harvard were white upper income level people. There was a mission hill project with HUD and we began treating another population. Now Dr. Yin's panel is diverse. I have my older patients with their problems and I have a whole new group. The mix is good. Some patients are careful and others must be explicitly told how to administer a drug.

Dr. Yin's relationship with nurses is different from the relationship of other doctors. I take all my calls after they are received in the phone room when I am in the office. The reasons for this approach are numerous. To begin, providing quality service is a factor. He feels it is important to call patients as fast as possible and avoid the possibility of having a patient's concern lost in the shuffle. Second, for some patients the nurse will call a patient and only add more information to the note taken by the medical assistant. This redundancy is one example of an inefficient system. Taking the nurse out of the loop improves the efficiency for some patients. In effect, Dr. Yin utilizes the nurses differently. He knows what they can handle so he chooses

the tasks for them to perform. I have not heard the nurses complain about this tactic as it reduces their overall work load.
Let me mention that Dr. Yin is extremely efficient, organized and one might say "anal" in terms of how his life is structured. The advantages of his work style I imagine is that he accomplishes a lot with his time in the office.

Dr. Yin commented on his relationship with the medical assistants. I have no contact with the employees in the phone room.

Clinical and non-clinical: The current telephone system is dangerous. A patient calls into a system and does not know who the person is. Messages do not get to us. It is not uncommon that a patient will be lost in the shuffle. Some patients have spent three days trying to contact a physician. This sort of frustration is an issue that Dr. Yin is trying to address. From his viewpoint, the phone room is not a good job. Turnover is high. One comment he had was that the best medical assistants were college kids taking a year off from school. They may have had no training, but they were able to learn quickly and do the job with ease. The fact that they students moved on over a year or were promoted was sad and good at the same time. With the current staff, I do not know them. Mental health days are all used by the medical assistants because of the job. The space is windowless. I have basically no communication with the phone room.

Runner position
The message system is like the pony express, you get your messages on route. A simple dot could indicate the importance of a message and importance of returning the call. Sometimes I am suppose to call a patient within an hour. By the time I get the message, the hour is over. This is a real problem.

Location of the office and exam rooms
Great private location. It is wonderful having this corner to myself. My patients can discuss their problems in my office and there is no problem with confidentiality even with my office door open. Getting to other parts of the office is not a problem. I do not mind walking twenty paces is no problem. Size is adequate. If anything more windows would be great. View is good.

Exam rooms
I was taught to examine from the bottom and on the left. This is for gyn examinations. Light is good. Size is adequate. Arrangement is good. Blinds always get pulled because of privacy for the patient. For me having access to the patients from both sides is helpful.

Light
Light is important. When I worked in an enclosed space at a nations lab the offices did not have windows. It was not a pleasant place to work.

Teaching
I tried teaching in the unit. I would go into a patients exam room, introduce the resident and ask if the patient minded if I let the resident perform the exam. Later I found out that some patients did in fact mind having a resident perform the exam. One observation was that the upper middle class did have a preference. The patient had come to see the doctor and not a resident. So, because of these experiences, I no longer precept here. Instead, I go to one of the hospitals and work with the residents like a consultant. In terms of space, I think the resident should have a private area to do his work. Whether it be an office or a workstation, the resident should have some privacy to dictate and make phone calls.

Information Technology
The investment for a system is a big risk. Dr. Yin discussed the possibility for modifications to the existing system. The problem with the existing system is that programming for the system is outdated.

"Dinosaur age technology." Difficult to change and improve. The advantage of the existing system is that it is easy to learn and use within a few hours. In contrast, a new system might potentially require thirty hours to acquire skill to place one in a beginners position.
Another problem with the existing system is that there is no way to track where the inefficiencies lie in the system on a per doctor manner. I cannot compare my work load to another doctor because the system does not allow this to occur.

Ideal Group
The ideal group would be four doctors, one nurse(this would be Mary in this case), one Up MA and one MA for the phones. Dr. Yin described this unit and at the same time he was discussing the old relationships that were developed when the system was smaller.

My Interpretation of this
Dr. Yin is very independent and organized. His concerns and attitude reflect his desire to demonstrate his ability to care for patients and meet their needs.

DATE: FRIDAY AUGUST 16, 1996
SETTING: INTERNAL MEDICINE FOURTH FLOOR

What is Happening?
Today was my last day of the research at internal medicine. The day passed by quickly. I worked a lot on my sketch pad, chatted with Dr. Priscilla Rawson and Eliza Carter about the ideal exam room for women. Their answers reflect similar responses that I had received from other females.

At three o'clock, the staff presented me with a good luck cake. They all asked what would occur next and invite me back to the unit to say hello. It was a nice closing to a intense learning experience.

DATE: MONDAY AUGUST 19, 1996
SETTING: INTERVIEW WITH DR. RUSSELL RUGA, MD
Primary Care Physician and Preceptor

What is Happening?
Comment about personal workspace or private office. Not enough storage space for binders. Issue is amount of storage space. His current office can fit Dr. Bernard Walker. But it is tight.
Comment on medical assistant: I have no visibility of the medical assistant at the Up desk. I like a medical assistant to keep pace with me versus sitting idle. I do not like to tell them to get moving. From their desk they should be able to see the exam rooms. They should clean the exam rooms when a patient leaves so that the next patient can be escorted into the space for another exam.
The medical assistants are high school graduates. They are not your number one choice for an employee. A suggestion that Russell Ruga had was that every medical assistant be required to work for two years as a medical assistant. Try to recruit the eager beaver type of employee. Think about the medical assistant position as a job that will lead to another job. Training these type of staff members is easy. They will give good service to the member, maintain the doctor's flow of patients, and question work processes. "These kids would suggest alternate ways of doing work." Russell said that there were two reasons why the company cannot recruit these type of employees: (1) Union is entrenched within HMO, (2) Diversity is imperative.

Spatially Dr. Ruga has a loop that he works in within the workspace. For him the flow is good for all of his office interactions. A few comments that Dr. Ruga shared with me had to do with another doctors location. Dr. Eva Jones is located down a corridor. She has to walk down the hall for any communication she needs. Russell compared this to his experience with a poorly located team member. This team member was Bonnie, a RN who works on the other side of

Fig. 7.45 Drawing of Dr. Russell Ruga's private office. Focus of drawing is furniture layout. This office is shared with Dr. Bernard Walker, resident.

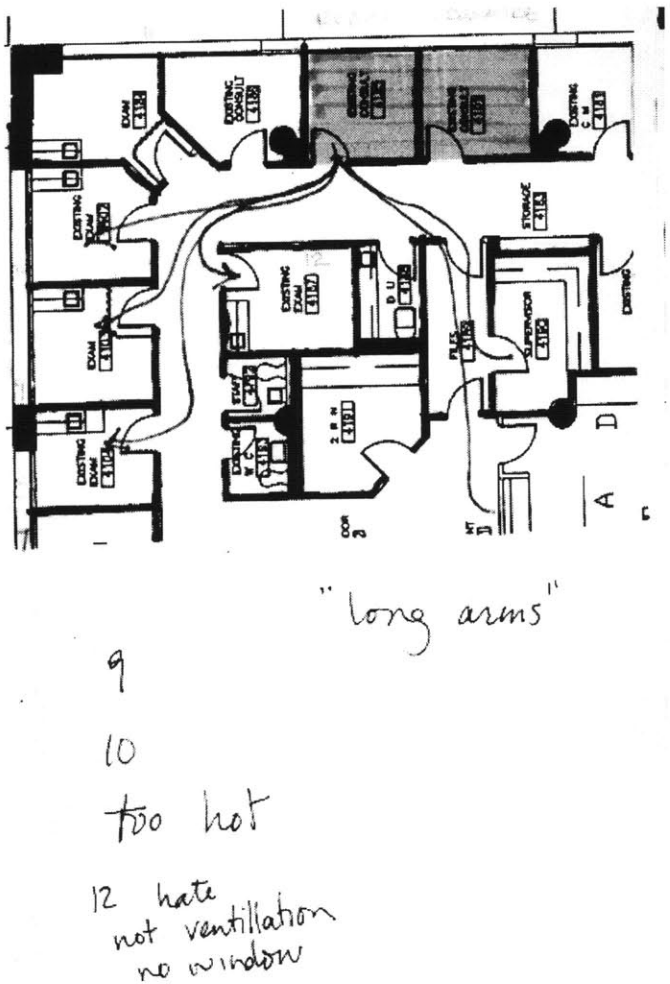


Fig. 7.46 Drawing of office location, and circulation paths typically made by Dr. Russell Ruga based on observation and informal interviews.

the office. When Dr. Ruga worked with Bonnie, it was difficult to communicate. She was out of my loop.

Nurse Triage System: I helped to design the system. Russell discussed the origin of the word triage. Triage was a job performed by doctors/surgeons on the field. It was basically a person with a lot of knowledge making decisions. So the doctor saw the sick patient and made the decision to save the life or let the patient die. Anyhow, Russell likes how the triage system is working.

Triage: Origin of work triage; most sophisticated to do the triage. Decide who is sickest. The best and smartest should answer the telephone. What are the option? The options are diseconomic. Best care situation if patients could reach the doctor. This is cost prohibitive. 70% of the telephone calls are non-medical questions. The current system is an "Upside down triage system."

Dysfunctional Personnel. Dr. Ruga believes that the individual physical responsibility of the patient should be his. *"I believe you should be my patient."* The contract is: 1. to see you with my time. 2. to inform you & 3. to promise to fulfill things in the contract. For example: Dr. Ruga will say to a patient, *"I will be in contact with you about the result of this test."* This is his belief and under this current structure, an employee will either love or hate working with me. I place strong demands on myself and others. Either you buy in or not.

Medical Assistants working in the phone room: I cannot work with seven or eight MA's in the phone room. I would prefer to have one individual to work with. I would prefer to have my secretary. I want to trust that person.

Compared his practice to Dr. Yin's practice in terms of answering phone messages. Dr. Ruga looked to the shortcomings of the system.

My Interpretation of this
Dr. Ruga does not trust the medical assistants in the phone room. Dealing with seven or eight support staff members does not work for him. He wants one individual who he can work with, train, trust and delegate interesting and challenging work to.

DATE: FRIDAY SEPTEMBER 7, 1996
SETTING: INFORMAL INTERVIEW WITH CHRISTOPHER SADLER, MD
Chief of Internal Medicine

What is Happening?
This morning I met with Dr. Christopher Sadler to discuss internal medicine as an organization. We discussed two scenarios:

1.The Existing Organization.
2. The Ideal Organization.

C: *"There are 30,000 people in our practice. With four teams each team is taking care of at least 7,500 patients. It is probably large, probably optimally it should be 5,000 patients per team. So maybe four to six clinical teams would be appropriate for our internal medicine practice. Then there is a layer surrounding the clinical teams. The team leaders actually sit on the cusp and bridge communication between the two layers. The team leaders interact with the support group. The support group includes Anne Burgess, Connie McCarthy, Donna Eckstein, Dwayne, Mike Kidder, Sue Canton, Margaret Becker, Gordon Jackson and myself."*

A: In looking at the ideal organizational diagram, will the organization still turn out to be a pyramid or will it be flatter? And will management be looking at issues on the left and clinical looking at issues on the right, or are they going to come together at some point?
C: *"The organization ends up being flatter . It is greatly dependent upon how much management responsibility the teams and the team leaders take. If there is a requirement for a lot of supervisory management, for example, scheduling no shows, fudging vacation time, etc., the organization will not be flatter. But, if I build a strong culture and the create right incentives, then I will not have to watch*

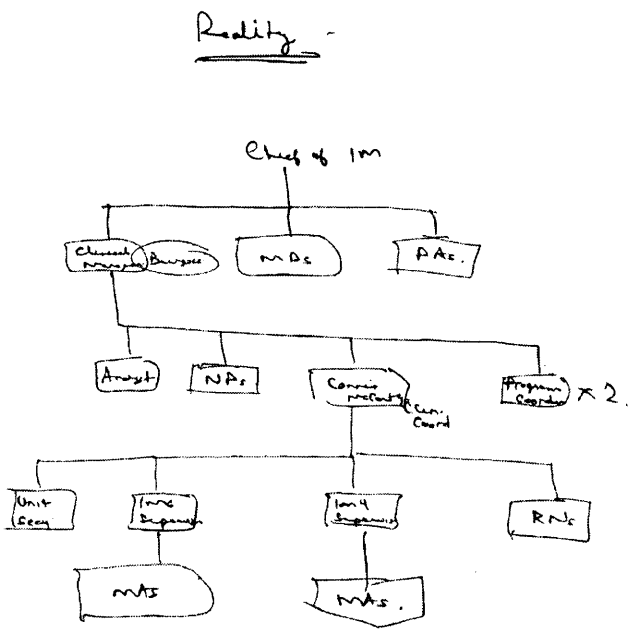


Fig. 7.47 Existing organizational structure drawing by Dr. Christopher Sadler, Chief of Internal Medicine.[1]

[1]Christopher Sadler, personal drawing, September 7, 1996.

them. My role will be a supporter of innovation in the practice. I will give the teams ideas of ways that they could do things differently to make them even more functional. This abolishes the need for so many support staff. And management becomes much more of a support group instead of a vertical hierarchy. So in my ideal organization drawing, this is a circle because it is not a hierarchy. And it doesn't have to be. And so it is flat. And there is no reason why it cannot be flat.
Actually, we have already moved in this direction. So the reality organization drawing is no longer true. Clinical teams exist. Team leaders exist. Now, the incentive systems are being designed. And once those incentive systems are designed then this structure completely falls into place. It doesn't have to be a redesign of the practice at all. The residents just kind of fit right in. So it already exists or we are getting there."

A: Another drawing, What ever way you would think about a model teaching practice.
C: *"We are willing to contribute to current operations but we cannot comment on a model that might be in use for six to twelve months."*

A: The residents that I spoke with said that they enjoy working with a number of physicians. Maybe having one as a preceptor, but having access to all, they learn more: techniques, more ways to solve problems.
C: *"You could even blow up the concept of preceptor for residents. You can have a resident whose preceptor is the team. The team should decide whether they want a resident. The concept of supporting a resident is to increase efficiency, improved service and quality, and results in a fiscal wash for the team. If they can do it right. If I am on a team and I am told on my team, my team gets paid by the number of members that I take care of and my team can elect to have a resident. Then there is a choice. If the team chooses to take a resident, that*

means my best interests as a team leader is to make sure that that resident is up to speed as quickly as possible in taking care of patients because then they can develop a panel. The resident can offload some of the work of other clinicians on the team. So although I know it costs the team in terms of time to teach the resident, it is worth it because it provides me an extra luxury of time in my day because the resident is taking some of my work away from me. The decision is made by the team. Let's develop the concept further, the concept is that any clinician in this department, can go to anyone of these specialty leaders for advice and for immediate consultation. In addition, if a resident is sitting on a team, the resident can go to any of the clinicians on that team, including the specialty clinicians. This would be a model teaching practice for me. And, I can very easily implement that strategy within my department. I cannot get specialists for just-in time consultation for many things. Maybe, I can get just-in-time consultation for dermatology, for ortho, for GYN, that is about it. However, I am not necessarily going to get it for any of the other medical or surgical specialties. They are just to busy and their staffing ratios are pretty tight. But, if I go out to the department and I tell the doctors I want you, one of the prerequisites is for you to develop an expertise so that before we automatically refer to the cardiologist, that they can come to you. You know maybe a little bit more about cardiology then anyone else. In exchange for that, I am going to hire two more doctors into the departments so that your panels are less. So that you are serving in some sort of consultative role. That is what I would do."

A: And you would call that a model teaching practice.
C: *"Yes, I would, it would be a model practice as far as I am concerned. And teaching would fit nicely into that model for me. Why? Because what is essential for the residents is to have access to people who with a certain degree of expertise and specialties. The*

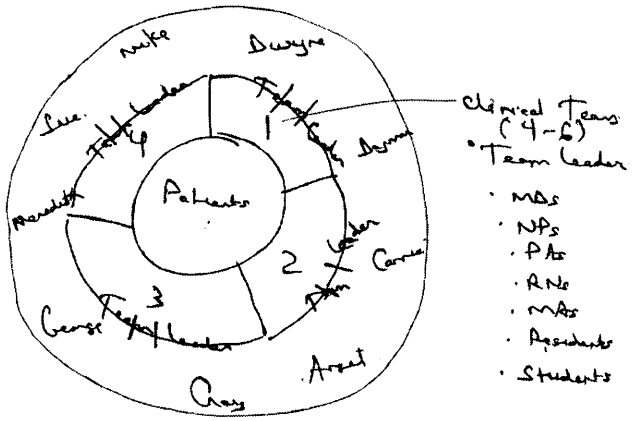


Fig. 7.48 Ideal organizational structure drawing by Dr. Christopher Sadler, Chief of Internal Medicine.

[1]Christopher Sadler, personal drawing, September 7, 1996.

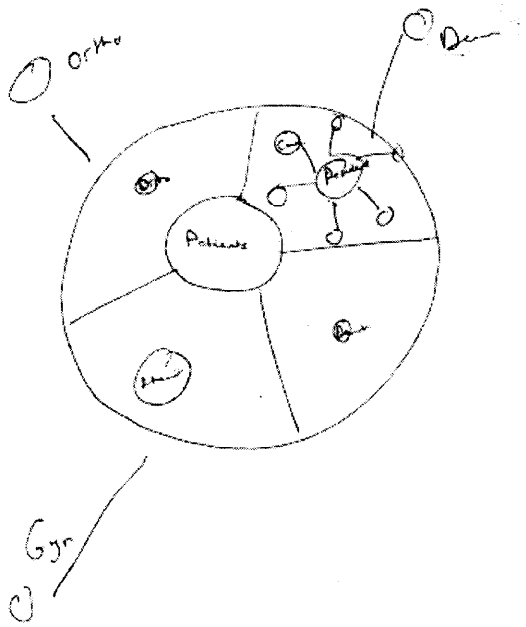


Fig. 7.49 Conceptual drawing depicting the relationship between the primary care physician and the specialist.

[1]Christopher Sadler, personal drawing, September 7, 1996.

educational cost is that the resident does not get intense specialty exposure. I am not exactly sure how to remedy this issue. I think the residents will be required to spend time in a dermatology clinic that is offsite. You cannot bring the specialists in purely for a teaching mission. Because again it does not make sense from an efficiency standpoint for the primary mission of the group. If a model teaching practice like that is developed, then it will have to be supported. You see I can build this model teaching practice as I have just described it, probably without much of an extra cost burden on the practice. A separate model teaching practice that has specialists coming and going and that is full exposure to the residents would be very costly. Who would pay for it? The company is not going to pay for it. The medical school is not going to pay for it. So it is probably not going to exist. Unless, there is some kind of grant funding which will eventually run out. So, I do not think it is a viable long term alternative. It needs to be primarily something that supports the primary mission of the group which is patient care."

A: What lies ahead for the teaching program?
C: *"What I need to do is practical. I really do. The HCD needs to cut $30M from its budget next year. I need to apply every resource I can into getting this department into working better and being more service orientated. And yes teaching is a mission of ours and I do not want to loose that, but I cannot redesign the practice around teaching because if I do that I could be potentially compromising the jobs of the people working here. For whatever reason, if we waste resources, if membership declines, then, I will need to lay people off, so it is not worth it for me to invest in something that would be nice but doesn't serve our primary mission. Teaching is a luxury. The patients and staff are at the center."*
"Caring is living in reality and the patients and staff are my priority not the residents and medical students. I have a box to fit it in. Without the patients and staff, I do not have a business. Without the residents and medical students, I do have a business. I do not pay the

residents and medical student salaries. Secondary mission is teaching. The goal of teaching is really to develop talented people to support the primary mission. And it is not a mission if you are downsizing. So if you a loosing your business as a result of your teaching, you better stop teaching. Teaching is not going to get you where you need to go when you are trying to survive. My concern about teaching is that I cannot focus on it now. I need to focus on my core business. If budget cuts keep coming more and more and I have problems with access, I am going to suggest eliminating teaching. It would be the first to go."

Financial Issues

C: *"You need to consider the financial implications. Because there may be other options. Considering your studies here, maybe you could propose something with out knocking down everything and rebuilding."*

My interpretation of this

Christopher appears to be looking for a realistic solution to the concept of model teaching and opposes some concepts advocated in the Pew report.

Reflection

What organization resistance or support might Christopher receive from his proposed model teaching practice?

What opportunities exist in the existing to explore these ideas?

How bad is the financial situation for Internal Medicine in particular?

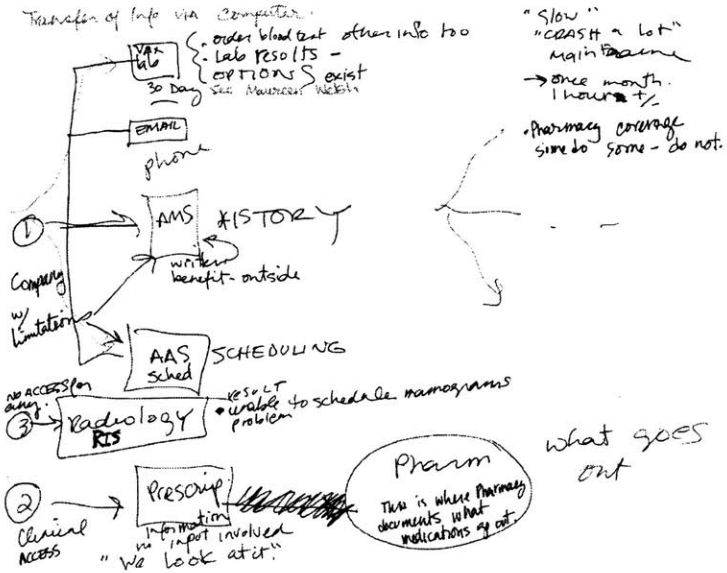


Fig. 7.50 Drawing of information technology processes currently in use based on an informal interview with Jan Sudman.

DATE: THURSDAY OCTOBER 17, 1996
SETTING: INTERVIEW WITH THEODORE LANGLEY, MD
Resident

What is Happening?
This morning I participated in a group meeting with a resident.

A: What's your show rate?
T: *"It depends. When I first started here it was low because no one knew me The people who would schedule regular visits, like IHAs or PHRs, were the people who usually cancelled, A IHAs is a Initial Health Assessment and a PHR is a Periodic Health Review. Those are considered to be like, "Well, I just wanted to go and see a doctor" kind of thing. Those always cancel. People who come in are the ones who are sick and who want to be seen now. They will definitely show up 90% of the time. You can tell who's going to show just by looking at your schedule and if you look at my schedule today there's different systems,"*

Shared office
T: *"There's another resident here that practices out of his desk here, so very often they hang charts on there and we don't know who the hell's coming in and so I just used to get out there and look every single time. It's so annoying so I finally created this little stack of little trays and this one is just left over, but I have them put anything that's for me here so that I can just grab it and nobody can tell the difference which is nice. So that I can get my charts. Small things like that that pay off in the long run if you do it 100 times a day."*

Patients
T: *"The way I describe my practice is it's like juggling and I juggle about 400 balls which are my patients. If juggling 400 balls all at the same time is impossible, then some balls are juggled by hocking them up higher which means that they just have longer lag time for following up. So you'd say "This one's healthy, but I need to see him in about three months" so you hock them up really high and you hope they come back down in three months, but you don't really care if they don't, if they drop it's okay because they are pretty healthy. The one's that are sick you have this really small juggling move where you definitely want to make sure that they are in next hand and then the other ones who walk-in are completely healthy and you don't have any concerns and they can walk out for five years and you could care less if they do anything wrong because they are going to be healthy so you can just drop that ball and there's this pool of maybe 200 balls that are sitting at your feet that occasionally kind of just spring to life once in a while when they get a cold. But that's kind of how I envision my practice."*

Computer
T: *"The nice aspect about the plan is it's computer, Since it was an instituted in the 70s, it's kind of, it's a weird system. It doesn't make a lot of sense from some standpoints, but from the traditional charting methods, but it's actually better than the traditional charting methods. Probably we'll see a lot of systems similar to this, but just more modernized. The reason is most charts you kind of flip through sequentially, it's time ordered. This you can log in different problems by their type of problem and then they're sequentially ordered according to the problem. So that way if someone has an eye problem that they see someone every four years for you don't have to flip through four years of charts to look for that one eye note. You can just flip through the eye section and you have all their sequential eye problems so that's the nice thing about it. And the other thing is I can always do sequential by going into the computer."*

"The thing about Harvard Community Health is you can be as disorganized as you want it to be or you can make it as organized as you want. I try to organize my charts, grade the level of problems so under

major problems you can list all the things you really want to see. A lot of charts you'll pick up that are disorganized will have you know, warts, fungus, you know, vaginitis, urinary tract infections, you know, stroke, a heart attack right after that then they'll have you know eye problems, so you got to look for the major things "Oh my God this guy has diabetes," but it's on the last page you know that kind of stuff. Whereas I try to organize my charts. You can stratify them by QE level so I always put an "M" next to things I want to know off the bat so I know their family history so when I pick up a chart....let's see is this okay?"

A: No other resident has bothered to organize their chart the way that you have and I've watched residents in a very chaotic manner.
M: *"Exactly and then they kind of just scan them and get a Gestalt. If they don't find anything that's like starred, they don't worry about it, kind of thing. And that happens in most places just because of the system. I have a good system that backs me up."*

M: Do you enter into the computer directly — by that date or do you write it and then someone type it?
T: *"I get one of an encounter sheets, I fill it out, I put my name here, my preceptor's name here, the vitals are usually there and this is how I fill it out. And actually it's good that this comes back. Occasionally it comes back because you forget to fill one thing out, so I forgot to fill one thing out and the magic of THE HMO is they want you to use a red pen, but that's okay because because they think you can see things. But anyway this is how I would fill it and I would put an "m" next to alcohol use — so occasional, never smoker is important to me, I check off seat belt and exercise because they're HEDIS criteria. Are you guys familiar with HEDIS criteria? They are these standards that are set by the management organizations for quality assurance in HMOs so one of the ways that HMOs are rated on performance is by HEDIS criteria."*

T: *"H-E-D-I-S. I don't know what it stands for. It's some health employment database for, anyways it's some kind of quality assurance assessment for HMOs so basically THE HMO can say well we have 90% of our HEDIS requirements on all of our patients meaning that 90% of the people have tetanus, 90% of our patients have a breast exam, 90% of women over 40 which is kind of debatable because well that's a clinical thing, anyway 90% of women over 40 have mammograms and all that kind of stuff are listed and you can see here for instance on Judy NAME WITHHELD these are the HEDIS criteria, okay. And so I saw her for one visit and I got all of these checked off except for breast and pap because she was having her menstrual cycle at that time so we couldn't do a pap, but had we done her breast and pap exam then we could have gotten everything taken care of, boom 100% and then THE HMO can say "Oooo" well one they could say, THE HMO can say well "Oooo we have 90% HEDIS you know that beats Tufts by 5% so give us the patients" and then two they could say "well, Dr. Langley's not doing too bad. He's filling his stars out, but Dr. Peckins down the hall has only got 70%" so you could either give him the squeeze you know that's in the future, but they're not using that right now to judge physicians, but that technically could be one thing."*

TURID: What do you mean when you say that quality assurance is not supportive?
T: *"Because a lot of things are judged by either a manager or a physician who hasn't looked at all the literature in detail and so they think "Oh yes, I think everyone should have a breast exam every year" although if you look in the data there's no evidence that breast exam is actually supportive in proving fatality for breast cancer in fact you cause more complications. Yeah, we do it, but in reality the data is not there supporting anything like that on a regular basis so I'm not overly —"*

TURID: So in a way, you say it's a performance criteria established which is...
T: *"Which doesn't judge performance. I mean that's the bottom line. The other one that's really blatantly controversial is mammograms for women over 40. Most data supports mammograms for women over 50, but in all our 40-year-olds they have this little asterisk saying you haven't done a mammogram on your 40-year-old and I'm not going to do it until 50 so I blatantly ignore that one because the data is pretty strong, but controversial. The other one is like cholesterol whether you need to check it every five years in young people that's really kind of bogus. A lot of these other things are pretty bogus. The only things that are really important are blood pressure, smoking & Pap smear."*

TURID: So you actually go for the tests which you feel are supported by data.
T: *"Well that depends, if it's effortless and it just takes a question or two I'll ask and check it off even though in the long run it probably doesn't make a big difference. I'll usually do most things. The only thing I really will ignore is the mammogram between 40 and 50 unless they really want to get a mammogram that's fine because it's controversial. If the patient wants to get a mammogram at 45 I have no problem with that."*

A: So then, how do you judge performance?
T: *Well that's the problem. That's the big thing in medicine so there are all these committees now by the AMA. Every division is developing their own quality criteria. The physicians are developing their own, the health care organizations are developing their own and I think the employers, I think this is an employer-driven, HEDIS is employer-driven as I recall. Anyways so they're all developing their own quality standards, but the problem is there's not much data to support quality in medicine. A lot of it is empiric, historical and so you could just read anything and it would be controversial. So there are a few things that are definitive."*

TURID: I want to go back to how you started telling about your practice and that was by telling about how you prepare yourself for a visit and what is happening, what kind of contact do you have, do you have contact with the patient all the time when he doesn't or she doesn't visit?

M: *"Wait, are you talking about in terms of if people are not coming in and I need to see them or?"*

TURID: Who determines, I mean I could give an example. If a doctor, for example, let me see, sometimes I'm really for it because something is happening to me I don't understand and I really want to see the doctor and then I can't see him because he has such a long waiting list. Most of the time I don't want to see him because I know exactly what I need, but I can't get it without a prescription from him and he refused to see me, he refused to give it to me without seeing me. Who determines if a doctor will see a patient? For example, if something is happening to me, I don't understand it, and I really want to see the doctor. Then, I can't see him because he has such a long waiting list. In some cases, I don't want to see him because I know exactly what I need, but I can't get it without a prescription. He refuses to see me and he refused to give me a prescription because he needs to see me first. My question is do we need all these visits?

T: *"It depends. The system is not created very well because there's no good triage system. And basically everything hits the front phone before it gets to me. The problem is you're limited by what the front phone does. The front phone has a problem that's completely bogus that doesn't even need to come in and says, well you should make an appointment and makes an appointment. That's a waste of time and money. If the person knows how to triage people effectively, if there were a physician at the front phone, then possibly we could deal with 90% of the calls. That would be ideal."*

TURID: So why don't you take the phone calls as a resident?

T: *"Well, that's the problem, it's time management. A system would need to be created where one physician each day or each shift will take phone calls. An alternative would be to hire someone qualified to answer the phones and reduce the number of MAs to accommodate the change."*

A: What did you say?
M: *"You've got to remove some of the other staff and hire someone with more skill. I mean that's one possibility."*

TURID: Or could that be like, could you say that the phone, the first meeting with the patient is so important that the highest skilled should have the first meeting.
T: *"I personally believe that the triage is the most important thing."*

TURID: Yeah.
T: *"And physicians should be triaging."*

TURID: How would you practice if you painted a picture of your ideal practice? The model practice. Not the model teaching practice, but the model practice. What would it be like?

T: *"I think it's a group. I think the solo physician now is nice in concept, but it's too much. You need a network of support physicians, one for dynamic learning and two for coverage. Then a small unit, not this big and cumbersome, but just someone's house with three or four physicians practicing on different specialties so you have a few, you have mostly primary care physicians and then you have some that have a special focus in dermatology, some that have a special focus in surgery. Each one has their own little niche that can supplement each other. And then you might have some support staff other than that and*

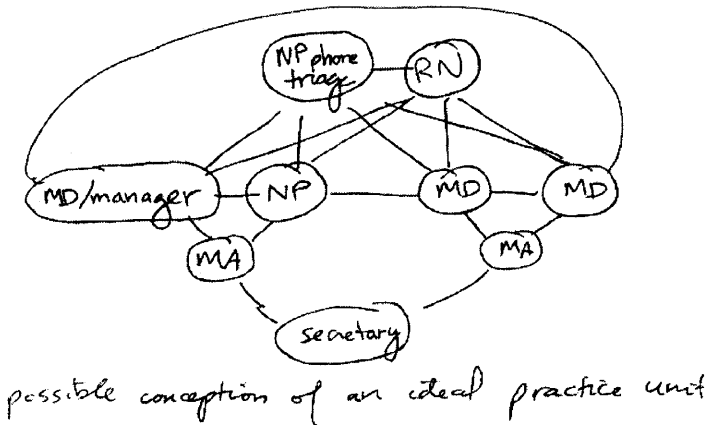


Fig. 7.51 Ideal organization drawing by Dr. Theodore Langley, resident.[1]

[1]Theodore Langley, personal drawing, October 17, 1996.

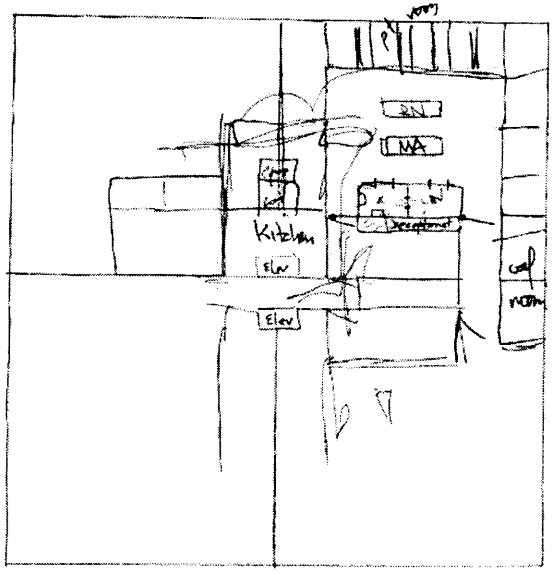


Fig 7.52 Ideal workplace drawing by Dr. Theodore Langley, resident.[1]

[1]Theodore Langley, personal drawing, November 13, 1995.

then perhaps a PA who takes your phone calls."
TURID: What is a PA?
T: *"Physician's assistant who essentially works as a physician, but needs physician authorization for most things."*

TURID: So a PA is almost a physician?
T: *"PAs and Physicians do a lot of similar things. They do a lot of basic primary-care type things. But somebody who has medical expertise should be answering the phones. Someone with no medical expertise is not going to know if this chest pain is major or not so they, we get triaged a lot of calls that are pleurisy and then the MIs walk home. You know, or the heart attacks walk home."*

A: And how many nurses, MAs... What would the management look like today? Would there be a clinical manager?
T: *"I think that in the ideal system, and this is my ideal system, a physician would be part-time physician part-time manager for that practice — but he would be a physician in that practice. One, because he's got to buy in with the group. Two, is he knows intimately what's wrong with the practice but he can also spend half-time doing management. But I'm biased too because I'm interested in a lot of management issues —"*

TURID: What is management? How do you define management in a practice?
T: *"Well it depends. There's a huge array of things that I don't know what the managers are doing. But the general concepts are troubleshooting. From my mind the biggest thing that we need from managers is physicians, that physician/managers can contribute not necessarily financial expertise or hiring or firing or equipment- type things, but information flow and how processes are worked out. Because the complexity of medicine is not "well how many test tubes do we have over there?" and "what's the salary?". That's part of it,*

but the big thing is how does information flow? How do I get my consultant on the phone quickly? How do I have him call me back? How do the medical assistants work with me? And then there is the patients. And how do I get a sick person the hospital really fast? That is the process."

T: *"Basically if I was going to spend my time effectively, even though I would not want to, I'd be on the phones triaging while the medical assistants were sending my patients to the hospital after I've done the clinical work-up. But it's being the other way around."*

M: Where's the inefficiency in the system?
T: *"It's again the information flow. I mean if you look at a hospital, people sit around for hours in the waiting room. They've been triaged. You know some people could easily be sent home from the triage place and told to follow-up with their primary care doctor if they're benign. Then you go through the whole history and physical with one person. They kind of discuss it with another person. They decide to admit the patient. The admitting team has to come down and read the whole history and physical again and then they present it to another person, read the whole history and physical again. It's a lot of repetition that's unnecessary if you could somehow..."*

M: How much of your day would be affected by that?
T: *"I would say you know 10 to 20%. A lot of the other things are tracking things down, running things down, having to send people to get different tests done and there's always lag time so diagnostics study wait time is another, meaning...I mean I would say that's even bigger, that's probably about 40% of wasted time.'*

T: *"So this is my godsend. Very often I'll sit around for a half-an-hour and a chart will come to my desk and it will come 30 minutes after the appointment and the patient had been there on time — fifteen minutes later so very often I don't know until I get the chart, "Oh, my God, that the person has been waiting for 20 minutes." Now, by then the next patient is already supposed to be in. You're supposed to be seeing the next patient. So this is helpful, because I can see when people show up and if it starts to get beyond 8:15 I'll just go out there and grab the patient myself."*

M: Is that going to effect how much time you are going to spend with them, if they're waiting a long time?
T: *"Well that's the problem. See, in the real world it's different. It's hard to say what is better. I end up just trying to make up for lost time by, kind of, you can do certain things that will make up lost time. One is kind of say, "Well we only have this much time". If someone shows up on time I never penalize them. I always will see them for the full time that they are allotted. If someone shows up late they are penalized kind of in the sense that I won't see them until I am free with all of my on-time patients. So, if I'm done seeing all my on-time patients then all come back to my late patient. But if let's say for instance my on-time patient gets a little late for whatever reason, I'm running late or they got put into the room late, I'll still see them for the normal amount of time, but sometimes I'll juggle and if I know they need a lab test or x-ray I'll send them directly first, catch up on my next patient who's on-time, that person will come back and then we will discuss things further and hopefully I'll have a lag time. So there's different ways to work it. But it's luck of the draw."*

T: *"Okay. But I just think processes need a lot more direction. It hasn't been like anyone's been interested in how things work or improving things. It's just been status quo."*

A: " Is there a team? Is this unit of Internal Medicine broken down into two teams, like you, your preceptors and two other doctors?"

T: *"Geographically, but not functionally. That's the problem. If we were functionally a team it would be better, but geographically we kind of are located on the same side, but functionally we're a bit competitive. Which is not helpful. Part of it is you adopt the culture that you're in and I'm kind of the most resistant to the culture. So, I haven't done radical things, but I mean I've done small things that make my life easier, but in terms of the community it's not kind of one of these, "well what do you think we should do to improve that," kind of thing. You're fighting an uphill battle and kind of troubleshooting for one, two; figuring out who to speak to So, everyone has their own agenda and it takes just too much time to troubleshoot everything to figure out."*

TURID: How many people are in this whole internal medicine?
M: *"There are three physicians full-time, two residents, a nurse practitioner and a nurse and two or three MAs at a time."*

TURID: So we're talking about 25, 30 people all together.
M: *"The total number of physicians is about six or seven."*

TURID: Yes, but the total staff is how many?
M: *"About 20 or 30. There are two teams or sides."*

A: Keep going down your tree. Two nurse practitioners or one? What is the team structure?
T: *"We have three physicians on this side, two residents, one nurse practitioner, one nurse and maybe two or three MAs on this side. On the other side, there's about three physicians, one nurse, one nurse practitioner and three or four MAs."*

A: Can you tell us about your preceptor relationship? Why are you laughing?
T: *"It's been variable. The program has been finding it difficult to find a reliable good preceptor to stay with me. My first preceptor moved to California and then I was switched to this, then I had another preceptor who was kind of just spacey. So, I came over here and started practicing with my preceptor over there and that was kind of difficult. Then, finally I had a good preceptor here in this office; but, then she moved to the Brigham. So, now I'm kind of still communicating with my preceptor at the Brigham by page if I have problems. I've been relatively autonomous for the last couple of years."*

A: So there never was an experience?
T: *"Not an bonding experience like some of the other residents. My situation is a little atypical, but it hasn't been that harmful, but still..."*

Learning in the Hallway
A: Who took the role when you were onsite and you had a question?
T: *"If I have a question, I just ask Peter or Chris or whoever's in the hall. I mean most of the stuff is..."*

A: What do you think of that system?
T: *"It depends, it depends kind of how you like to learn and how much kind of, the problem with learning in an outpatient setting is that you've got to take everything with a grain of salt because a lot of it is historical, clinical, kind of really gray. So, I want to practice as black and white medicine as I can. So, I look at the literature, I talk to other people and I develop opinions that are a conglomerate, but I don't really take one person unless I truly believe that they are also practicing that same way. I kind of take it with a grain of salt, but I also talk to specialists and other people to get a clear picture of what is probably the standard here. Now, that's just my bias and it's not necessarily right or wrong, but it's just the way I like to practice rather than anecdotal."*

A: When you have to talk to a specialist, how do you make contact with them?
M: *"Right. I work with a lot of specialists at the Brigham as an inpatient. I also do rotations as an outpatient follow-up. So, I've met most of them and then there's an on-call sheet where I can call them up and ask them questions. The system to support me is pretty good so I'm not as reliant because usually if I've gotten to the point where it's like weird, the other person, my preceptor will think it's weird too and we call a specialist. So, it makes sense and then things that I miss out on are the small subtle things that help and have managed a practice that we've picked to couple with our meetings and I meet with a preceptor once a week for a full hour to discuss things. I should probably get to see my patients, okay."*

M: Comments about flow of patients from reception to exam room.
T: *"It's not ideal. I'd rather be able to sit down in a comfortable room first. I don't think that model's very common at least at THE HMO for sure or not, but at other private clinics it's probably more common, but it's still not that common. Where you know, you sit down, clothed and say, well why don't we walk you to the dressing room and see you for the exam, that doesn't happen. Occasionally, if this office is not busy, I'll use this where I'll just talk about things."*

TURID: So, the exam room is the heart of the introduction?
T: *"Of the encounter, yes, and sometimes the patient is already in a gown which is not right. It's not the ideal system. I wouldn't choose to do it that way. Sometimes when I'm meeting my patients for the first time, they're already in a gown which is not ideal. It's time efficient, but it's not ideal."*

M: Why is it not ideal?
T: *"It's just, it's an awkward way to meet someone, kind of introduce themselves when they're already kind of wearing this gown which already is ugly and paper thin and rips as soon as you turn. I mean the gowns here are terrible. I've talked to people about the gowns before too."*

M: *"Right. The system is created so that people are triaged to like an express lane type thing versus a full service lane and so they kind of, the nurses and the PA, the nurse practitioner and the nurse hopefully should do the express line kind of stuff. Flu shots, immunizations, even simple Paps and basic kind of routine zip em in zip em out kind of stuff — and that frees me up certainly for other things that might be more complicated. At the same time, they're kind of in parallel, but that's not the ideal medical system because we take care of the same patients and so my name and the nurse's name is attached to the same patient, sometimes, so there is no cross communication. So, the system frees me up from one standpoint, but the system also isolates me from the patient's care that I should probably now a little bit about if there are any problems which they do communicate at times, but I think it frees me up, but it also separates me a little bit from the other world."*

TURID: Where do you see yourself in five years?
M: *"That's a different story. I'm interested in how medicine and management can work better. So, that's my kind of inherent interest anyways. So, my pathway might be a little bit different than most, well I think it's definitely different from most of my peers. Most of my peers are going to go into practice and just be good primary care physicians in the community and I'm going to probably take a detour and apply to business school and looking at how health care organizations can manage better that type of thing. But with a different focus. With the patient as the focus in quality care. So, if you can put all of those together and still someone have good physician managers. My ideal is to be in an academic center, managing a practice and teach-*

ing and seeing patients. I mean that's the ideal, but..".

Value of participating in a Teaching Practice
A: What is the value of being in a teaching practice?
M: *"It's just the culture that I'm used to and I'm brought up in and it's more stimulating then just being out in the community practicing and not interacting with students. I think teaching itself helps you learn medicine better and it's a little bit more stimulating. So, I think most of us who have kind of grown up in the atmosphere enjoy it and prefer it as something."*

TURID: We discussed the squeeze teaching has gotten because nobody really paid for it and somebody asked how do you market teaching and you said, "It's actually very attractive for the physician." But how do you get a organization like HCD, like Harvard Pilgrim to pay for it?
T: *"Well, that's the big question."*

TURID: Or market it. What's your thoughts?
T: *"That's difficult. I think eventually, I mean my own bias is that you can't rely on government for education just because it's just a poor track record and it's just getting worse and with the loss of Medicare funding for education that's going to be even worse." So, people like THE HMO and other private organizations are going to need to pick up the ball with education and you have to think of what kind of benefit education is going to give an institution. You could technically say that marketability is a little bit better with THE HMO as a teaching organization and it's considered more academic because of that. I think most people think that the residents and students just add to the environment of the work, but I think eventually they're going to have to be able to produce some output that gives some financial benefit too. I mean I think we give some financial benefit to the plan. I mean we are very cost effective I think and we see a fair number of patients and then we give back, we're doing some projects on geriatrics right now on risk assessment and improving that and I'm doing my little mini project here in trying to figure out how information flows, but."*

TURID: This class is going to develop a project somehow connected to this. What could you see could be useful from your perspective? What could help you and this organization, that might be different what would help you and what would help the organization, but you could answer both?

T: *"I mean one way would be to, I mean I understand there's a problem, and I understand how to go about it grossly, but perhaps constructing a model that'll be its own troubleshooter, meaning that some kind of formula that we could use that would allow us to identify problems, brainstorm problems, and fix problems relatively efficiently without having to do this whole survey thing, although that's generally what I see that one needs to do to figure out how to fix things, people, but that would be one thought. That you could develop some type of model where you could kind of have a systematized approach, like a consultant. Consultants have their own systematized approach to how they tackle management problems. That would be helpful."*

T: *"One for practice and two for teaching, you could argue that. The other would be to how to enhance the learning of residents in this environment which is kind of variable. So, how do you enhance the preceptor, resident, communication, teaching, learning that kind of thing in a setting where you're seeing a lot of patients. I mean if you had two hours to sit down for one patient and then discuss it with a preceptor that would be great, but then it doesn't become financial helpful to the plan."*

TURID: Are you seeing problems which intrigue you which you would like to work with? I mean you just started, but for example, if I asked you, yeah, is it pieces here which you get?

M: It worries me a little bit about communication

Communication and Resident Learning
T: Yeah, that's a big problem. The problem is we're all in different patient rooms at different times, popping in and out at different times and if you've got to find one person, you can wait for five minutes and wait for that person to pop out or you interrupt them or it's a problem.

F: Can you interrupt a doctor?
M: *"Yes, I mean it happens a lot. It kind of just breaks the flow. If it's necessary it happens."*

Shared Office Space
TURID: Could it be like having excess space, you could gain it by having a very good flow?
M: *"Oh yes. The classic example, I don't know if you guys looked at that office that Francesca works in? Where the preceptor, the nurse and Frncesca, who is the other resident, work in the same office and the most common place to find me if I'm not in a patient room is obviously going to be here. So, your chances of running into people are going to be so much higher here than anywhere else. So, by sharing office space that would be the ideal situation for communication between different people. It happens, it happens in different settings just doesn't happen here because, I mean the other resident and me end up talking about lots of stuff just because he's here. Even though we're both running around, there's a few minutes here and there that we can kind of catch up. So, that clearly is one kind of, but you can't have ten people in a room."*

A: Do you ever shut this door?
M: "Very rarely."

A: When would you shut your door?
M: *"If I have a patient in my office and we're talking about issues."*

A: In a week, once?
M: *"If even, probably once a month — except for the fact to get my coat. Is that weird?"*

A: Privacy and confidentiality are issues that I keep hearing about. And if you tell me you don't close your door then you can control it within this distance away from everybody else. Is that characteristic of most of the doctors?
M: *"Yes."*

TURID: You're also saying that you don't see the patient here. So confidentiality isn't a question here, but it's a question in the exam room.
A: Which is another question. How many doctors follow the same pattern of having their consult, conversation in the exam room? Everybody? Is that typical? How about Francesca or any of the other doctors? Do the other clinicians bring their patients into their office?
T: *"No. zero. It's not set up."*

Learning Environment
M: *"Yeah, basically education of residents is complicated because it's a fine balance between having time to see lots of patients for experience versus having no time to read. So, it's kind of both. Plus you also have to have some type of structure, didactic "slash" mentoring or something where you are getting something from the more experienced clinicians. It's not enough just to do stuff and then read about it. You need to learn from people who have experience. So, it is complicated to figure out the balance. The balance of our program is much more skewed toward outpatient learning then any other program. Most programs have you grunting in the hospital for a year and then you come out for a second year for maybe two or three*

months at this setting and then you are in the hospital for the rest of the time. Four or five months, you're a senior here. Our program — we spent nine months here last year and now about six months this year."

"The problem is the type of learning we get here is stimulatory in the sense that it brings up interesting problems that we would have never thought about it we were just in the hospital. The problem is solution wise it's not as structured. We don't have the preceptor who's kind of very knowledgeable, that's always here, able to answer our questions whenever we have a question and we don't have the time luxury of waiting around for somebody to be available whenever we have a question."

"So that's a problem, but we make up for it in conferences and other things like that where we have structure didactic and things addressing some of these issues, but also other issues. Then we have a fair amount of more balance for book reading and other types of things too. So, our program is a little bit more balanced. What we don't get is that kind of heavy handed preceptor teaching you in the outpatient setting. We get a lot of that in the inpatient setting at the hospital, but not here. It's just a different, the rules are different. You've got to see people on time, the problems are not as well documented and the information on those problems, these people who have strange nerve symptoms that have no clear etiology. You can't look it up, it's just no where."

M: "Des the plan tend to put a resident and a senior together in the same room?"
T: *"I think that's the ideal situation, but as a rule it can't do that. It just doesn't have the office space or it hasn't created the office space to allow that to happen. It's common at other centers, but not necessarily at this center for some reason. The offices are small and people are kind of bias in a way."*

appendix 2

Participant Workbooks

The data presented in this appendix was collected through a questionnaire that was distributed to eighteen participants. The data is a cross-sampling of all the users of the physical space. Therefore the data is not limited to staff members, patients participated as well.

WORKBOOK IMAGE 1

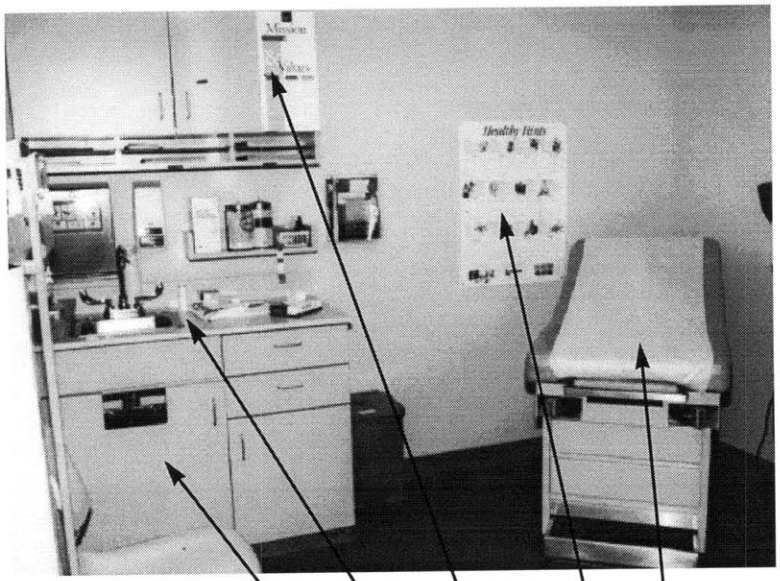


Fig. 7.53
TYPICAL EXAM ROOM

Like and dislike the millwork.

Like and dislike the items on the countertop.

Like the mission statement poster.

Like and would keep the "Healthy Hints" poster for the future.

Like the exam table and blood pressure cuffs.

WHAT DO YOU LIKE ABOUT THIS SPACE?

Room for forms, referrals in exam rooms where the doc is talking about it. Saves privacy.

Easy access to documents over sink. Convenient location of sink & trash. Functional exam table. Sufficient Space.

Size is adequate.

Compact. I can reach things, blood pressure cuffs reachable.

Spacious Open.

Angle of table; need more space left on left side.

Neat, position of table and scale.

Exam table area.

This room is one of the more spacious exam rooms.

It seems adequate but I don't use it for exams, and am not the best person to rate this room.

Spacious - good for family/group discussions.

Sufficient space. Layout is ok.

Clean, serves its purpose, pretty roomy.

It is large enough to perform activities. And hold three or four if necessary.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

Clutter and mess.

Small cramped; no writing surface; little "workspace" on counters; Hand-washing sink so close to work surface (splashing).

Inadequate room around exam table. Electric socket can be difficult to reach. Blood pressure gauge positioned close to patient which is good; but, difficult to examiner's head. Tongue depressors, reflect hammer, etc., on shelf over sink not convenient to reach when examining patient on table; especially if MD is on patient's left. Light reflection from windows. It's nice to have windows, but shades don't make room dark enough for some exams. Cushion on pull-out foot support often doesn't slide out with it's frame. Can't see what's in cabinet without opening.

Too stark - Patients do not know where trash bucket is. Paper towel dispenser too low. Often patient's do not know where they are.

No window +/-. Floor light always need to be re-positioned and wall mounted light's screws are often loose.

The desk space is too far & is better when on right because need more space to examine on left.

Too small.

Too much clutter around sink. There should be more artwork and educational material on walls.

No windows, the door should be relocated. When opened people in the phone room can look in.
No good writing surface.

Difficult to do GYN exam in this room. No table within arms reach. I'm always pulling a chair over to use as a table.

Exam table too far from wall. Red trash receptacle should be closer to table. Blood pressure cuff should be near both table and chair. Cups should be out of dispenser.

No windows. Lack of air and light.

Wall services awkward to reach. Privacy curtain arrangement.

DO YOU USE THIS SPACE?

Yes. (13)

Occasionally. (2)

No. (1)

HOW CAN IT BE IMPROVED?

Move exam table against the wall. More to hide the plug from patient's children. Move the chair and scale.

New trash bucket. Some pictures or decorations on walls.

Stocking regularly.

Brighter carpet, more comfortable chair.

As above.

WORKBOOK IMAGE 1

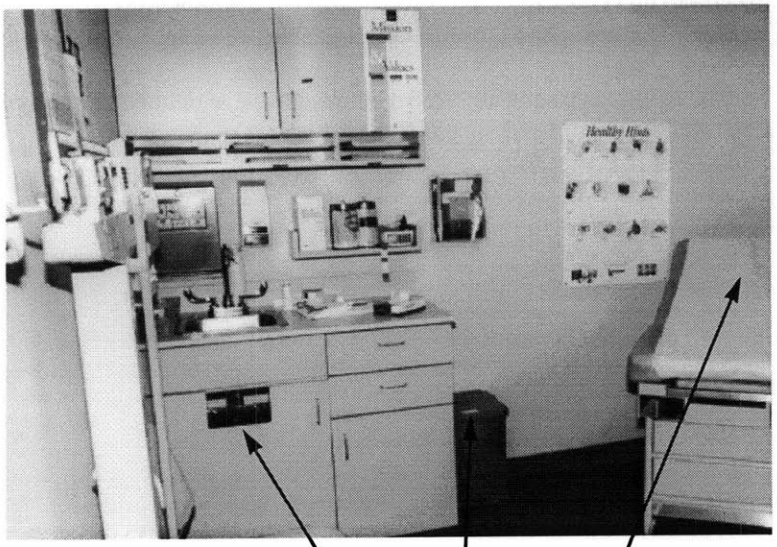


Fig. 7.54
TYPICAL EXAM ROOM

Dislike the built-in trash receptacle.

Dislike the bio-hazard receptacle .

Change the location of the exam table.

Move bio-bucket out of sight or to side of table.

Remodel cabinet and desk top area.

Exam rooms without windows tend to get very stuffy for staff and patients. I would like to see windows.

Unlikely you can.

Add movable table/tray or re-arrange exam table.

Increased slots for forms. Glass front cabinets. Lower shelf for tongue depressors.

Windows.

Raise outlet above exam table height. Add pull-out to counter. Organize trash containers for more convenient and sanitary use.

WORKBOOK IMAGE 2

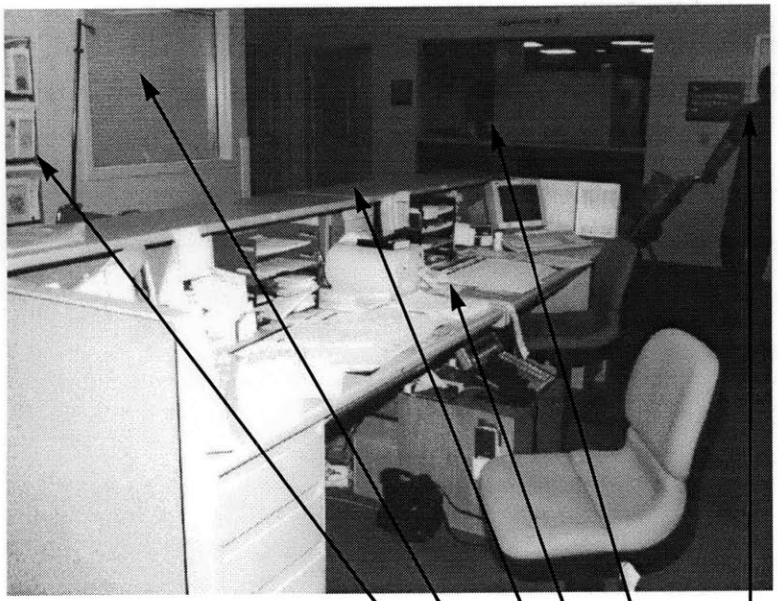


Fig. 7.55
MEDICAL ASSISTANTS' SHARED UP-DESK AND ADJACENT AREAS

Change the pamphlets

Dislike the interior window and space behind it.

Like the transaction surface of the workstation.

Dislike the clutter on desk and floor.

Like the access to follow-up medical assistant and waiting room.

WHAT DO YOU LIKE ABOUT THE SPACE?

Nothing.

Proximity to waiting area, RN offices & utility room (clean).

Can see registration area from MA work area. Counter at MA's area is convenient to jot notes. Computers conveniently located though not ergonomically positioned.

Can see into waiting room. Can see people come and go easily.

Open counter space.

Central location.

There is a lot of counter room. Easily manageable for two people.

Centrally located, easy access to waiting room and all exam rooms.

This space is good that it provides a large desk to work at.

Most.

Easy access to support staff.

Central locale.

Lots of space, communication.

Work stations adequate size. Standing writing surface.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

Clutter and mess. (No order!)

Equipment does not all "fit" into work area. No room for personal items. Distance from soiled utility space. No line of site to all exam rooms.

Desk looks messy. Office, marked in red, blocks flow of traffic from exam room. Patient gets lost trying to get around. Handouts on wall are accessible to MD but should be in waiting room too.

No waiting area at appointment desk - Should have one or two chairs as it gets backed up now and again.

Cluttered desk and floor.

Darkness. Clutter. Lacks life.

Nothing.

Not enough space to handle the paperwork, computer systems and telephone calls (This phone is the default phone for Internal Medicine 4).

The space behind the desk is not as large as the other side. Patients with difficulty walking may find exam rooms too far.

Too messy looking for patients going by.

No privacy for support staff.

Probably don't need this much space for the type of work done.

Location of phone.
Computer and phones not well integrated. Ad Hoc form storage.
Computer keyboards too high.

DO YOU USE THIS SPACE?

Yes. (7)

No. (7)

HOW CAN IT BE IMPROVED?

The desk needs departments for belonging. The window is never used. The desk is an island that is in the middle of no where. Looking at nothing (i.e., exam room or wait room).

Remove office or red so traffic flows better.

Better organizational aids at desk.

Light, organizing space. Add color with wall paper. Plants.

Nothing.

Eliminate our need for more and more paper. Update computer system.

Maybe we could find another space to call patients in from so the walk is not so far for the exam rooms all the way down the corridor.

It's ok.

WORKBOOK IMAGE 2

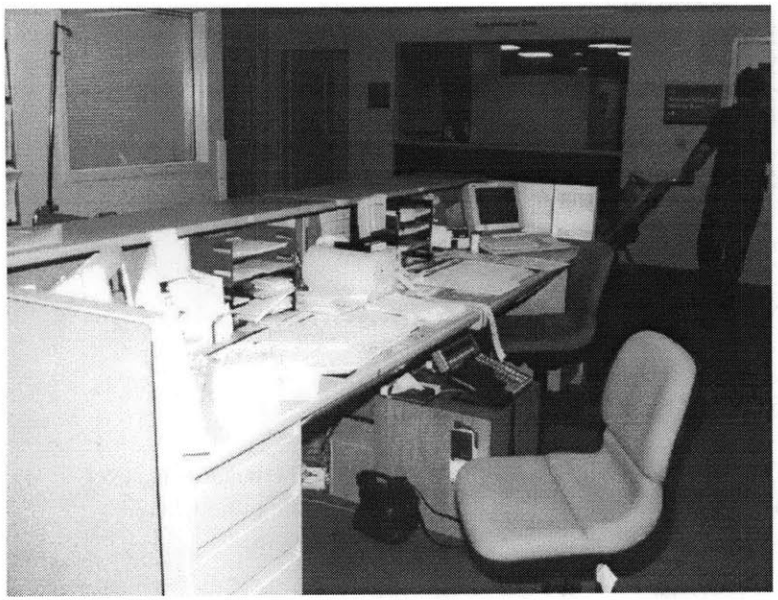


Fig. 7.56
MEDICAL ASSISTANTS' SHARED
UP-DESK AND ADJACENT AREAS

Take pamphlets and put on wall in waiting room instead.

Remove clutter.

Study ergonomics of functions and rearrange equipment to function better.

WORKBOOK IMAGE 3

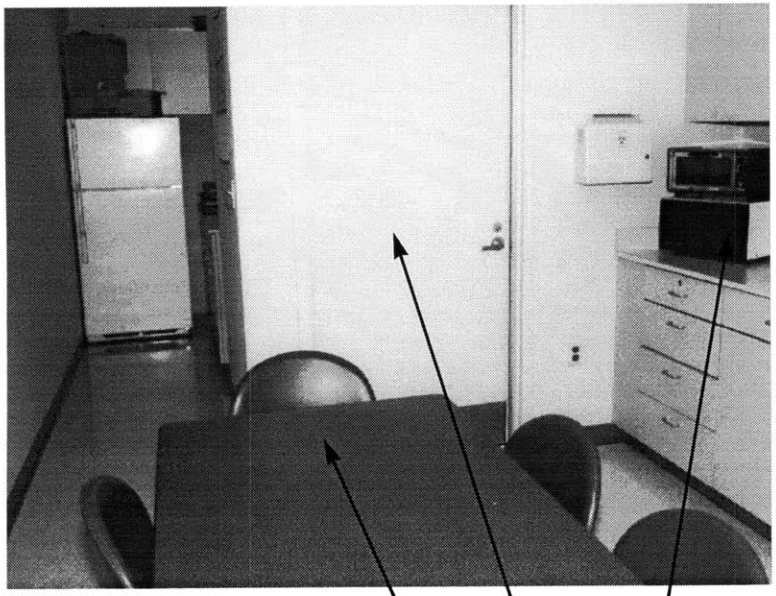


Fig. 7.57
STAFF BREAK ROOM

Like the table and chairs
and would keep them for the future..

Change the door to the handicap bathroom.

Like the appliances.

Change the space by adding windows.

Dislike this space.

WHAT DO YOU LIKE ABOUT THE SPACE?

The simple fact that we have a break room!

Any space for staff is "good."

Plenty of space. Good to have microwave, fridge and toaster oven.

Glad we have refrigerator, ,microwave and toaster oven.

Seems functional.

Clean.

Private away from the patients.

It is a good size private break room with bathroom.

I associate this space with non-working things. It's a space where we have most of our parties.

This is a former Gi procedure room.

Place for conversation that's not work related.

It has been designed as a kitchenette with cleanable surfaces and storage.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

The frig is too separated from the rest of the kitchen area.

This room was meant to be a procedure room.

A bit dreary. Bathroom beside eating area lacks privacy.

Too stark. No windows, not comfortable, not big enough.

Refrigerator is too far away and looks pretty small.

Dark. No windows. Small. Empty. No color. Textureless. Cold. Impersonal.

The bathroom.

Having been designed as a procedure room, there is a tremendous amount of wasted space. The unit's handicap bathroom is located in the staff breakroom?

Bathroom entrance not appropriate for "kitchen."

Size, upkeep, light and air.

Awkward proportions. Poor location of refrigerator.

DO YOU USE THIS SPACE?

Yes. (13)

No. (2)

HOW CAN IT BE IMPROVED?

More chairs or maybe even a sofa.

It would be nice to have space "designed" for staff including lockers.

Move bathroom to open more space and get rid of dark hall to fridge. Wall hangings/pictures.

Bigger room, windows, more chairs, some decorations.

10 more feet x 5 more feet.

Light. Making larger.

Take out bathroom.

Start from scratch and redesign everything. Smaller bathroom, less cabinets, no hallway.

Perhaps a different entrance. So staff can have privacy when opening and closing doors.

Rearrange space to make room for couch. Could have smaller table and smaller bathroom.

Windows, air, increase size.

Arrange appliances and counter/sink into a more efficient array. Provide more circulation space around table.

WORKBOOK IMAGE 4

Fig. 7.58
INTERNAL MEDICINE
RECEPTION AREA ENTRY

Dislike the reception desk and the column in the room.

Like the receptionists.

Dislike the lighting and would change it.

Like the direct access to the receptionist.

Change the direct access to the receptionist.

WHAT D YOU LIKE ABOUT THE SPACE?

The flowers are very nice.

Colors.

People who work there.

Open.

Open. Friendly secretaries. The plant.

Roomy. Enough room for the patients.

Location of signage and location of reception desk.

What I like is that it is spacious.

It's ok.

The reception desk is placed in a convenient place.

Open. Welcoming.

Roomy, clean, bright, flower arrangement.

Direct, line of sight access to check-in counter. Adequate seating. Thoughtful decor.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

Lighting.

Not "cozy". Seating not comfortable, rather "Clinic looking". Poor wheelchair access to desk area when all seats are occupied.

No privacy. Should have plexiglass and seats at check-in.

Nothing.

Dark. No natural light.

Windows should be in front of Receptionist.

Lots of open space, terrible furniture, too much lighting, no magazines.

The lighting is so sterile. The pole seems to be in the way of entrance door when calling in clients.

Area too dark. Chairs not comfortable.

Looks like an airport or bus station.

"Clinic like". Need more comfortable chairs, better layout, table top lamps and dimmer on lights to add mood.

Orientation and grouping of seating. No reading material for long waits. Lighting could be improved to reinforce seating, reading areas.

DO YOU USE THIS SPACE?

Yes. (6)

No. (4)

HOW CAN IT BE IMPROVED?

TV. Better chairs.

Soften the lighting. Have separate waiting and reception areas for each side of the unit.

More books and magazines.

Light. Windows. Color. Plants.

Nothing. TV in waiting room

I think adding sliding plexi-glass would give us a more professional appearance. Conversations between staff and patients should not be heard by the entire waiting room. Give us some plants and more subdued lighting.

Maybe some lamp lighting and floral arrangements.

Put healthcare reading material in waiting room. TV. User friendly computer system.

TV for clients, entertainment source.

Rearrange seating. Supply reading material. Change lighting.

WORKBOOK IMAGE 5

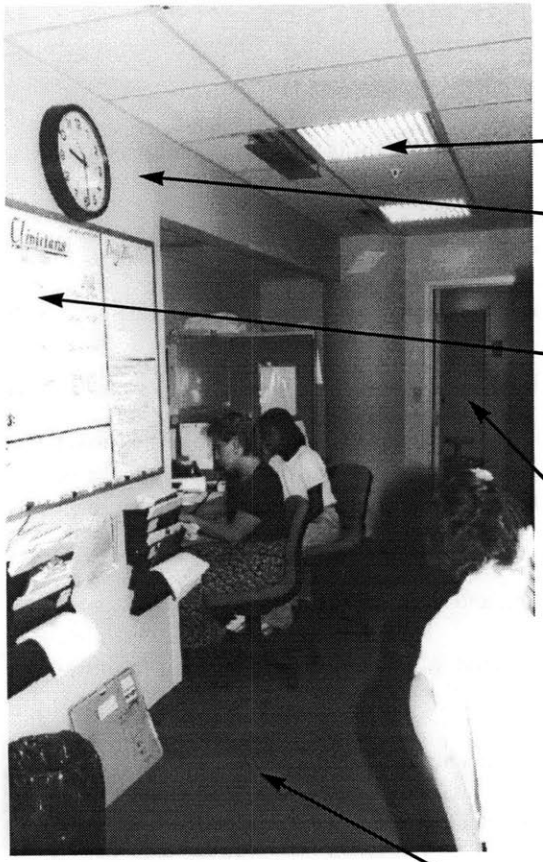


Fig. 7.59
MEDICAL ASSISTANTS' PHONE ROOM

WHAT DO YOU LIKE ABOUT THE SPACE?

Schedule board.

Accessible from both sides of unit. Allows staff to access each other easily.

Openness.

People.

The desk area.

Centrally located clock and info board.

Very spacious for walking through. The desk space is extensively limited.

The people in it.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

Clutter.

Interior space with no outside light. No sense of "my own" area.

No windows.

Dark (No natural light). Lack of color and plants. Crowded.

Not big enough.

Not enough space between cubicles.

The desk space is extremely limiting. Also, the lighting is atrocious.

Area of work too confining. Needs more privacy for confidentiality purposes. The entire area too close to waiting room.

Confidentiality or privacy if patient is booking in person.

Size, arrangement, air, light, space and privacy.

Bulletin board and mail boxes at narrow point in circulation. Clock can't be seen by anyone sitting and working.

DO YOU USE THIS SPACE?

Yes. (5)

No. (5)

HOW CAN IT BE IMPROVED?

Spread out.

Open. Skylights or windows. Painting or wallpaper.

Make room bigger.

Spread staff out so that they are not all sitting on top of each other.

I don't know how to get any natural lighting in there considering this room is the center of the unit.

Sufficient.

Enlarged, air, windows.

Relocate bulletin board and mail boxes. Change air diffuser to one with built-in deflector.

WORKBOOK IMAGE 6

Fig. 7.60
DIRTY UTILITY ROOM

WHAT DO YOU LIKE ABOUT THIS SPACE?

Nothing.

Not much.

True dirty room.

Crowded not functional cabinets and counter.

It's usable.

Away from patient area. We can sterilize things.

Size of dirty workroom.

I don't use it.

Everything. It serves it's purpose.

Cleanable, sanitary, surfaces.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

Too cluttered.

Not much.

Cramped. No hazardous waste disposal. Old microscope. Inadequate shelf space. Inadequately suppled for in-office tests.

hard to get at microscope. No seat at microscope. Where is sharps container for slides?

Cluttered in rear.

Not quite big enough.

No counter space (we use laundry basket as counter at times).

Too crowded.

Need clean space for microscope.

Cramped. Microscope should be closer to door. Unclear what else this space is used for and how often.

Laundry and trash location. Block access to utility sink, microscope and crowd counter.

DO YOU USE THIS SPACE?

Yes. (8)

No. (5)

Occasionally. (1)

HOW CAN IT BE IMPROVED?

Spread out.

Redesign.

Move microscope and provide seat.

Take trash off of countertops. Throw plastic bags away. Add picture.

Larger.

Make room a little bigger.

Redone completely. Eliminate bedpan toilet. Completely useless. Redue countertops so that they can be used for what we need the room for.

Enlarge entire area.

Make an alcove for laundry and trash. Hang clock.

WORKBOOK IMAGE 7

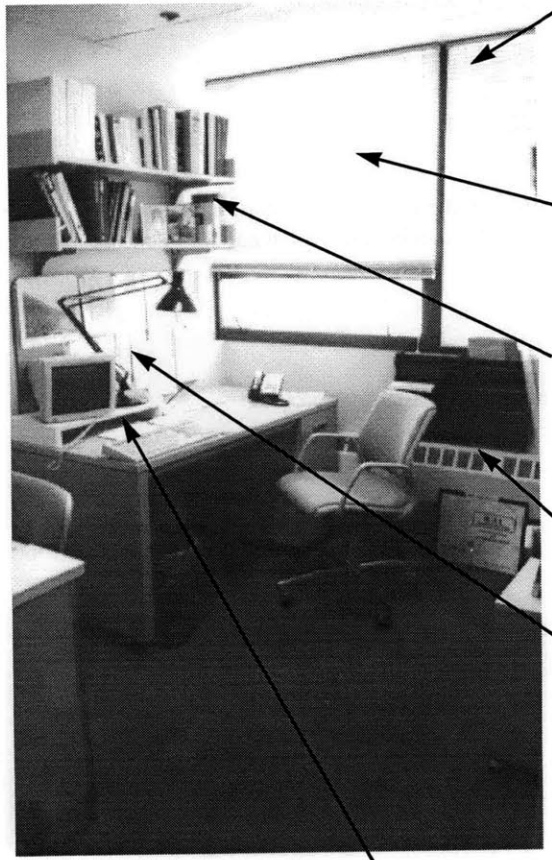


Fig. 7.61
PHYSICIAN AND RESIDENT SHARED PRIVATE OFFICE

WHAT DO YOU LIKE ABOUT THE SPACE?

Everything is in place.

Outside lighting.

Shelf space and windows.

Window.

The window. Easy access to computer, books and phone.

Enough room for two people.

Books and diplomas look nice in doctors' offices.

I love the natural lighting and that you can actually open a window.

Light and windows. Adequate space.

Windows, air privacy.

It has a window. Space is adequate.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

Lighting on desk and the window blinds.

HVAC.

Computer inconvenient to desk in corner. Desks too small. Temperature control often poor. Book shelves and bulletin board not available for corner desk.

Should have counter spaces not desks.

Small. Lack of color and life.

Should have windows to open instead of just one.

Ugly furniture.

It seems too crowded and messy with two desks.

Some offices too small. Some desks could be larger or needs. Not enough room to hold file cabinets.

Provider's back to the door.

It seems crowded. Desk and computer not well integrated.

DO YOU USE THIS SPACE?

No. (8)

Yes. (4)

Occasionally. (1)

HOW CAN IT BE IMPROVED?

Change blinds.

Plants, wallpaper, curtains and pictures.

Another window. It is nice that you can open.

Update and modernize computers and use nice wooden furniture.

Remove one desk.

Sufficient.

Mount keyboard on a pull-out tray. Wall mount light. Organize storage for odds and ends.

WORKBOOK IMAGE 8

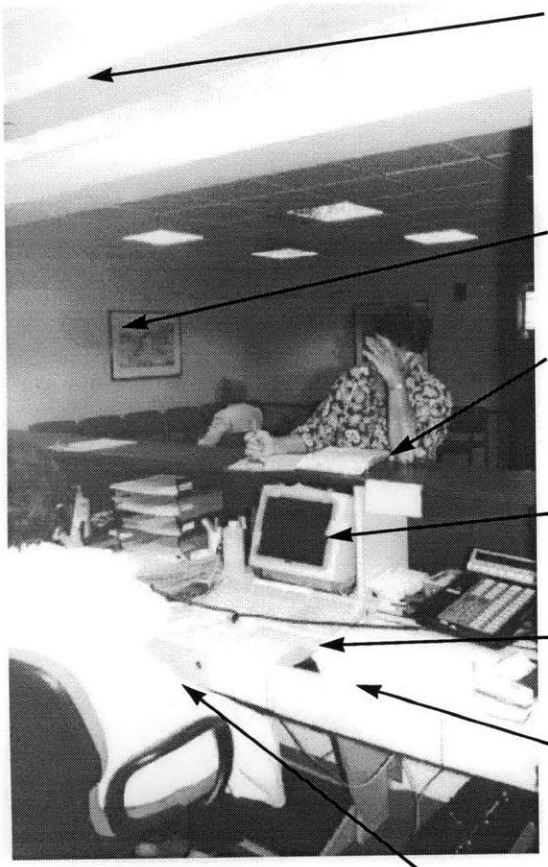


Fig. 7.62
RECEPTIONISTS' WORKSPACE, PATIENT CHECK-IN AND WAITING ROOM

WHAT DO YOU LIKE ABOUT THIS SPACE?

Pretty pictures.

Counter height for patient. Computer screen is out of sight.

Too cluttered under counter.

People.

Nice work area.

Location. Lighting above desk.

The spacious desk and the chair with arms seems to offer a bit more support. Also having a computer and phone available is helpful, the stream of light seems to be a bit easier on the eyes.

It's ok.

Plenty of room and space.

Desk space is adequate. Standing counter provides good separation and convenience.

WHAT DO YOU DISLIKE ABOUT THIS SPACE?

Lack of order. Too messy.

Little patient privacy at check-in. Inability for staff to easily access the waiting are should help be needed.

No privacy for patient and/or staff. Receptionist has no window.

Not enough work space.

Dark. Wall to high.

Not enough room for computers or work space to do our jobs.

Open space to exam room. Desk too low.

I don't like the square lights above the receptionists.

Needs more conterspace and more light.

No area for patient to speak confidentially or sit while speaking if very ill.

Lack of privacy.

Computer installation. Lack of wire management system.

DO YOU USE THIS SPACE?

No. (3)

Yes. (5)

Occasionally. (3)

HOW CAN IT BE IMPROVED?

More privacy. Plexiglass and seats for checking in.

New carpet.

Skylights, lower wall and plants.

Put glass in front of receptionists to protect them from colds etc. Make stands for computers.

Close off open space with plexi-glass. Raise desk space and make receptionists eye level with patients (not looked down upon and coughed and sneezed on).

The back space seems limited.

Provide entry directly to waiting room.

Separate partially enclosed option for check-in.

Sufficient.

Glass between patient and receptionist for sanitary and privacy.

Lower keyboard. Add wiring grommets and under counter cable organizer.

WORKBOOK IMAGE 9

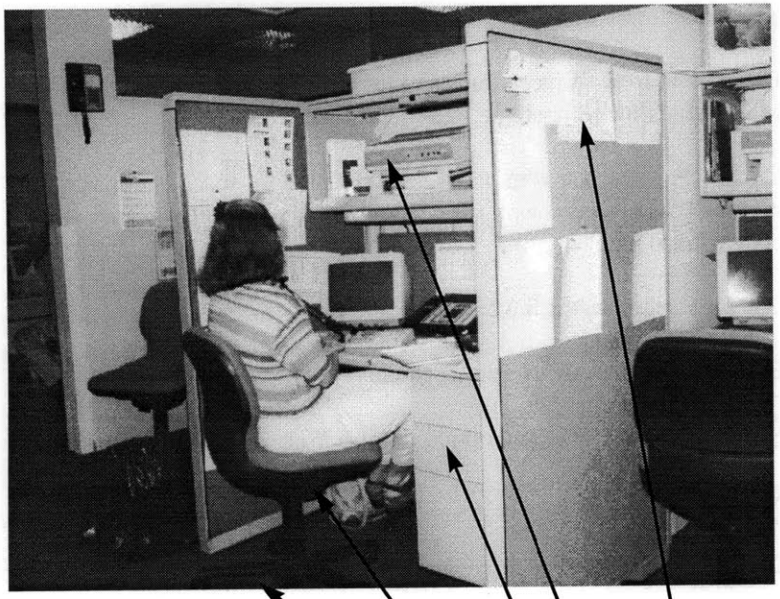


Fig. 7.63
PHONE ROOM MEDICAL ASSISTANTS WORKSPACE

Dislike the circulation corridor through the space.

Dislike the chairs and would change them.

Like the storage locations at the workstation and dislike the workstations.

Like the printer and would keep it for the future.

Dislike the workstation partitions and would change them.

WHAT DO YOU LIKE ABOUT THE SPACE?

Not much.

Out of sight of waiting areas. Staff access to each other. Some degree of privacy between staff.

Openness.

Workstations are almost private.

Everything is at your fingertips.

Nothing.

Nothing.

There is separation. Tack surfaces.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

Too close.

Interior space. Lighting problematic.

No windows.

Small, crowded, facing wall, dark.

Should be larger at times it looks kinda crowded.

Size. The computer and telephone are too big making desk space too small.

Everything. Very small, having something a bit out of place appears very messy. The lighting is horrible; no windows.

Area of work too confining. Needs more privacy for confidentiality purposes. The entire area too close to waiting room.

Confidentiality or privacy if patient is booking in person.

Everything.

Too tight. Computer and keyboard are not integrated.

DO YOU USE THIS SPACE?

Yes. (3)

No. (4)

Occasionally. (2)

HOW CAN IT BE IMPROVED?

Spread out.

Open up, not face the wall. Windows.

Make it larger.

It is a very tight space to work in all day, enlarge it. Computers, computers, and computers.

I don't know.

Adequate.

Complete renovations.

Make larger. Hang computer monitor. Mount keyboard on a pull-out tray. Use wall mount for phone.

WORKBOOK IMAGE 10

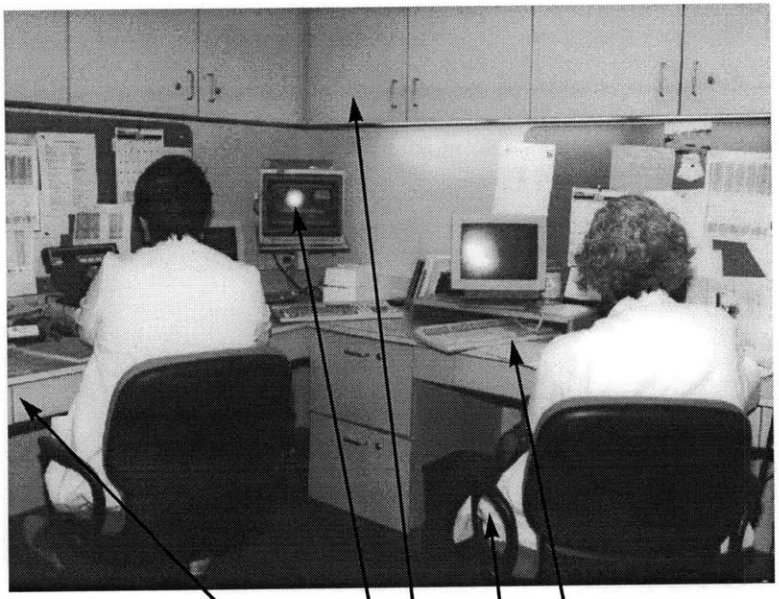


Fig. 7.64
NURSES SHARED PRIVATE OFFICE

Change the worksurface.

Dislike the pharmacy computer.

Like the cabinets above the worksurface.

Keep the chairs with arms for the future.

Dislike the computer and would change it.

WHAT DO YOU LIKE ABOUT THE SPACE?

Not much.

Privacy to address calls.

Hard to tell what its for. So hard to tell what I like.

Neat. Easy access to phone/computers.

Nurses are out of line of vision of patients.

Lots of counter and cabinet space. Pharmacy computer.

Big. Enough desk top space.

Nothing.

There seems to be enough space if equipment is better organized.

WHAT DO YOU DISLIKE ABOUT THE SPACE?

I don't like/dislike.

Each person should have computer accessible. Lighting. Would prefer greater separation between two staff on phones.

Too small. No windows. Too stark.

To many notes and notices on walls.

Backs face door. No windows.

Too small.

They seem crowded together; but, if they like it that's ok.

No windows, no air.

No visual access to patients in waiting room.

Too crowded. Not enough privacy.

Backs to door. No privacy for patients.

No windows for nurses. Cramped.

Computers, writing space, phones are not well arranged. Task lighting seems poorly located.

DO YOU USE THIS SPACE?

Yes. (2)

No. (10)

HOW CAN IT BE IMPROVED?

Provide bigger room with window and some pictures.

Bright carpet, less clutter on walls.

Windows, desks facing out. Plants.

Make room bigger.

Add another desk at right and eliminate desk in the middle.

Move office. Use office for part-time clinicians.

Make larger. Hang computer monitor. Mount keyboard on a pull-out. Use wall mount for phone.

appendix 3

Netgraphs: Communication Networks

Team Communication on October 18, 1996

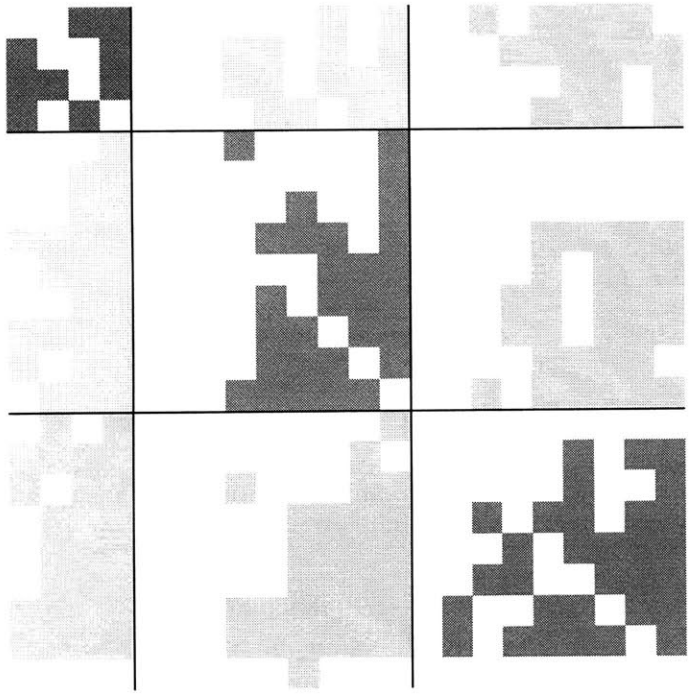


Fig. 7.65 Team communication netgraph for October 18, 1996. The black lines represent team sort lines. The upper left hand corner is mgmt. The middle square is the east clinical team and the lower right hand corner square is the west clinical team. The goal of analyzing communication according to this criteria is that it enables one to visualize communication among team members and between teams.[1]

October 21, 1996

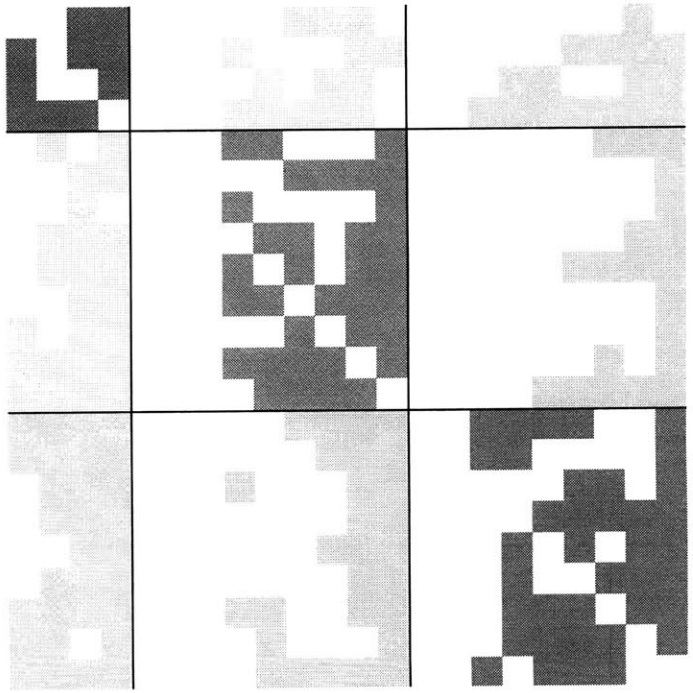


Fig. 7.66 Team communication netgraph for October 21, 1996.

[1]Thomas J. Allen, *Managing New Product Development: Organizational and Architectural Issues and Solutions* (New York: Oxford University Press), (in press).

October 25, 1996

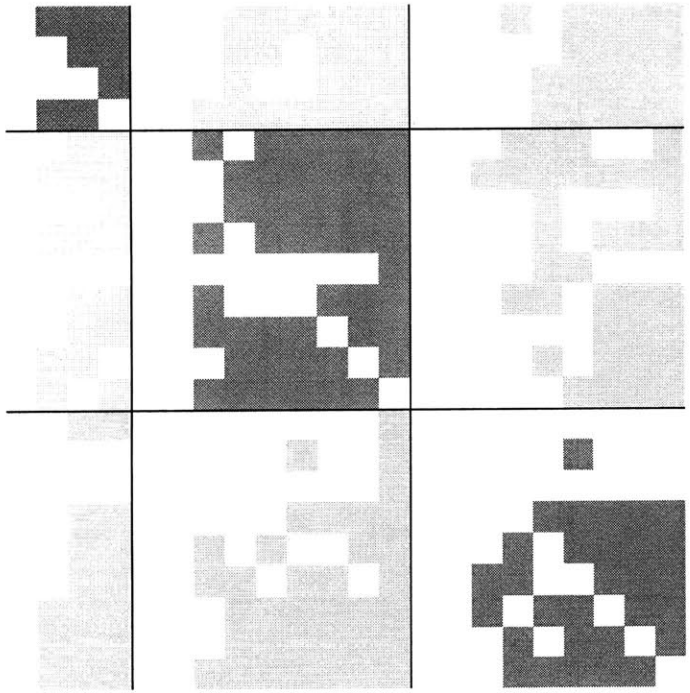


Fig. 7.67 Team communication netgraph for October 25, 1996.

Aggregation of three days

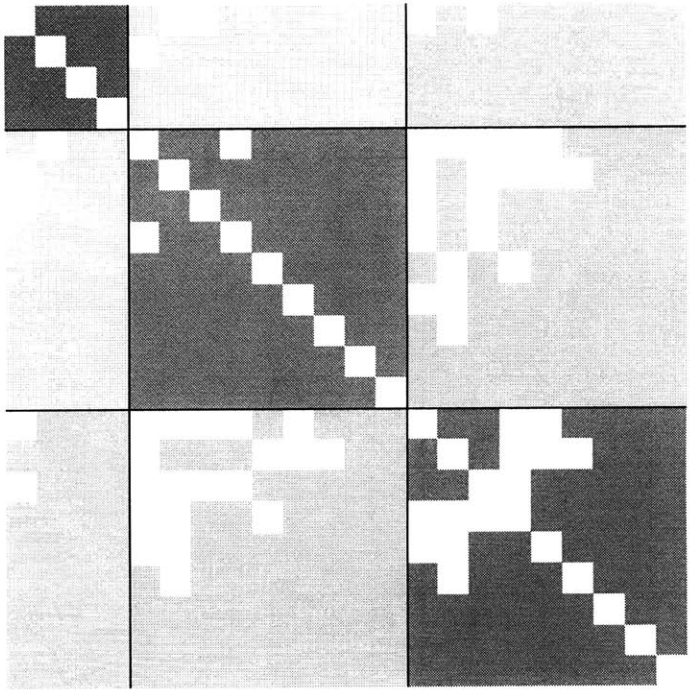


Fig. 7.68 Aggregated team communication netgraph for the three collection days. Within this department teams are communicating within teams and outside of teams. This is characteristic of a small group according to Tom Allen. Visualized in this netgraph or communication network is a matrix that is almost filled. This means that almost everyone is communicating with everyone.

Flow Communication on October 18, 1996

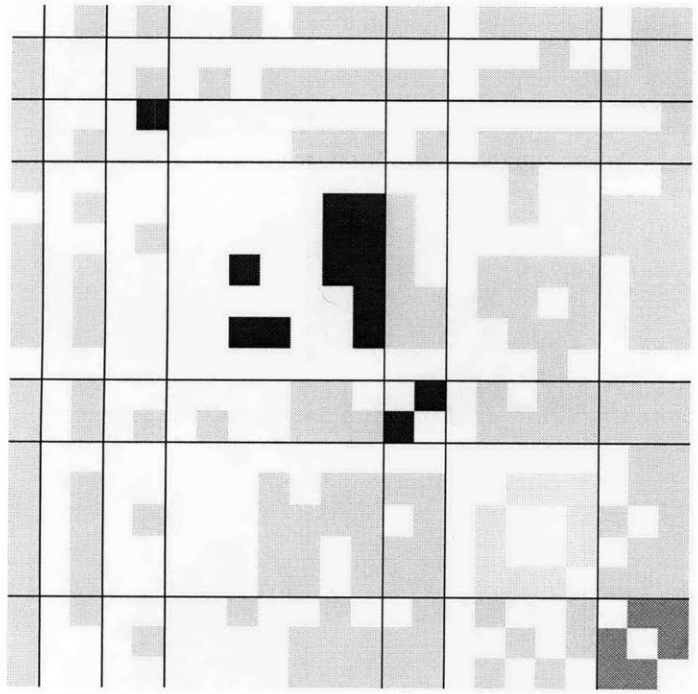


Fig. 7.69 Flow communication netgraph for October 18, 1996. The black lines represent the flow sorts. Beginning at the top left, the sort is organized as follows: receptionist, up-medical assistant, mid-level clinicians, doctors, follow-up medical assistants, phone room triage, and finally, management in the lower right corner. The goal of analyzing communication according to this criteria is that it most clearly reflects the face-to-face "steps" that a patient experiences when he or she visits the department of Internal Medicine.[1] *(See Fig. 2.21)*

October 21, 1996

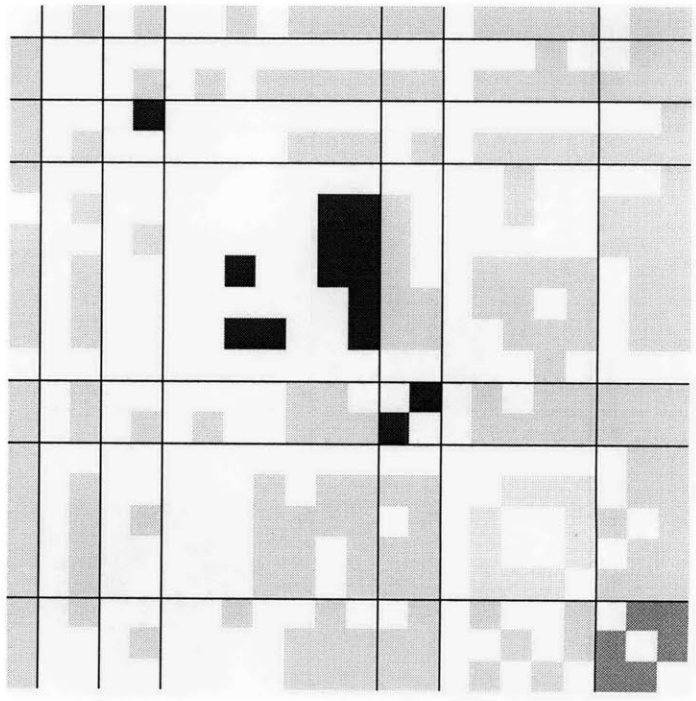


Fig. 7.70 Flow communication netgraph for October 21, 1996.

[1]Thomas J. Allen, *Managing New Product Development: Organizational and Architectural Issues and Solutions* (New York: Oxford University Press), (in press).

October 25, 1996

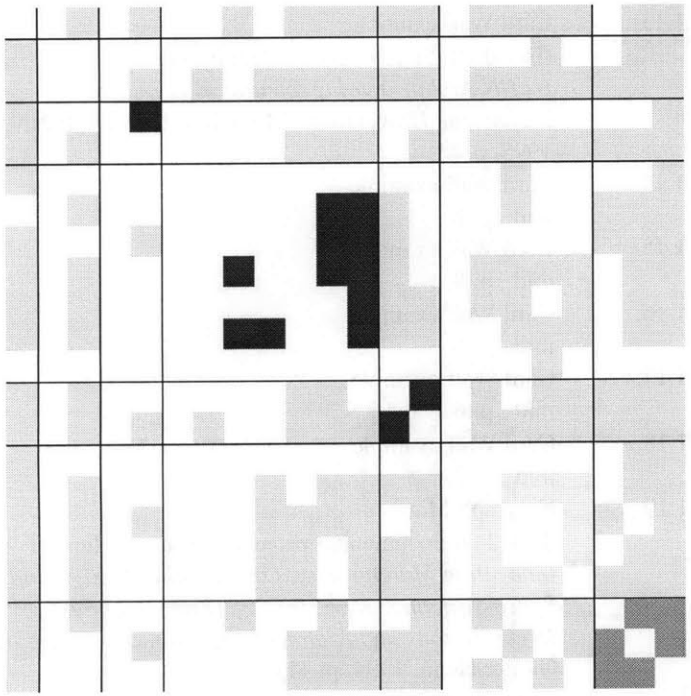


Fig. 7.71 Flow communication netgraph for October 25, 1996.

Aggregation of three days

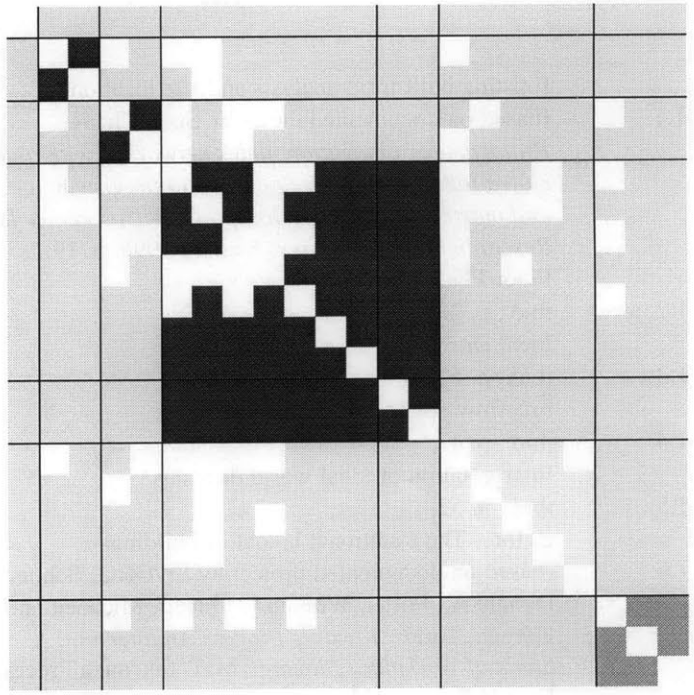


Fig. 7.72 Aggregated flow communication netgraph for the three collection days. Within this department all staff members are communicating. For example, the large dark box in the center of the graph represents the face to face communications between the doctors within the department.

8. List of Illustrations and Credits

All illustrations by author, unless otherwise noted.

Existing built form analysis and site location.
Fig. 1.1: (based on documented thesis by Suon Cheng, *Prototype for innovation nodes networked with associated laboratories: an approach to programming and master planning for Joseph C. Wilson center for Research and Technology*, January 1996. p. 19).

Floor Plans
Fig. 1.2, a-c: ibid., p. 22.

Ideal Drawing
Fig. 1.3: ibid., p. 52.

Freeflow communication
Fig. 1.4: ibid., p. 47.

Interpretation of ideal world drawing
Fig. 1.5: ibid., p. 52.

Before: The traditional layout of buildings
Fig. 1.6: (based on documented project by SP/ORG) Schon, Donald A.; Porter, William L.; Joroff, Michael; and Horgen, Turid. *Towards Process Architecture: A Study of Workplace Making.* MIT/Takenaka Process Design Research. 1996.

Fig. 1.7: After: A Center for the Research Group
ibid.

Fig. 1.8: Floor plan of design proposal
ibid.

Fig. 1.9: Behavioral hierarchy showing a subgroup of the LX lab
(based on documented thesis by Suon Cheng, *Prototype for innovation nodes networked with associated laboratories: an approach to programming and master planning for Joseph C. Wilson center for Research and Technology*, January 1996. p. 148).

Fig. 1.13: Card Wall example
(based on documented project by Gunter Henn, *HENN Architekten Ingenieure: Masterplan Technische Universitat.* Munich: Office of HENN, 1995. p. 6).

Fig. 1.14: Card Wall example
ibid., p. 8.

Fig. 1.15: Card Wall example
ibid., p. 8.

Fig. 1.16: Card Wall example
ibid., p. 6.

Fig. 1.17: Card Wall example
ibid., p. 6.

Fig. 1.18: Card Wall example
ibid., p. 7.

Fig. 1.19: Netgraph Matrix
(based on documented project by Gunter Henn, *Innovation Management, Organization Design and Space Structure: New Ways of Thinking about Organizaitons and Architecture.* Munich: Office of Gunter Henn, 1994. p. 11).

Fig. 1.20: Organizational structure of the seven institutes
ibid., p. 11.

Fig. 1.21: Architectural Concept Diagram
(based on documented project by Gunter Henn, *HENN Architekten Ingenieure: Masterplan Technische Universitat.* Munich: Office of HENN, 1995. p. 30).

Fig. 1.22: Communication links within the university
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Fig. 1.23 Access Diagram
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Fig. 1.24: Context Diagram

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Fig. 1.30: Communication as a Self-Organizing Principle in Architecture
ibid., p. 49.
Fig. 2.1: Figure Ground Drawing of Kenmore Square Area (based on BRA urban plan).
Fig. 2.2: Vehicular and Pedestrian Access Diagram (based on BRA urban plan).
Fig. 2.3: Fourth Floor Plan Figure Ground Analysis (based on HMO cadd files).
Fig. 2.4: Fourth Floor Plan Illustrating Site Location for Inquiry Study (based on HMO cadd files).
Fig. 2.5: Detail Plan of the Department of Internal Medicine (based on HMO cadd files).

9. Bibliography

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