CONFINES OF HEALING: INNIS, ILLICH, AND

THE QUESTION OF AUTHORITY IN WESTERN MEDICINE

by

Kathleen Galarneau

B.A., University of Waterloo, 1975

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS (COMMUNICATION)

in the Department

of

Communication

© Kathleen Galarneau, 1982

SIMON FRASER UNIVERSITY

October 1982

<center>APPROVAL</center>

Name: Kathleen Galarneau

Degree: Master of Arts (Communication)

Title of Thesis: Confines of Healing: Innis, Illich, and the
Question of Authority in Western Medicine

Examining Committee:

     Chairperson: Thomas J. Mallinson, Professor

<center>
_____

Paul Heyer
Assistant Professor
Senior Supervisor

_____

Liora Salter
Associate Professor

_____

Gary B. Rush
Associate Professor
Department of Sociology and Anthropology
Simon Fraser University
External Examiner
</center>

Date Approved: October 13, 1982

<center>ii</center>

ABSTRACT

A concept of knowledge monopolies, derived from the writings of
H.A. Innis and Ivan Illich, is used as a critical tool to analyze the
nature of authority that is exercised by modern medical doctors in
Western cultures. The concept's utility is thought to be two-fold: It
can add another dimension of understanding to a sample of historical and
sociological literature pertaining to medicine, as well as furnish a
basis for discussing the nature of professional authority in terms of
more general cultural criticism.

The writings of H.A. Innis suggest that modern systems of authority,
such as the profession of medicine, are based on monopolies of knowledge
that grew in relationship to developments in printed communication. His
communications perspective is adapted to the problem of modern
professional power in general, and medical authority in particular,
through Illich's notion of radical monopoly. The works of both writers
are discussed separately and then synthesized into a conceptual frame-
work for assessing medical authority.

The first application of this framework is toward an examination of
systems of authority in traditional medicine -- defined as the healing
arts from antiquity to the close of the Middle Ages. Second, the concept
is used to guide a discussion of the growth of modern medicine.
Particular emphasis is placed on the invention of the printing press in
the fifteenth century. The survey concludes at the outset of the
twentieth century where systems of authority in traditional and
modern medicine are shown to be almost parallel. By virtue of the

way in which medical knowledge was monopolized in the modern era, it is argued that scientific doctors exercise powers that are unprecedented in the history of Western medicine.

The conclusion endeavours to appraise the utility of the monopoly concept, arguing that it can be a useful analytical guide to understanding the nature of professional authority in modern medicine. It can serve to organize a sample of historical and sociological material in a new way. In so doing, the concept permits the student of social change to step outside the details of formal medical delivery systems, and examine the problem of authority within a wider context of the history of systems and institutions responsible for the organization and control of professional knowledge as a whole.

TABLE OF CONTENTS

PREFACE

Today everyone claims to be working for the patient's best interests. No wonder the patient is in deep trouble.

Thomas Szasz

Beginning in the nineteenth century, journalists, politicians, intellectuals, and patients, sang praises for modern medicine. The white lab coat and stethoscope became symbols for the triumph of science in the service of humankind. Later, in this century, an upbeat tune was interrupted by occasional discords. "Many treatments are hazardous to your health." "The health care bureaucracy is too expensive and dehumanizing." "Consumers have no choice but to submit to professional authority or be abandoned during times of personal crises." Thus, in the past few decades, we have begun to appreciate that, despite undeniable advances, modern medicine has failed to satisfy us in significant ways.

This thesis is the result of my efforts to understand the nature of medical authority from the vantage point of its relationship to communications media; to assess the ways that communication confines both the producers and consumers of medical knowledge. I chose not to deal with sociological, economic, and political details of modern medical practice. Rather, I looked at the relationship of communications media to systems of authority throughout the history of Western medicine.

The idea of examining a medical authority in relationship to media came to me while reading Harold Innis' work regarding the history of communication. In light of his perspective, I came to regard the history of Western civilization as a series of epochs that have come and gone in relationship to particular media and the ways in which they were used to impart order and meaning. As I began to reflect on the achievements and failures of ancient, medieval, and modern cultures, in terms of the organization of knowledge, I discovered that major transition points in medical history matched patterns that Innis found in larger, cultural,

historical contexts. These findings led me to believe that the problem of authority in contemporary medical practice is, in effect, a small-scale version of the problem of knowledge in Western civilization, and that printed communication is central to understanding how medical knowledge was monopolized by modern doctors.

While choosing Innis' communications perspective as the primary guide to assessing the nature of authority, I required a complementary theory to adapt his ideas to modern medical practice. It was at this point that I turned to Ivan Illich's concept of radical monopoly. He maintains that doctors exercise a monopoly over the creation and satisfaction of medical needs in industrial societies. Their monopoly is a radical one because patients cannot order the production of alternative needs and sources of satisfaction. His writings are rich with examples of how professional authority is maintained and extended through education, patient referral systems, drug control programs, ideology, and other market mechanisms. Thus, I fused Illich's concept of radical monopoly with Innis' knowledge monopoly concept to form the conceptual framework for this thesis. It is the wide angle lens that enabled me to frame and fix a multifaceted subject for analysis.

Part One of the thesis begins with an overview of Innis' history of relationships between communication, monopoly, and the organization of knowledge. This is followed by an explication of Illich's critique of professional power in contemporary cultural contexts. Both writers are shown to be complementary in terms of how they perceive the nature of power and how they conceive of ideal systems of authority. These

pages provide a conceptual framework that guides my analysis of traditional and modern medical systems.

Part Two is a brief summary of selected aspects of the history of traditional medicine. Traditional healing is examined in terms of institutional medical systems in Western civilization during periods when communication was based on media such as clay, stone, papyrus, and parchment. While Innis' communications perspective is used to structure this survey, the medical material is drawn from historians like Erwin Ackerknecht, Frederick Cartwright, W.J. Reader, Vern Bullough, and Henry Sigerist. This part concludes with an assessment of the nature of authority in traditional systems of healing.

Part Three is an examination of the birth of modern medicine and its maturation into a dominant profession. European doctors and their acquisition of monopolistic privileges, are assessed in relationship to developments in printed communication from the fifteenth to the turn of the twentieth century. The nature of modern medical authority is discussed with reference to the work of sociologists such as Eliot Friedson, Magali Larson, Elliott Krause, and Terence Johnson. Traditional and modern systems of medical authority are shown to be analogous in some respects while diverging in one significant way. It is argued that the important difference between traditional and modern authority stems from print-related processes that underscore the way that modern medical knowledge was monopolized.

It should be noted that Parts Two and Three are not presented as medical history or sociology but, rather, as another way of approaching the problem of authority in modern medicine. I believe that the

monopoly concept frames some historical antecedents that seem to explain, what many sociologists agree to be, the symptoms of contemporary medical malaise. My analysis stops short of tracing twentieth century developments in medicine. Rather, it suggests that current systems of authority were founded on print-related factors. Thus, for those who are concerned about the nature of professional authority in current medical practice, the following pages also suggest that future reform may arise from the ways that more recent communication technologies are used to produce knowledge.

PART ONE

THE CONCEPTUAL FRAMEWORK

PART ONE: INTRODUCTION

For anyone who has undertaken even a cursory reading of Harold Innis and Ivan Illich, the question might aptly arise: What do these two writers hold in common and why have they been selected as the major sources for this thesis? This question could stem, first, from an awareness of variations in style. For example, Innis entreats his readers to meander through 'snips' of history and to entertain the idea that systems of power, based on particular media, have shaped the contours of knowledge in Western civilization. In terms of style, Innis is a scholar who discusses new ideas while never being dogmatic or attempting closure. Illich, on the other hand, is like an oracle who pulls his readers along a straight line of reasoning. He exhibits a kind of intolerance for those who might fail to grasp his very specific, and at times, dogmatic critique of contemporary Western society.

Another point of disparity between Innis and Illich lies in approaches taken to the problem of knowledge. Innis uses communications media as the key to understanding achievements and failures of cultures throughout recorded history. Illich does not speak of communication technology *per se,* but is concerned with a full range of tools that we use to satisfy needs. Unlike Innis, he tends to be off-handish about Western history prior to industrialization, preferring instead, to punctuate his critiques of contemporary society with personal observations from the field of Latin American development. When he includes references to ancient and medieval history, it is more by way of illustrating the strengths of bygone epochs and the limitations of industrial

societies. This is in contrast to Innis who treats particular historical periods in their own right.

Incompatibilities between Innis and Illich, in terms of style and approach, recede into the background when one considers the positions held in common. They regard the monopolization of knowledge as the principle dilemma facing modern society. They both argue that authority should, ideally be vested in every person as opposed to being rigidly stratified according to institutional divisions. Furthermore, they maintain that this ideal is attainable when knowledge is produced and shared in the absence of monopoly.

In my mind, the concept of knowledge monopolies, as drawn from the writings of Innis and Illich, represents a useful theoretical guide to understanding the nature of authority in modern medicine. Part One, therefore, is devoted to explaining and defining the concept. Chapter One is my interpretation of what Innis means by monopolies of knowledge. Chapter Two is concerned with Illich's use of the term radical monopoly, and how professional groups in general, and medicine in particular, utilize monopolistic power to confine human action. In the conclusion to this part, I endeavour to synthesize the major ideas Innis and Illich hold in common, so that the reader will possess the same lens that guided my reading of selected texts in medical sociology and history.

CHAPTER ONE

H.A. INNIS: COMMUNICATIONS AND THE

MONOPOLY OF KNOWLEDGE CONCEPT

In my opinion, interdisciplinary work does not mean the
meeting of specialists in different disciplines, but
rather the meeting of different disciplines in the same
individual -- an adventure that our system discourages,
when it does not absolutely forbid it.

Lucien Israël, M.D.

This chapter opens with an introduction to Innis' personal and academic background. Then, the subject of communications media, which is central to his approach to understanding the relationship between knowledge and power, is discussed. This is followed by a discussion of the 'bias of communication' which is a prelude to the section where the concept of knowledge monopolies is defined. The chapter concludes with a look at what Innis believes to be the implications of knowledge monopolies for modern Western culture.

INTELLECTUAL DEVELOPMENT

H.A. Innis was one of Canada's most eminent scholars. Despite his premature death in 1952, he left a valuable collection of insights and interdisciplinary research for students of social change to draw upon. Born on an Ontario farm in 1894, Innis was raised according to the strict canons of the Baptist faith and the demands of routine farm labour. Donald Creighton, a personal friend and colleague of Innis, remarks that a rural and religious background instilled a strong sense of dignity, independence, and self-sufficiency in the young Innis.[1] Creighton also notes that World War I had a significant effect on Innis and it is perhaps most revealing in terms of the latter's underlying concern with the nature of authority in society. Creighton expresses Innis' views about the War in the following way:

> In his view, noncombatants were simply bureaucrats
> who risked nothing and battened on the War's
> emoluments of money, prestige, and power. Bureau-
> cracy meant regimentation and centralization and
> all the other evils of big government, which Innis
> instinctively hated. (2)

This attitude permeates Innis' scholarly work in which he documents the consequences of centralized power in relationship to economic and cultural activity. As far as he is concerned, centralized authority leads to exploitation of natural and/or human resources.

While attending McMaster University, Innis became known for his debating skills, which led him to contemplate a career in law.[3] Upon completion of a Master of Arts degree in 1918, this plan was overruled in favour of studying at the University of Chicago. It was here that Innis expanded his intellectual base through exposure to Thorstein Veblen's evolutionary theory of economic development, G.H. Mead's emphasis on language in individual development, and Robert Park's concern with cultural conditioning.[4] Innis obtained a Ph.D. in Chicago and returned to the University of Toronto in 1920 where he began teaching economics.

For the next twenty years, he taught and wrote under the rubric of 'economic geographer'. He is well known for his work on Canadian economic history, represented by the following books: A History of the Canadian Pacific Railway, 1923; The Fur Trade in Canada, 1930; Cod Fisheries: The History of an International Economy, 1940; and Essays in Canadian Economic History, 1956. In these works, he addressed the problem of regional development in Canada. His primary concern was with developments in natural resource industries. His research led him to conclude that economic instability results when the production and distribution of staple resources, in marginal areas, is controlled from the centres of civilization.

It was not until after World War II that Innis turned his attention
to the problem of knowledge and culture. He extended the economic theory
of monopoly to include systems of power that shape the contours of
knowledge in Western civilization. This shift in emphasis, often
referred to as Innis' second phase, is well represented by two books:
Empire and Communications, 1950;[5] and The Bias of Communication, 1951.[6]
These volumes are used as the primary sources for the discussion that
follows are are referenced in the text by the abbreviations Empire and
Bias respectively.[*]

Much has been written about Innis' unique approach to economic and
cultural history, but perhaps one of the more succinct statements is
offered by William Kuhns: "Innis has attempted reading history through
forms rather than content, through information flow and control rather
than political heroes, wars, and trade."[7] Innis, as economic geographer,
traced the source and routes of staple economies and Innis, as cultural
historian, documented the "source and route of new forms of power and
authority."[8] The systems of authority that concerned him, were those
that emanated from various communications technology and related uses.

COMMUNICATIONS TECHNOLOGY

Despite the centrality of communications technology to Innis' work,
he does not provide a precise definition for the word 'media'. Neverthe-
less, one can extract a workable definition of the term by examining

---

[*]   For example, (Empire, 81) or (Bias, 15) are used in place of stan-
      dard footnotes in this and subsequent chapters. The numbers refer
      to pages where the quote and/or idea appears.

particular epochs in Western history, which Innis distinguishes according to empires or systems of power that were founded on unique systems of communication. For example, he regards the development of cuneiform writing on clay tablets as a principle dynamic in the rise of religious hierarchies in Babylonian and Assyrian cultures (Bias, 6). Similarly, Egyptian priesthoods acquired power through the use of a complex form of writing with brushes and papyrus (Bias, 7). On the other hand, Innis links the rise of Christianity to Latin scholars writing with stylus and parchment codex (Empire, 109).

From these and other examples, it is clear that Innis' use of the term 'communications media' embraces three dimensions: (1) the artifacts associated with communication; (2) organizational factors pertaining to the production and distribution of messages; and (3) implications for the character of knowledge. These dimensions are illustrated in the case of ancient Babylonian and Assyrian cultures. First, clay and the reed stylus were the instruments used to produce official records and/or to strengthen collective memory. Secondly, priests monopolized the requisite artifacts and expertise to produce knowledge. Temples, in essence, were the training grounds, production houses, and libraries for important documents. The clergy's control over writing enabled organized religion to exercise a high degree of authority within city-states. And, thirdly, religious influence on the character of knowledge was evidenced by a cultural preoccupation with ritual, astronomy, astrology, and a belief in fate (Bias, 6).

The problem of authority is at the heart of Innis' use of the term 'media'. He regards communication as the fundamental activity in any

culture and is, therefore, concerned with religious and/or secular groups

who control the instruments of communication. While it is important to

stress that Innis is not a technological determinist[9] he does argue that

communications media underscore the evolution of systems of authority:

Media give rise to power; they point to mechanisms that serve to maintain

power; and, they can be enlisted to offset or destroy entrenched

authority. Sociologist, Liora Salter, clarifies this point in the

following quote:

> Technology is viewed as an extension of activity:
> it is instrumental. Like the activity of which
> it is a part, technology is grounded in specific
> social and economic conditions; it is tied to
> relations of production, kinds of markets, and
> vested political and economic interests. Techno-
> logical systems function as an integral part of
> production, are developed to meet the needs of
> specific forms of production, and contribute to
> the maintenance of control. At the same time,
> they can be used as weapons of resistance. (10)

Thus, media, regardless of design, can be used toward different ends,

depending upon their relationship to the cultural milieu.

Innis found that what people 'know' about the world is largely

determined by interconnections between political, economic, social, and

psychological factors, as these components of culture pivot around the

dominant medium of communication. In Empire and Bias, he presents the

reader with a variety of communication systems or combinations of these

factors. To expedite an understanding of the significance of media to

the history of civilization, it is best to forego lengthy descriptions

of unique communication systems and proceed with a breakdown into two

general types.

In the first type, people derive meanings through traditional patterns of interaction where there is an emphasis on religion and continuity with the past. Innis refers to these kinds of cultures as being 'bound to the demands of time.' In the second type, knowledge is negotiated through processes that favour secular concerns such as economic and military expansion and the pursuit of novelty. Cultures, in this latter category, are 'bound to the demands of space.' Whether or not a culture is considered to be time-bound or space-bound is dependent upon the bias of communications media.

THE BIAS OF COMMUNICATION

Bias, in communication and culture, operates on several levels, but it begins with people. Human communication is, essentially, the activity of using our senses to access information and to process or, literally, to 'make sense' of experience. The significant outcomes of this continuous process is that we use derivative meanings to act in the world and to solve problems (Bias, 85).

Innis expresses a preference for oral communication and/or systems of writing that are easily adapted to everyday speech (Bias, 4). He argues that, when language is spoken, people tend to employ a full range of sensory information to appraise and solve problems. In other words, individuals make decisions on the basis of what they see, hear, feel, taste, and smell.[11] The advantage of face-to-face communication is that we can trust the authority of our own senses to experience and know the world. In so doing, we are less likely to be rendered dependent upon others who might prefer to do the knowing for us.

The appeal of writing rests with its capacity to compensate for the limitations of human memory. However, the problem with writing is that it can overtake the authority of spoken communication (Bias, 101). With but a few exceptions, Innis found the history of the West to be punctuated with communication systems that confined individual freedom of thought and action; where external sources of knowledge overpowered people's authority to negotiate reality through the use of langauge in direct connection with sensory experience. In each case, external sources of authority are related to the biases of complex writing systems.

The bias of communication stems from qualities that are inherent to the medium that writing is based upon:

> Media that emphasize time are those that are durable
> in character, such as parchment, clay, and stone.
> The heavy materials are suited to the development of
> architecture and sculpture. Media that emphasize
> space are apt to be less durable and light in
> character, such as papyrus and paper. The latter
> are suited to wide areas in administration and trade.
> Materials that emphasize time favour decentralization
> and hierarchical types of institutions, while those
> that emphasize space favour centralization and systems
> of government less hierarchical in character (Empire,
> 7).

Thus, communication and culture are likely to be biased in favour of time if the dominant medium is of a durable or permanent material. Temporally-biased media tend to confer power to religious hierarchies. Conversely, if the dominant medium is easily conveyed, and somewhat fragile in nature, the resulting bias of communication will be a spatial one. Spatially-biased media lend themselves to monopolization by secular groups and centralized power.

Both biases exhibit strengths and weaknesses with respect to the probability that a culture will flourish or be stable. For example, temporally-biased cultures satisfy the need for tradition and strong social bonds between people, while spatially-biased cultures satisfy the need for explorations into new geographical and intellectual terrain. Few cultures, throughout history, have enjoyed the benefits of change without the threat of social disintegration, or experienced the security of established community life, without an accompanying sense of boredom and rigid adherence to precedent (Bias, 90). Furthermore, the more extreme the bias of communication, in favour of time and at the expense of space, or vice versa, the more difficult it is to correct before the culture declines. In this respect, communication is the keystone of culture, and the latter is most stable when the biases of time and space are balanced.

Innis reveres classical Grecian culture because its members demon-strated an ability to "appraise problems in terms of time and space" (Bias, 85). In other words, the Greeks maintained the benefits of tradition, while reaching out of relative geographical and cultural isolation, and returning with novel ideas and artifacts for adaptation to their own needs (Bias, 40, 136). Similarly, they achieved an optimum relationship between autonomous and institutional authority, through a unique system of communication based on speech.

Innis argues that a strong oral tradition, and an alphabet that was easily adapted to writing in the vernacular, enabled the Greeks to excel artistically, scientifically, socially, and politically. An 'appeal to the ear' in communication provided a persistent check against the

formation of knowledge monopolies.[12] This means that an emphasis on
speech facilitated a cultural system of authority, independent of force.
Empowered officials had the means of establishing guidelines for
religious, economic, social, and political action, but, at the same
time, they were responsive to the need for continuously adjusting stan-
dards in light of new information (Bias, 42). Classical Greece was, in
Innis' mind, a culture in which institutional authority existed in the
absence of force: "The individual became responsible for his actions and
the root of authority was destroyed" (Bias, 42).[13] In short, Greece,
during its classical period, was a stable or ideal culture.

MONOPOLIES OF KNOWLEDGE DEFINED

     Many scholars subdivide the historical landscape into periods of war
and peace, or into decades and centuries. Innis does not conform to the
customary methods of chronological sequencing, but rather, orders history
according to empires as they developed and declined in relationship to
one another and the dominant mode of communication they employed. An
empire, like classical Greece, is a culture that exhibits a flexible
interplay between competing forms of communication. A balance between
time and space enabled Grecian culture to achieve stability. However,
empires are often biased in favour of time at the expense of space or
vice versa. In such empires, one form of communication dominates
cultural activity, to the point where the empire becomes a rigid system
of power. The result is cultural instability and, ultimately, the
empire declines in the face of the bias of communication.

The source of this instability, or rigidity, is found by examining monopolies of knowledge that have grown in relation to the dominant medium of communication. Or, as Salter indicates:

> Monopoly and empire could be seen as two perspectives on the same phenomenon. If empire was the institutionalization of power, monopoly represented the nature and means of control exerted. (14)

In this respect, Innis' notion of knowledge monopolies is the key to tracing the source of cultural instability, and to understanding the nature of authority that operates in rigid systems of power.

Monopolies of knowledge, despite differences on the surface, share three characteristics:

(1) They are built on, and their communication depends upon, the restriction of communication to one dominant medium.

(2) They tie knowledge to specific interests and, in so doing, de-value other ways of knowing about the world.

(3) They enable favoured groups to exercise rigid control over the production and movement of information.

For example, an empire that is entrenched in a temporal bias of communication, tends to be supported by monopolies that are built on durable media such as stone, clay, and parchment. Historically, religious groups have built powerful hierarchies on the basis of sacred texts that were written on durable media. They authorized knowledge that was concerned with providence and anchored spiritual beliefs to moral law. Painting, music, architecture, and rituals that 'appealed to the ear' reflected organized religions' control over cultural activity.[15]

While different in substance, a spatially-biased empire displays the same underlying elements as its time-bound counterpart. It is founded on a dominant medium of communication, which is, in this case, papyrus, paper, or other materials that are easily conveyed. Monopolies tend to cluster around forms of communication such as textbooks where, historically, markets for these products have been forged through concomitant innovations in road construction, shipping, and other developments in transportation.[16] Spatially-biased forms of communication facilitate standardization in knowledge by lending a quantitative character to information, and by increasing the possibility that communities, in hitherto geographically isolated locations, receive the same information as those in the centres of civilization. These conditions foster a preoccupation with civil law, and confer centralized power to governments, entrepreneurs, and professional classes.

Monopolies of knowledge begin with innovations in communications technology that generally emerge from the margins of culture -- from groups that are geographically and/or sociologically distanced from the loci of power. Furthermore, the competitive strength of new forms of communication, rests with their capacity to offset the limitations of the dominant communication system. For example, during the reign of Augustus, papyrus was the dominant medium that had facilitated Rome's imperial expansion and centralized power (Empire, 108). In this spatially-biased empire, lands and people had been united politically, but the need for what Innis calls 'individual salvation' had been neglected (Empire, 108). Parchment, which was economical, convenient, and durable, proved to be an innovation that enabled Christians to

compete against other religions to satisfy the needs for redemptive religion, and to eventually overtake secular Roman rule (Empire, 109).

The same principle was in operation when the Christian empire reached a point of rigidity or instability. The Church's temporal monopoly paved the way for competing forms of communication that could correct the need for novelty. "The limitations of culture, in point of duration, are in part a result of the inability to muster the intellectual resources of a people to the point where stagnation can be avoided and where boredom can be evaded" (Bias, 133). Paper was a corrective for the predicament of knowledge and culture. To this effect, Innis writes:

> A monopoly over time invited competition such as
> that which followed a spread in the use of paper
> from China through the Mohammedans at Bagdad and
> Cordova and in the recognition of new sources of
> learning, notably in Greek science and philosophy
> represented especially by Aristotle filtered
> through Arabia or coming direct from Constan-
> tinople. (17)

New forms of communication that were based on paper, satisfied the need to explore novel areas in knowledge, while, simultaneously, retrenching Latin as the official language and revitalizing literature written in the vernacular. Later, during the Renaissance, developments in print technology served to extirpate the roots of the church's power.

Ironically, monopolies of knowledge originate when an alternative medium of communication presents the possibility for marginal groups to correct cultural instability that results when an empire has evolved into a rigid system of power. However, as the groups who control new forms of communication begin to consolidate their interests, new systems of

power begin to emerge. In effect, monopolies of knowledge, during their infancy, represent a check against rigid power, but when mature, monopolies support another but equally rigid system of power.

The history of Western civilization, from Innis' perspective, resembles a pendulum that swings from one bias of communication to another; from one empire to another; and from one configuration of knowledge monopolies to another. Ideally, the pendulum should oscillate only slightly at a central point between two extreme biases of time and space. But balance of this nature is difficult for cultures to achieve and maintain. This is the case, because the strengths of a new medium of communication usher it from the margins to the centre of cultural activity. It is not until monopolies of knowledge have grown up around the medium that its limitations beg for correction. However, it is difficult to assess the limitations of communication because individuals cannot escape the bias that confines thought and action in their own culture (Empire, 9) (Bias, 133). Thus monopolies of knowledge resist correction until the empire that they support is threatened by instability. The result is cultural decline and another swing of the pendulum.

IMPLICATIONS FOR CONTEMPORARY SOCIETY

Innis devotes a large portion of his writings to a transition period in Western history, when the church's time-bound empire was overtaken by monopolies of knowledge that grew in relation to innovations in paper and print technology -- when printed forms of communication displaced the authority of sacred manuscripts. This transition began in

the fiteenth century, in conjunction with the invention of the printing press, and was, more or less, consolidated late in the nineteenth century, after power was applied to the printing press and wood-based paper had been manufactured (Bias, 3).

While Innis' work includes developments in more recent media such as cinema and radio, I choose to limit this discussion to the period beginning with the Renaissance, and concluding at the turn of the twentieth century. My choice is based on an assumption that the systems of power that characterize contemporary Western society can be traced to developments associated with printed communication prior to the twentieth century. Furthermore, I assume that medicine's current monopoly of knowledge can also be traced to printed forms of communication that emerged during this transition period.*

Innis stresses print-related changes in education, perhaps because institutional learning is intimately bound to the processes that shape the character of knowledge. During Western Europe's period of modernization, education was transformed from a closed circle of religious scholars into a large-scale secular enterprise. As the production of knowledge shifted from dictation and hand copying to mechanical and commercial printing processes, so too did the character of knowledge change. The church's emphasis on spiritual needs and a concern for preserving traditional knowledge, gave way to a spatial bias that emphasized natural science and a preoccupation with the future (Bias, 76).

---

* From this point forward, I shall refer to this period of transition as the modernization of Western civilization.

Monopolies clustered around printed forms of communication such as textbooks, newspapers, and learned journals. As more and more people learned to read, they also learned to need scientific information about the world. Innis refers to these needs as 'demands for the miraculous':

> To supply this demand for the miraculous has been a highly renumerative task, as is evidenced by the publications of firms concerned with scientific works....Popular literature explained the wonders of the physical world and at the same time flushed the imaginations of men with the consciousness that they were living the era "which, in itself vastly superior to any age of the past, need be burdened by no fear of decline or catastrophe but, trusting in the boundless resources of science, might surely defy fate" (Bias, 192).

Science, in effect, captured the public imagination during modernization and prevails at the expense of generating and satisfying needs in non-commercial ways.

The strength of printed forms of communication is their capacity to standardize information (Bias, 18). Because modern scientists are concerned with objective knowledge, print suits the needs of scientific inquiry more perfectly than media that preceded it.* The fact that science produces objective, or what Innis calls "mechanized knowledge", is not a bad thing in itself (Bias, 195). The problem, from Innis' point of view, is that Western people have become 'obsessed' with science and that other ways of knowing about the world have been de-valued (Bias, 193).[18] Because of print-related links between government, industry, and education, there are few institutional mechanisms that

---

* It will be argued, in Chapter Three, that science has inherited an objective method largely because of print-related factors.

support knowledge that cannot be justified in terms of economic and military expansion (Bias, 193-195). Thus, modernization led to the growth of empires that are rigidly biased in favour of space. Monopolies of knowledge, founded on the bias of print technology, support and extend these empires at the expense of knowledge that satisfies needs associated with time.

The lesson that I derive from Innis is that contemporary Western nations have not escaped the dilemma that beset other cultures throughout history. Problems and/or needs are defined and satisfied through rigid institutional processes. The high priests of knowledge are now research scientists and consulting professionals. Doctors, lawyers, engineers, economists, and other special occupational groups have inherited key positions in the current scheme of things. They are empowerd to protect and extend monopolistic privilege over the activities that govern the production and satisfaction of needs. In so doing, professions, such as medicine, nourish empires that are entrenched in a spatial bias of communication -- a bias that threatens the stability of Western cultures.

FOOTNOTES TO CHAPTER ONE

[1]Donald Creighton, "Harold Adams Innis -- An Appraisal". In Culture, Communication and Dependency, ed. W.H. Melody, Liora Salter and Paul Heyer (Norwood, N.J.: Ablex Publishing, 1981), p. 14.

[2]Ibid., p. 17.

[3]Ibid., p. 18.

[4]William Kuhns, The Post-Industrial Prophets: Interpretations of Technology (New York: Weybright and Talley, 1971), p. 140.

[5]H.A. Innis, Empire and Communications (Toronto: University of Toronto, 1972).

[6]H.A. Innis, The Bias of Communication (Toronto: University of Toronto, 1977).

[7]William Kuhns, Prophets, p. 143.

[8]Ibid., p. 141.

[9]Ian Parker, "Innis, Marx, and the Economics of Communication: A Theoretical Aspect of Canadian Political Economy". In Culture, Communication and Dependency, p. 133.

[10]Liora Salter, "'Public' and Mass Media in Canada: Dialectics in Innis' Communication Analysis". In Culture, Communication and Dependency, p. 196.

[11]My interpretation of Innis is influenced by ideas associated with Neuro-Linguistic Programming -- a communications approach to psychotherapy. Refer to Richard Bandler and John Grinder, Structure of Magic (Palo Alto: Science and Behavior Books, 1975 and 1976).

[12]In this case, an 'appeal to the ear' was used as a check against external sources of authority. However, Innis notes that oral communication has been used toward different ends. For example, he writes that religious groups "relied on the oral tradition" to control human action (Bias, 131). Also, Hitler's use of the loudspeaker was enlisted "for the exploitation of nationalism" (Bias, 81).

[13]Innis does not address the issue of slavery in Greek culture.

[14]Liora Salter, "'Public' and Mass Media in Canada: Dialectics in Innis' Communication Analysis", pp. 195-196.

[15] H.A. Innis, "Concept of Monopoly and Civilization", _Explorations_, 3 (1954), p. 91.

[16] _Ibid._, p. 91.

[17] _Ibid._, p. 94.

[18] This is similar to ideas that are developed in Jürgen Habermas, _Toward a Rational Society_, translated by Jeremy Shapiro (Boston: Beacon Press, 1970), p. 97.

CHAPTER TWO

IVAN ILLICH: PROFESSIONAL MONOPOLY

AND POWER IN INDUSTRIAL SOCIETY

...the professions bring knowledge to the service
of power....

> A.M. Carr-Saunders and P.A. Wilson

This chapter is an explication of Ivan Illich's critique of industrial society with particular emphasis on professional monopolies of knowledge and their place in contemporary systems of power. First, his academic life and career are highlighted. Then the discussion turns to how professions, especially medicine, dominate the creation and satisfaction of needs in industrial countries. This is followed by an examination of the role that science plays in modern society. The concluding section includes Illich's ideas on technology and the way it is used by professional groups to maintain and extend their authority.

INTELLECTUAL DEVELOPMENT

Ivan Illich lived his first fifteen years in Vienna until his family was expelled by Nazi occupiers in 1941. The following two years were filled with studies in natural sciences and psychology at the University of Florence. In 1943 he began classes at the Gregorian University, in Rome, where he obtained degrees in philosophy and theology. His formal education was completed with a doctoral degree in history, at the University of Salzburg in 1951.

Illich's interest in the 'roots of knowledge' was apparent when he was a student[1] but his concern with 'knowledge and power' crystallized when he entered the priesthood. After four years serving as an Assistant Pastor of Incarnation Church in Manhattan, Illich began to speak out against the Catholic Church and other institutionalized religions. He was critical of what he called a 'dominating and disabling influence' that organized religion exercised in American communities; particularly

with reference to the influx of Puerto Rican immigrants to New York's inner city.[2]

In 1956, Illich was assigned to the position of Vice Rector of the Catholic University of Ponce, Puerto Rico, where he obtained funding to open a centre to train incoming missionaries. The Intercultural Centre of Documentation (CIDOC) was founded in 1961 in Cuernavaca, Mexico. The curriculum consisted of courses in the Spanish language, social sciences, and humanities, with an emphasis on challenging the students' cherished beliefs. Illich's central message to the missionaries, according to a writer in Current Biography:

> was an exhortation to root out of themselves
> Western political biases, ethnocentric values,
> and paternalistic attitudes that would align them
> with the status quo in a social and economic
> system that desperately needs changing. (3)

The CIDOC message, coupled with the publication of Illich's articles recommending a de-politicized and de-bureaucratized church, resulted in a major ecclesiastical controversy. It led to a Vatican order forbidding priests, nuns, and other members of the church from studying in Cuernavaca. The end result was a secularization of the centre in 1968 and Illich's renunciation of his priestly functions in 1969.

Apart from his on-going involvement with CIDOC, Illich is author of six books: Celebration of Awareness, 1969; Deschooling Society, 1971; Tools for Conviviality, 1973; Energy and Equity, 1974; Limits to Medicine, 1976; and Toward a History of Needs, 1977. The theme that unites each volume is Illich's concern with the institutionalization of knowledge and implications for personal and cultural determination. The books that serve as primary sources for this discussion are Tools for Conviviality,[4]

Limits to Medicine,[5] and Toward a History of Needs.[6] They are referenced
in this and later chapters by the abbreviations Tools, Limits and Needs
respectively.[*]

While Illich considers his research into compulsory schooling to be
a model for assessing the problem of knowledge and authority in contem-
porary society, he extends his analysis to embrace other areas such as
health, welfare, transportation, national defense, and energy (Tools,
xxii). He argues that these, and other important public needs, are
defined and satisfied by professional elites who monopolize knowledge.

THE CREATION AND SATISFACTION OF NEEDS

An outstanding feature of industrial societies is the proliferation
of specialists who dominate the activity of creating and satisfying needs.
Through various mechanisms, these groups preside over the definition of
important problems as well as the implementation of solutions. Despite
differences on the surface, the substance of various professional groups
is the same; they are a special force in the industrial mode of production.
Professions are unique because they exercise a 'radical monopoly' over the
focal activities of society. Illich defines radical monopoly as:

> ...the dominance of one type of product rather
> than the dominance of one brand. I speak about
> radical monopoly when one industrial production
> process exercises an exclusive control over the
> satisfaction of a pressing need, and excludes non-
> industrial activities from competition (Tools, 52).

---

[*] For example, (Limits, 56) indicates that the quote and/or idea
appears on page 56 in the book entitled Limits to Medicine.

Professionals differ from others who provide a service or product because they have acquired the authority to both determine needs and to be the only groups permitted to satisfy them. In educational spheres, for example, the need 'to learn' is transposed into the need 'to get an education'. Learning, which is an intrinsic activity or a by-product of everyday living, becomes a commodity or institutional package in the professional equation (Needs, 70). Learning is re-defined to mean that which is acquired in schools -- the latter being the workshops or the places where 'what is worth learning' is packaged.[7]

Not only do professional groups have the authority to create and minister to needs, they also have the legal sanctions to determine the rationale for mandatory consumption of their services. Through a claim to incommunicable knowledge, professionals can define people as clients with particular needs and in so doing, create new social roles.[8] Illich maintains that the authority to do this does not come from the population at large, but rather, he says, "a profession, like a priesthood, holds power by concession from an elite whose interests it props up" (Needs, 24). A concession of this nature is possible only in societies where knowledge has been monopolized.

Morticians are an interesting example of a group that was granted the concession to move from merely supplying a service to a group capable of creating needs. At the turn of the twentieth century, grave-diggers acquired the outward appearances of a profession by changing their title, establishing a set of academic credentials, and by 'educating' the public about hygienic standards pertaining to burial. But the ultimate criterion required for admission to the professional

class occurred at the point when it became illegal to be buried independently of their services.[9]

Of all the occupational groups that have acquired professional status, medicine is the most dominant. A measure Illich uses for this is the frequency of the patient role. Almost all people in industrialized societies 'need' to be patients at one time or another. Our dependence on institutional medical care reshapes the cultural milieu by, in his words, "appropriating those of its general characteristics which have enabled people to so far cope on their own" (Limits, 50). This is accomplished on a clinical level when diagnostic and treatment procedures replace or undermine the body's natural ability to heal itself (Limits, 30-41). Clinical iatrogenesis* is compounded and reinforced by the social organization of medicine which creates new demands for a consuming public, rendering the medical system as a principle economic activity and converting self-care into a felony (Limits, 47-52). The result is a public that is oriented toward, and fascinated by, extraordinary medical intervention, and what Illich calls a "need for the engineering of miracles" (Limits, 113-114).

If the perception of ignorance is converted to a need for formal education, and if the experience of pain is interpreted as a need for medical intervention, what are the historical precedents to these transformations? Illich argues that they are developments unique to industrialization: "For the first time, needs have become almost exclusively coterminous with commodities" (Needs, 13). Professional domination

---

* Doctor-inflicted injuries.

overrules the need and/or capacity of individuals to educate and care for themselves: Exchange-values replace use-values in an unprecedented fashion.[10]

Institutional processes dominate the creation and satisfaction of pressing needs to such an extent that professional services begin to undermine the health and well-being of the consuming public. This paradoxical and counterproductive situation is legitimized, "...through appeal to the expertise of an elite whose knowledge, by its very nature, cannot be shared" (Needs, 13). When, for example, people are adversely affected by particular medical technologies[11] there are two immediate solutions to this problem. The first is to limit or stop the use of harmful procedures and the second is to step up professional intervention to manage the crisis. Clinical iatrogenesis, in the latter response, becomes a new need that requires further intervention to be satisfied. It is often the solution that is imposed by the profession, even if experts and laypeople agree that it contradicts 'common sense'. This type of imposition is legitimized on the basis of scientific knowledge, at the expense of common knowledge, and at the risk of counterproductive outcomes.

Illich maintains that the way we use language contributes to the escalation of health-denying needs and corresponding solutions in industrial and developing nations alike. He defines cultures as "programs for activities" and regards language as fundamental for such programs (Needs, 9). But, like other intrinsic activities such as learning and healing, speaking is used to serve commercial interests: "The sounds made by the editors and announcers of programmed texts,

daily pervert the words of the spoken language into building blocks for packaged messages" (Needs, 5). Whenever consumer messages are seen and heard, the greater the likelihood that people think in terms of commodities as needs. Mass media serves the producers of industrial goods and services by creating new markets in locations where such needs would never have otherwise arisen.

The standardization of needs is another factor that requires our dependency on professional expertise. Our experience of lacking something, expressed as a need for something, is, in Illich's words, "The fodder on which professions fattened into dominance" (Needs, 30). The label 'needy' has been broken into special categories, so that individuals from all socio-economic classes are included as actual or potential markets for professional services.[12]

The process of standardization has extended the range of professional intrusion into hitherto taboo areas of social life. This is illustrated by recent controversies regarding sex education in the schools. Venereal disease and adolescent pregnancies were defined as problems, but before these problems could be managed through professional channels, they had to be defined in terms of needs. Standardization transposed these problems into a 'need' for more education.[13] In this, and other examples, the public has fought against professional domination over the definition of deviance and the prescription of remedies. However, in most cases, the burden of proof in professional-lay controversies rests with those who possess scientific knowledge, thus enfeebling lay resistance to professional management.

THE BURDEN OF PROOF

Illich maintains that professional domination is legitimated on the basis of scientific knowledge. Proof of the rightness or wrongness of professional action rests with the rules that govern the production of scientific knowledge. The cognitive nexus between medical practice and scientific research implies that the definition and satisfaction of needs, in clinical settings, has become an extension of the laboratory. Thus, Illich writes that modern medicine:

> has become an orthodox apparatus of bureaucratic
> administrators who apply scientific principles
> and methods to whole categories of medical cases.
> In other words, the clinic has turned into a
> laboratory. By claiming predictable outcomes
> without considering the human performance of the
> healing person and his integration in his own
> social group, the modern physician has assured
> the traditional posture of the quack (Limits, 255).

Links between research and practice refocusses the physician's primary responsibility away from the client and toward science and/or the profession.

Given this arrangement, what constitutes effective or ineffective treatment is defined according to written medical standards.[14] These standards do not emanate from lay circles nor do they develop through professional-lay interaction. Rather, their source is the experimental method of science, which is the agreed upon approach to problem-solving within research circles. Regardless then, of treatment outcomes, such as cure, further impairment, death, or no change, professional conduct is considered to be correct, so long as the doctor has followed scientific rules. For these reasons, Illich suggests that physicians require

a high tolerance for cognitive dissonance to permit them to perform dual
roles of healer and scientist (Limits, 256).

Illich does not take issue with science in and by itself. The
problem with science arises when its social function is examined. It
is used to determine the nature of professional practices and serves, at
the same time, to legitimate orthodox procedures. In so doing, it is
the means whereby other ways of defining and satisfying needs are de-
legitimated: "By denying public recognition to entities that cannot be
measured by science, the call for pure, orthodox, confirmed medical
practice shields this practice from all political evaluation" (Limits,
257). Science, used in this fashion, provides unprecedented protection
to governing elites and, in so doing, presents a formidable barrier to
the uninitiated who wish to participate more directly in the satis-
faction of pressing needs. Illich contends that the breakdown of
this barrier involves a radical change in the design and use of modern
technology.

TECHNOLOGY AND MONOPOLY

Illich argues that some technologies are predisposed to enrich
life, while others are not. The dual function of tools derives partially
from their design and partially from social arrangements in which they
are employed. If technologies and their uses enhance autonomous control,
Illich refers to them as being 'convivial' (Tools, 20). If, on the
other hand, the designs and uses of artifacts foster individual depen-
dence on external sources of knowledge, he refers to them as being
'manipulatory' and/or 'industrial':

> Tools are intrinsic to social relationships. An
> individual relates himself to action to his society
> through the use of tools that he actively masters,
> or by which he is passively acted upon. To the
> degree that he masters his tools, he can invest the
> world with his meaning; to the degree that he is
> mastered by his tools, the shape of the tool deter-
> mines his own self-image. Convivial tools are those
> which give each person who uses them the greatest
> opportunity to enrich the environment with the
> fruits of his or her vision. Industrial tools deny
> this possibility to those who use them and they allow
> their designers to determine the meaning and expec-
> tations of others (Tools, 21).

Because mass production of goods and services in industrial nations goes

hand-in-hand with a separation between the producers and consumers of

knowledge, Illich maintains that most modern technologies are manipula-

tory.

Where manipulatory tools and social arrangements prevail, at the

expense of convivial ones, technology ceases to liberate people. It

becomes, instead, a new form of enslavement. People lose rewards that

can be gained only when they master their own environment. Convivial

tools, to the contrary, are naturally suited to the satisfaction of

intrinsic needs and endow the user with competency that is similar to

William Leiss' notion of 'craft skills': "Craft skills require an

intimate knowledge of the materials which are used in the realization of

an objective."[15] Thus, manipulatory tools render people dependent on

external sources of knowledge, while convivial technologies facilitate

intrinsic authority and/or competence that serves as a check against

manipulation.

Despite the fact that Illich often refers to manipulatory tools

as being more complex in design than convivial ones, he argues that

technologies can be used toward different ends, regardless of their degree of sophistication: "In principle the distinction between convivial and manipulatory tools is independent of the level of technology of the tool" (Tools, 22). Like Innis, he believes that technology cannot be assessed on the basis of design alone, but rather, in relationship to psychological, social, economic, and political factors. In this sense, an inherently manipulatory tool can be used in a convivial fashion and vice versa.

Evidence of this principle occurred in medicine when nineteenth century clinicians discovered ways to improve urban sewers, water supplies, and housing. Initially, these early applications of science to solving public health problems were convivial. For example, community members were responsible for knowing how to identify contaminated water, as well as maintaining neighbourhood wells. However, later in the same century, this knowledge was monopolized by the profession of medicine, thus converting convivial technologies into manipulatory ones (Tools, 1).

Apart from rendering people dependent on external sources of expertise, professional monopolies are counterproductive. Beyond a certain point, manipulatory tools and arrangements undermine the pur-poses for which they are designed (Tools, 1). In medicine, for example:

> ...one out of every five patients admitted to a
> typical research hospital acquires an iatrogenic
> disease, sometimes trivial, usually requiring
> special treatment, and in one case in thirty
> leading to death. Half of these episodes result
> from complications of drug therapy; amazingly,
> one in ten comes from diagnostic procedures
> (Limits, 41).

Thus manipulatory tools and uses have escalated to the point where institutional medicine has become health-denying. Illich applies this line of reasoning to all professional monopolies.

Professional domination and the escalation of counterproductivity is tolerated in industrial societies because science and the myth of technological progress overrules, in Illich's words, "legal, cultural, and political precedents as formal guidelines to present behaviour" (Tools, xxiii). In manipulatory societies, most citizens cannot evaluate the limitations of professional management, because they do not possess specialized knowledge. Fully manipulated individuals do not and cannot resist domination because of a belief that the good life is synonymous with consuming commercial products and services.

From Illich's point of view, government policy, industrial expansion, and professional domination, go hand in hand. For example, when governments establish health care insurance schemes in the name of 'public interest', it is ultimately the interests of industry and professions that are served:

> Our market-intensive societies measure material
> progress by the increase in the volume and variety
> of commodities produced. And taking our cue from
> this sector, we measure social progress by the
> distribution of access to these commodities.
> Economics has been developed as propaganda for the
> takeover by large-scale commodity producers.
> Socialism has been debased to a struggle against
> handicapped distribution, and welfare economics
> has identified the public good with opulence --
> the humiliating opulence of the poor in United
> States hospitals, jails, or asylums (Needs, 7).

Increased access to industrial goods and services improves the quality of life to a point, but beyond this, access serves to accelerate disabling intervention and fuel the myth of progress.

In summary, Illich believes that industrial societies are manipu-
latory; important needs are defined and satisfied, primarily through
institutional mechanisms; exchange-values replace use-values in most
areas of social life. Professional monopolies of knowledge represent
a principle source of manipulation because they promote our dependency
on external sources of authority, at the expense of defining and
satisfying intrinsic needs in an autonomous fashion.

For Illich, an ideal social organization of knowledge results when
there is balance between what people "need to do by themselves and what
they need to obtain ready-made" (Tools, 51). Balance of this sort
facilitates autonomous control and mutual caring among people who, at
the same time, benefit from extrinsic sources of knowledge. This ideal,
or convivial society, is difficult to construct, in contemporary Western
cultures, because knowledge is entrenched in elite groups that determine
our needs and how they are to be satisfied.

Medicine, one of the most powerful of these groups, has acquired
the authority to determine how health and illness are thought about and
dealt with. There is virtually no segment of problematic social behaviour
over which doctors do not have complete or partial authority. Their
permission is required to obtain drugs -- both prescription and 'over-
the-counter' varieties. They are often called upon to determine if an
individual is 'fit to stand trial' and/or if the convicted person was
'sane' or 'insane' at the scene of the crime. They can decide who should
or should not conceive a child and when a woman should abort her fetus
or carry it to full term. The list of physical, moral, legal, and social
judgements that medical experts make on our behalf is so extensive, that

Illich has devoted an entire book to the subject of medical domination (Limits).

The problem with modern professions, such as medicine, stems from the nature of their authority. Professional status is based on a membership of individuals who have demonstrated mastery of specialized scientific knowledge. Science, to a large extent, determines the rules of professional conduct. However, when scientific doctors define and satisfy medical needs, their actions can result in health-denying and/or counterproductive outcomes. People experience further impairment or death as a result of professional intervention. The capacity of citizens to effectively challenge professional authority, in such cases, is enfeebled because science has acquired a dual function in industrial societies: It is used to generate as well as to legitimate professional knowledge and power. This predicament is reinforced by manipulatory arrangements, whereby government, industry, and professional groups hold mutual interests. The overall result is that the public is de-politicized and, therefore, unable to resist further manipulation.

FOOTNOTES TO CHAPTER TWO

[1]The topic of Illich's philosophy thesis was "Dostoevski and Vladmir Soloviev as precursors of existentialism', particularly in their concepts of intuitive knowledge. His dissertation for a doctoral degree in history was about the problem of historical knowledge in the works of Arnold Toynbee. S.V. "Illich, Ivan", Current Biography, 13th ed. (1969-70), p. 218.

[2]Ibid., p. 218.

[3]Ibid., p. 217.

[4]Ivan Illich, Tools for Conviviality (New York: Harper and Row, 1973).

[5]Ivan Illich, Limits to Medicine (New York: Pelican Books, 1978).

[6]Ivan Illich, Toward a History of Needs (New York: Pantheon Books Ltd., 1977).

[7]Ivan Illich, "Disabling Professions". In Disabling Professions, ed. by Ivan Illich (London: Marion Boyars, 1977), p. 16.

[8]Friedson's remarks concerning the 'sick role' clarify and reinforce Illich's position on the subject:

> Unlike Parsons, I do not argue merely that medicine
> has the power to legitimize one's acting sick by
> conceding that he really is sick. My argument goes
> further than that. I argue here that by virtue of
> being the authority on what illness "really" is,
> medicine creates the social possibilities for
> acting sick. In this sense, medicine's monopoly
> includes the right to create illness as an official
> social role....It is part of being a profession to
> be given the official power to define and therefore
> create the shape of problematic segments of social
> behavior: The judge determines what is legal and
> who is guilty, the priest what is holy and who is
> profane, the physician what is normal and who is
> sick.

Quoted in Samual Bloom and Robert Wilson, "Patient-Practitioner Relationships". In Handbook of Medical Sociology, ed. by Howard Freeman, Sol Levine and Leo Reeder (Englewood Cliffs, N.J.: Prentice-Hall, 1972), p. 328.

[9] For an interesting account of the professionalization of American morticians, refer to Jessica Mitford, The American Way of Death (New York: Simon and Schuster, 1978).

[10] Ivan Illich, "Disabling Professions", p. 31.

[11] X-rays and various 'pain killers' are examples of commonly used medical technologies that are known to produce harmful side-effects. For a concise account of how 'high-risk' drugs are marketed, refer to Rick Barnhart, "Getting a Fix: The U.S. Drug Monopoly". In Prognosis Negative, ed. by David Kotelchuck (New York: Vintage Books, 1976), pp. 107-121.

[12] Some regard the use of 'self-help' books as a way of limiting lay dependence on professional services. Illich refutes this line of reasoning when he writes that "...most of the new technology designed for self-help in health care, education, or home building is only an alternative model of high-intensity dependence commodities" (Needs, 42).

[13] Irving Zola, "Healthism and Disabling Medicalization". In Disabling Professions, pp. 41-68.

[14] In his reply to Illich's book, Limits, Horrobin disagrees with Illich's criticisms of medicine, but concedes on this point. David Horrobin, Medical Hubris (Montreal: Eden Press, 1977), pp. 18-19.

[15] William Leiss, The Limits to Satisfaction: An Essay on the Problem of Needs and Commodities (Toronto: University of Toronto, 1976), p. 15.

PART ONE: CONCLUSION

Innis and Illich believe that it is desirable and possible to have authority vested in individuals, as opposed to being institutionally stratified. They argue that when cultural arrangements endow individuals with authority, force and/or manipulation from external sources of power can be resisted. For Innis, individuals and institutions are in optimum relationship to one another when the biases of communication are balanced; when problem-solving is based on a concern for time, as well as space. Illich, on the other hand, believes that people are best able to define and satisfy important needs when exchange and use-values are balanced; when tools are used in a convivial fashion.

While Innis and Illich are not technological determinists, they argue that technologies are inherently predisposed toward particular effects. For example, Innis concentrates on communications technology and argues that durable media, such as clay, stone, and parchment, tend to bias communication and cultures in favour of tradition, ritual and/or time. Media that are less durable, such as papyrus and paper, lend themselves to intellectual and geographical expansion, novelty, and/or space. Illich contends that complex technology often enhances institutional or large-scale problem-solving while simpler designs facilitate convivial or small-scale enterprise.

Both writers distinguish technology according to tendencies that are endemic to design but they believe that the relationship of techno-logy to knowledge and power is best understood when examined within a larger cultural context. For Innis, this involves tracing the source

of knowledge to groups who monopolize communication. Historically,
religious groups have been favoured by durable media. Their monopo-
lization of the dominant system of writing served to organize knowledge
and power in a way that extended their control into virtually every
segment of cultural activity. Conversely, secular groups have risen
to power through their control over writing systems based on transient
media. In some cultures, notably classical Greece, a strong oral
tradition provided an effective check against the monopolization of
knowledge.

While Innis points to the source of professional monopolies in the
modern West, Illich starts with the premise that monopolies exist, and
proceeds to show how professions maintain and extend their authority.
He concludes that organizational and ideological links between science,
government, industry, and professional groups result in manipulatory
societies. In a manipulatory society, focal activities, such as learning
and healing, are standardized into needs that require institutional
commodities to be satisfied. This kind of standardization leads people
to neglect intrinsic activity and regard extrinsic needs and sources of
satisfaction as being the best or most progressive way to live.

Illich's description of industrial or manipulatory societies is
similar to Innis' notion of modern Western civilization as an empire
that is entrenched in a spatial bias of communication. Spatially biased
systems of power foster a preoccupation with science, economic and
military expansion, and a belief in progress, to the detriment of
knowledge that serves the need for strong common ties between people.
In both manipulatory and spatially biased cultures, individuals are

rendered dependent upon external sources of knowledge. The means and ways of knowing about the world are institutionalized and rigidly controlled by elite groups. Modern medicine represents but one of many such groups that serve to maintain dominant systems of power in modern Western nations.

PART TWO

TRADITIONAL SYSTEMS OF AUTHORITY

IN WESTERN MEDICINE

PART TWO: INTRODUCTION

Sociologists selected for this thesis regard professionalization as a phenomenon that is unique to industrialized societies. In so doing, they focus on nineteenth century events that led to the crystallization of the medical profession as we know it today. Thus, they tend to treat ancient and medieval medical history lightly as opposed to using it to assess the nature of authority in modern practice. While I accept the premise that modern medicine is embedded in a unique system of power within industrial nations, I also believe that traditional medical systems were unique and should be examined in their own right.

I derive this assumption from the writings of Harold Innis who, as discussed in Chapter One, organizes history according to unique empires or systems of power that have come and gone in relation to developments in communication. Therefore, in keeping with Innis' historical perspective, I have chosen to examine the nature of medical knowledge and corresponding systems of authority within particular epochs of Western civilization. Broadly speaking, the term 'traditional healing programs' refers to medical thought and practice in various empires throughout the 'writing phase' of civilization.* Specifically, the nature of traditional healers' authority is discussed with respect to medical knowledge that evolved from oral communication and writing systems that were based on clay, stone, papyrus and parchment.

---

* The 'writing phase' refers to significant developments in written communication prior to the introduction of printing in the fifteenth century.

In the conclusion to this part, I endeavour to point out that written forms of communication have been crucial variables in the formation of knowledge monopolies in medicine prior to modern times. The degree and nature of traditional healers' authority is examined in relation to the biases of early communication systems. It is anticipated that this overview of traditional healing programs will enable the reader to appreciate, more fully, the importance of the printing press to the growth of modern medicine.

CHAPTER THREE

THE HEALING ARTS: A SURVEY OF WESTERN MEDICINE

FROM ANTIQUITY TO THE FIFTEENTH CENTURY

Throughout history, to a marked degree, health
services have reflected in miniature the achieve-
ments and failures of the societies in which they
have existed.

Elliott A. Krause

This chapter is intended as a survey of traditional healing programs from ancient times to the close of the Middle Ages. No pretense is made to represent medical history in the following pages. Rather, the focus is on Western systems of health care in relationship to the biases of early instruments of communication. Using the monopoly concept as a guide, traditional medicine is broken into particular systems or institutions of health care in various cultures. Each system is examined with respect to the nature of official medical authority and sources of conflict and competition in respective health care markets.

This survey of traditional healing programs begins with a brief look at pre-literate medicine. It is intended merely as a way of stressing the importance of early notation systems on medical knowledge throughout recorded history. Two healing programs in Babylonia are discussed. They are shown to be related to the growth of empires based on the use of clay, and then, stone tablets, as the dominant communications media. This is followed by a section on Egyptian medicine after the introduction of papyrus. Then, healing in classical Greece is examined in terms of that culture's strong oral tradition and alphabet. The next section highlights Roman influence over Greek medicine in conjunction with the introduction of parchment in Western civilization. The final section is an examination of medicine during the Middle Ages when knowledge was written in manuscript form. This section also includes reference to the introduction of paper but stops short of the invention of the printing press.

PRE-LITERATE HEALING

Most conjecture about prehistoric medicine is based on anthropolo-
gical studies of contemporary primitive societies. Apart from some
archaeological evidence such as cave paintings and surgical instruments
fashioned from stone and shell, historians know very little about
medical thought and practice in prehistoric societies.[1] Despite this
dearth of information, however, most historians agree that medicine
began with the shaman who was a central figure in tribal life. Socio-
logist, Vern Bullough, describes the pre-literate healer's role as such:

> The shaman in ancient and primitive society was
> and is much more than a physician. He was priest,
> sorcerer, physician, chief of the tribe and the
> king who ruled over the people. Quite frequently
> he was the poet of the group, the man who knew
> the stories and songs and could tell of the
> origins of the world and of the deeds of the
> tribe and its heroes in a far remote age. (2)

In short, a shaman was the authoritative source of the society's
accumulated wisdom.

The shaman's importance to the present study stems from the nature
of his authority which was, according to Bullough, "based upon magical
communication with the gods."[3] Legimitation for this power could come
from his ancestral inheritance, dreams, or visions; through skill or
luck that enabled him to survive an extraordinary event; or any number
of symbolic actions that authenticated his gift for healing according
to the rules of the society.[4]

As far as historians can determine, shamen used rational[*] methods
such as drug therapies, surgery, innoculations, and massage, to arrive
at effective treatments.[5] The intention here is not to elaborate on the
details of treatment protocol, but merely to stress the point that
effective treatment was not consciously linked to rational techniques.
Rather, physical interventions were ways in which the shaman released
demons from the afflicted part of the patient's body. In all probability,
the shaman maintained an elevated position in tribal life because of
rational techniques but, in pre-literate consciousness, physical inter-
vention was nothing other than the healer's way of negotiating the best
terms from the demons.[6] Magical power was thought to be the reason for
successful treatment outcomes.

By virtue of advanced standing in age and instructions from other
wisemen, the shaman had access to information that was outside the range
of other tribal members' experience.[7] But, because this knowledge was
communicated through oral pathways, it was intimately connected to the
symbolic universe and everyday experience of the society. For this
reason, the shaman's 'store' of information did not constitute the
ultimate legitimation for his authority within the group. Rather, he
was acknowledged as a leader and healer because of what he did with his
knowledge; because his actions proved that he was capable of defending

_____

[*]   The term *rational* is used here and throughout this thesis to refer
      to medical knowledge that is based on the physical dimension of
      reality. Specifically, 'rational' healers are cognizant of cause
      and effect relations between physical intervention and symptom
      reduction. 'Irrational' healers, on the other hand, may employ
      rational methods but they attribute effective outcomes to magic
      or religion.

individuals against evil forces. In short, the shaman's knowledge and its corresponding power was pragmatic.

The pragmatic dimension of authority in pre-literate societies is illustrated by Paul Radin in his book The World of Primitive Man in which he quotes a Fiji Islander who said: "A thing has mana when it works; it has not mana when it doesn't work."[8] In terms of the shaman's authority, his mana or magical power was based on his ability to heal. When his treatments worked, he was powerful, and when his actions failed, he did not have the power to exact the best terms from the spirits. This pragmatic approach to healing, in Illich's terms, ensured that knowledge was used in a convivial fashion.

Thus, the aspect of healing that registered in pre-literate consciousness was spiritual, while cause and effect relations between physical intervention and treatment outcomes were not acknowledged on a conscious level. There were no lines to distinguish spiritual and physical phenomena. Healing was not a specialized activity; it was coherent and assimilated with everyday life where participants shared a common frame of reference. Because knowledge was communicated orally, the shaman's store of medical information could not be monopolized. It was generated through the form of communication that was employed to negotiate reality in every facet of social life. Therefore, the shaman's authority was intimately bound to common knowledge or daily experience. This relationship between knowledge and power underwent significant transformations as soon as information was communicated through writing.

HEALING IN BABYLONIA

Tablets dating from approximately 2300 to 600 B.C. indicate that
healers from ancient civilizations along the Tigris-Euphrates Valley
were cognizant of differences between the magical and rational dimensions
of their craft. This finding is particularly applicable to records that
reflect healing programs in Babylonia. Bullough reasons that differences
between spiritual and physical phenomena registered in consciousness as
soon as knowledge was written because, in his words, "it led to a
division in medicine between the literate practitioners and the more
empirical illiterate ones."[9] This, in turn, led to the emergence of a
specialized healing role in society as well as distinct functions within
that role.

As in primitive society, illness was regarded as a spiritual matter,
resulting from an immoral act that displeased the gods or from a spell
cast by a sorcerer or witch. But, as Babylonian priests began to
monopolize cuneiform writing on clay tablets, the shaman's unspecialized
role was taken out of contexts of everyday life and segmented into three
parts. First, the diviner or barû-priest was responsible for determining
the nature of sin that had caused the illness. Secondly, when the source
of evil was revealed, the âshipu-priest exorcised the spell or appeased
the demons through various rites and incantations. The third type of
healer was called âsu which means "one who knowls water".[10] The âsu
subscribed to the concept of illness as a spiritual problem but also
recognized that natural factors, such as food, water, climate, and
personal hygiene had some bearing on the patient's condition. Because
âsu healers were often illiterate, their knowledge was derived from

trial and error treatment which consisted primarily of surgery and herbal therapy.

Babylonian priests, like shamen, acted as the carriers of accumulated wisdom. But, unlike pre-literate wisemen, barû-priests recorded and stored knowledge on clay tablets. When collective memory was strengthened by early notation systems, the spiritual concept of disease acquired some new definitions which altered the processes of diagnosis and prescription. Just as writing had proven to be useful for keeping administrative tallies (Empire, 26) it also facilitated the making of lists pertaining to specific diseases. Hence 'illness', as a unified or general concept, was broken into specific 'illnesses' which were identified and grouped according to the location of symptoms or places where evil spirits had lodged themselves in the body.[11] In this manner, disease came to be represented as a series of distinct phenomena and diagnosed accordingly.

Given that the causes of disease entities were thought to be spiritual problems, the cure was logically tied to moral law. One of the best known and far-reaching of Babylonian moral prescriptions was the isolation of diseased individuals. Quarantine was rationalized on the basis of protecting others from contact with the offending demons.[12] The Hebrew culture was the first to adopt this measure and embellish it into an elaborate code for public hygiene. Eventually, knowledge of this practice spread to other cultures and variations upon the theme have appeared in every country and epoch of Western history.

Prior to 1800 B.C., when religion dominated Babylonia's written tradition, the thrust of medical prescriptions was, essentially,

philosophical counsel or guidelines for 'correct' living. Because the
âsus' social position was a lowly one, as evidenced by the absence of a
divine patron for their empirical craft,[13] codes for medical conduct
did not include references to surgery and the administration of herbal
remedies. In fact, the âsus' status as legitimate practitioners was
tenuous, at best. They were virtually indistinguishable from barbers
who practiced surgery and were responsible for branding slaves.[14]
Hence, rational information rarely achieved entry status into written
medical knowledge.

Around 1800 B.C., Babylonian medical knowledge took on a new
character. Records indicate a shift away from religiously inspired
codes toward a preoccupation with rational healing methods. This shift
in emphasis coincides with the rise of centralized secular rule under
Hammurabi. It is also consistent with Innis' idea that the priesthood's
monopoly over a complex system of writing, based on clay and the stylus,
invited competition from a medium of communication that could be trans-
ported more efficiently. Stone tablets proved to be a medium that lent
itself to large-scale administrative tasks. They were, thus, partly
responsible for a shift in the bias of communication -- away from
religious values and toward a monarchy and secular concerns (Empire, 54).

Innis notes that as Babylonia moved toward a unified nation, rural
law was reworked into civil law: "The rights and prerogatives established
by priests in earlier codes of law were arranged in patrician order"
(Empire, 32). The following excerpt from The Code of Hammurabi illus-
trates the implications that these developments had for healing:

> If a doctor has treated a freeman with a metal
> knife for a severe wound, and has cured the free-
> man, or has opened a freeman's tumor with a metal
> knife, and cured a freeman's eye, then he shall
> receive ten shekels of silver.
>
> If the son of a plebeian, he shall receive five
> shekels of silver.
>
> If a man's slave, the owner of the slave shall
> give two shekels of silver to the doctor.
>
> If a doctor has treated a man with a metal knife
> for a severe wound, and has caused the man to die,
> or has opened a man's tumor with a metal knife
> and destroyed the man's eye, his hands shall be
> cut off.
>
> If a doctor has treated the slave of a plebeian
> with a metal knife for a severe wound and caused
> him to die, he shall render slave for slave.
>
> If he has opened his tumor with a metal knife and
> destroyed his eye, he shall pay half his price in
> silver.
>
> If a doctor has healed a freeman's broken bone or
> has restored diseased flesh, the patient shall give
> the doctor five shekels of silver.
>
> If he be the son of a plebeian, he shall give three
> shekels of silver.
>
> If a man's slave, the owner of the slave shall give
> two shekels of silver to the doctor.
>
> If a doctor of oxen or asses has treated either ox
> or ass for a severe wound, and cured it, the owner
> of the ox or ass shall give to the doctor one sixth
> of a shekel of silver as his fee. (15)

While there is no evidence to prove that these laws were strictly

enforced, their very nature suggests that early literate civilization

had made some radical departures from pre-literate structures of

consciousness.

The first departure is indicated by the code's reference to cause

and effect relations between physical intervention and treatment outcomes.

For example, "If a doctor has treated a freeman with a metal knife for a severe wound, and has cured the freeman..." is a phrase that represents a radical change from the pre-literate belief that a cure was a result of the shaman's power to exact the best terms from the spirits. By the same token, references to surgery and bonesetting, at the expense of moral codes pertaining to lifestyle, indicates that priestly counsel could not conform and/or did not figure into the technical demands of a spatial bias of communication.

Secondly, the code assigns gradational values to activities associated with healing. The implication is that the value of various treatments and corresponding outcomes was dependent upon the nature of the intervention and the social ranking of the patient. Distinctions between eye surgery and bonesetting, for example, as well as freemen, plebeians, and slaves, is clearly an indication that the pragmatic value system of pre-literate people was augmented and/or supplanted by technical systems of measurement. Value codes based on Babylonian civil law were a far cry from the pre-literate equation: 'If the shaman's treatment worked, it had mana or value and, if it failed to achieve the desired result, it was not valuable.'

The third and final departure suggested by the code is that healing had become institutionalized into a secular system of power. This is illustrated by the term that was used to designate 'healer' which translates into the modern word 'doctor'. It was used to preface the ten provisions in The Code of Hammurabi that are devoted to medical law.[16] This is more meaningful when one considers that the code included two hundred seventy-two other provisions that were divided according to the

function of distinct occupational groups such as lawyers and archi-

tects.[17] Clearly, healing had become one of many specialized and

secularized functions in the Babylonian nation.

By the sixth century B.C., the production of tablets was monopolized

by a few families which served, in Bullough's opinion, to stagnate medi-

cal thought:

> The complicated form of written language devised
> in the area made it impossible for any but the
> select few to read. Originally potential scribes
> had undergone lengthy training in a 'tablet' house
> but educational functions had soon fallen to
> individual family schools. The same families
> dominated all aspects of literate life including
> the *materia medica* tradition. Their practice and
> thought came to be traditionalized so that medi-
> cine became static. (18)

When knowledge was monopolized by individual families, medicine, as a

special occupation, virtually disappeared by the fifth century B.C.

It was during this time that Herodotus was credited with saying that

Babylonian medicine was nothing more than an informal process of public

consultation:

> They have no physicians, but when a man is ill
> they lay him in the public square, and the passers-
> by come up to him, and if they have ever had his
> disease themselves or have known anyone who has
> suffered from it, they give him advice, recommen-
> ding him to do whatever they found good in their
> own case, or in the case known to them. And no
> one is allowed to pass the sick man in silence
> without asking him what his ailment is. (19)

Thus, Babylonian medicine was molded, first, by the hands of priests;

secondly, by bureaucrats and rational healers; and, thirdly, by literate

families who removed it from the fabric of everyday life.

EGYPTIAN MEDICINE

When contrasted with Babylonia, Egypt's system of medicine was more complex and flexible in terms of blending spiritual/written and rational/ oral dimensions of healing. Medical historians such as S. and V. Leff, attribute this to the use of papyrus, which enabled Egyptian priests to import and incorporate ideas from China, India, Crete, Babylonia, and Assyria.[20] Bullough, on the other hand, correlates Egypt's enlightened healing program to its central place in an elaborate religious system: "With a physician in the actual pantheon of the gods, and with all the gods showing concern for health, the Egyptian physician was allowed considerable freedom to develop empirical cures."[21] The physician to whom Bullough refers is Imhotep, an immortalized figure from the third dynasty who achieved fame as a healer, prime minister, chief architect, astrologer, and mathematician.[22]

The Edwin Smith Papyrus, which dates back to 1600 B.C., represents the most extensive record that modern historians use to speculate about Egyptian medical practice. The most interesting aspect about this document is that, considering it was written under religious jurisdiction, it is remarkably rational in emphasis. Leff surmises that the preoccupation with physical dimensions of healing was a result of the importance of armies and, hence, army physicians in Egyptian culture. He reasons that army physicians abandoned the ancient practice of lengthy incantations to the gods in favour of more expedient ways of returning wounded soldiers to the battlefield.[23]

The papyrus is composed of numerous case studies that are system- matized according to wounds of the head, neck, thorax, spine and limbs.

In most cases, the injury was diagnosed and treated surgically with an

array of tools fashioned from bronze:

> It is clear that the surgeon first studied the
> injury carefully and decided on the most appro-
> priate treatment before he started to operate.
> The qualities that made bronze suitable for tools
> and weapons also made it useful for medical
> instruments, and the surgeon had at his disposal
> a wide selection of knives, probes, forceps and
> surgical saws: better equipped than his prede-
> cessors, he was encouraged to make great advances
> in his practice. (24)

Not only was the diagnosis and treatment related primarily to physical

realities such as visible wounds and tools, but, according to Leff's

synopsis, prognosis was also tied to the strengths and/or limitations

of the attending physician's skill and instruments:

> In most cases the favourable prognosis was
> expressed in the words: "I will cure the disease."
> If the prognosis was doubtful, the formula was
> "Nothing can be done in this case", and if unfavour-
> able, "The patient will die." (25)

From this assessment, it appears that Egyptian healers demonstrated an

approach to disease that is referred to as rational as opposed to magical

and/or spiritual.

This is not to suggest, however, that healing was entirely rational

in nature. Extant papri that include Egyptian medical lore up to

600 B.C. indicate that healing was, in fact, a conscious combination of

rationally and religiously inspired action. Treatment of a cataract, for

example, involved an application of ointment with the accompanying

incantation:

> Come, verdigris ointment! Come, verdigris ointment!
> Come, thou verdant one! Come to him and take from
> him the water, the pus, the blood, the pain in the

> eye, the blindness, the flow of matter which are
> worked there by the god of inflammations. (26)

The ointment was considered to be impotent without its companion verse.

At first glance, this example suggests that Egyptian medicine was similar to pre-literate magical healing strategies. But, if one considers that Egyptian healers were cognizant of differences between spiritual and physical dimensions of illness and that the attending physician(s) was diagnosing and treating on the basis of textbook instructions, the nature of healing takes on a different complexion. For, according to a Greek historian writing in the first century B.C., Egyptian physicians followed their texts to the letter:

> ...physicians receive support from the community,
> and they provide their services according to a
> written law compiled by many famous physicians of
> ancient times. And if after following the laws
> read from the sacred books they cannot save the
> patient, they are let go free from all complaint,
> but if they act contrary to what was written they
> await condemnation to death, since the lawmaker
> thinks that few men would have knowledge better
> than the method of treatment observed for a long
> time and prescribed by the best specialists. (27)

For these reasons, achievement in Egyptian medicine began to decline and knowledge was closed in a corpus that reflected a temporal bias of communication.

Before this closure, however, Egyptian medicine enjoyed a period of innovation. As was mentioned earlier, healing was an essential component of an elaborate religious system that was, after the introduction of papyrus, 'fused' with the monarchy (Empire, 25). Medical records were controlled by the priesthood but practice was regulated by the king.[28] The hierarchical structure began with superintendents,

followed by inspectors, chiefs, and a host of specialists such as the 'physician of the belly', 'guardian of the colon', and 'treater of the teeth'.[29] So enamored were the Egyptians with specialized healers, that one king is reported to have had two 'physicians of the eyes' -- one doctor for each eye.[30] Bullough contends that the combination of religious and secular control enabled healers to experiment with rational medicine while still retaining their priestly titles and status.[31]

This flexible structure existed long enough for physicians to establish an extensive set of standards for practice -- all of which can be broken into several units. First, rational observation was advised. Physicians were instructed to note changes in skin colour, pulse rate, temperature, muscle tone, and movement, and to examine the patient's faeces, urine, and discharges. These impressions were more or less standardized by lengthy descriptions of specific cases.

Secondly, diagnosis was made by referring to various recorded case histories that contained observations paralleling the ones made with respect to the current case. Written precedents contained descriptions of a particular patient's symptoms that were entered after a standard lead-in of "Thou shalt say concerning it..." and the prescription followed a phrase "Thou shalt do against it...."[32] Treatment, being the third and final component of text instructions, included recipes for various drugs and ointments as well as verses and directives as to how often or in what order to recite them.*[33]

---

*   Interestingly, medical texts did not contain anatomical knowledge that was part of Egyptian mortuary practices.

Had the Egyptian empire been able to sustain a flexible relationship between religious and secular authority, healers may well have continued to extend the range of medical knowledge along the lines of rational observation that characterized the foregoing codes. But, when religion monopolized hieroglyphic writing (Empire, 25) the rational knowledge of Egyptian healers began to wane. And, as Bullough notes, rational medicine did not come to fruition in Egypt to the extent that it did in Greece.[34]

THE HEALING ARTS IN GREECE

The story of healing in Greece is an exceptional one in the history of Western medicine because Greek healers were exempt from many constraints that inhibited rational thought in other ancient cultures. To begin with, Greek medicine was founded on an oral tradition: There were virtually no medical texts written prior to the fifth century B.C.[35] Historians like Dolan and Sigerist point out that most of what was known about healing until that time was learned from observations in the kitchen, battlefield, and sacrificial altar, and that this knowledge was transmitted via peripatetic healers, philosophers, and orators.[36] Yet, despite the absence of a formal written tradition, medicine was an important part of Greek culture. In Homer's epics, for example, healing was regarded as a 'noble art'.[37]

In ancient Greece, all of the gods were thought to possess the power to cause illness and to heal.[38] By the ninth century B.C., healing acquired a more formal structure that was adapted from the Egyptian deity, Imhotep. First, Paeon, then Apollo, and, finally, Asclepius emerged in

succession as distinct healing deities. From the sixth century B.C. and
onward, Greek healers were acknowledged to be sons of Asclepius.[39] This
latter cult spread throughout Greece, Asia Minor, and, later, Rome and
its colonies.[40] An important difference between Greek deities and the
Egyptian model was that Greek priests did not control the production of
knowledge. This was due to cultural regionalism which prevented the
development of a strong priest bureaucracy in Greece. According to
Bullough, these conditions provided fertile soil for the growth of
rational or secular medicine:

> The identification with a deity gave the physi-
> cian the status both to treat and to innovate.
> Innovation proved easier than in Egypt because
> the Greeks lacked an overall cosmology, had
> various competing cults, and believed that the
> gods had not revealed everything to man but
> rather had left men much to find out through
> their own investigations. Even though the
> temples of Asclepius were run by priests, there
> was plenty of room in Greek medicine for the
> more secular practitioner who could claim
> descent from the gods. (41)

Hence, on the basis of a strong oral tradition and a flexible religion,
Greek medicine evolved into what is generally regarded as the most
enlightened system in the ancient world.

In Greek city-states, knowledge about health and disease was an
integral part of the culture at large and never the sole domain of
physicians. It was, for example, often a subject for poets[42] and, in
centres like Athens, medical information was part of highly esteemed
general education and gymnastics programs. The importance of health
to Greek citizens and the communication of idealized principles is
described by historians, Dolan and Adams-Smith, in the following quote:

> Athenian education was aimed at developing the
> whole man, both physical and mental. This ideal
> had great hygienic value because general education
> and health education went hand in hand....Health
> knowledge did not all flow from the physician. He
> also received help from the educators or philoso-
> phers and the trainers. The trainers were keen
> observers, knew quite a lot about surface anatomy,
> and were able to give advice on the correct diet
> (in the Greek sense), which would provide for the
> best physical and mental well-being. (43)

This passage reinforces Innis' notion that Greek medicine flourished
because it was a vital part of life outside of the "sphere of moral
law" and that it was taught and practiced in contexts where first-hand
experience was the "basis of knowledge" (Empire, 93).

Owing to the physician's working conditions, curative medicine was
also part of everyday experience. Except for wealthy patrons, medicine
was practiced in public squares where the itinerant physician and his
assistant set up temporary consulting bases. It was here that,
according to Sigerist, the patient's family and:

> ...neighbours would stand around, giving advice
> and all talking at the same time. Dislocated
> joints were reduced, broken extremities splinted,
> and other operations performed, more or less in
> public. (44)

Even though the relationship between a physician and his assistant was
bound by some rules of secrecy, the master of the craft instructed his
apprentice orally during public consultations. Hence, much of the
doctor's expertise was seen and heard by groups of bystanders throughout
the course of his stay in a particular community. Apart from midwives
and rootcutters,* physicians tended to most health related needs that

---

*   Local people who knew where to obtain medicinal plants and how to
     prescribe them.

could not be satisfied through general education or self and mutual care.

Medical education extended beyond the range of poetry, gymnastics and peripatetic masters and their apprentices. Throughout Greece's history, there were schools where the craft of healing was taught. By the fifth century B.C., the most famous centres existed at Crotona in Sicily, Rhodes, Cyrene, Cnidus in Asia Minor, and the island of Cos.[45] Many historians believe that these schools originated as family guilds that accepted outsiders as students.[46] Each one grew in numbers of students and in stature and, as a result of relative autonomy, reputations were built on distinctive foundations. Masters of the craft at Crotona, for example, were influenced by Pythagoras who believed that disease was the result of disequilibrium of various forces.[47] Cnidian teachers, on the other hand, became famous for their knowledge of diagnostic techniques.[48] Cos, the most notorious school, was respected for the Hippocratic inspired doctrine on body humors as well expertise in prognosis.[49]

Around the fourth century B.C., the healing arts came under attack. Healers were criticized for over-emphasizing craft skills at the expense of philosophy. Plato and Aristotle were two of many such detractors but, interestingly, their critique appears to stem from a new literary consciousness as opposed to evidence that healing programs had failed in a pragmatic sense. The crux of their argument against oral-based healing is highlighted by Bullough in the following passage:

> Undoubtedly both Plato and Aristotle would admit
> that the physician could improve his abilities by
> practice, but the difficulty with Greek medicine

> as understood by Plato and Aristotle was quite
> simply that it was not beyond the understanding
> of the better educated laymen. There were un-
> doubtedly secret recipes which were transmitted
> by the various teachers, but the greater the
> emphasis on empirical training the less likely
> the physician was to be accepted into the edu-
> cated classes. (50)

Bullough's interpretation of Plato's Aristotle's critique of medicine
suggests that written educational credentials were becoming increasingly
important for the legitimation of physicians' authority.

Opinions such as those expressed by Plato and Aristotle were
challenged by the end of the fourth century B.C. because of Alexander
the Great's conquest of the Persian Empire. This resulted in a flood of
ideas from Egypt, Persia, and Babylonia, as well as a permanent site for
intellectual activity in Alexandria. Here, at the Temple of the Muses,
Greeks, Egyptians, Jews, and learned men from other lands, met to
exchange ideas; to record observations from its famous botanical gardens;
and, for the first time, to observe and record dissections in a system-
matic fashion.[51]

Alexandria is the place where Greek medicine was both defended
against its detractors and defined as a branch of natural philosophy.[52]
It became a centre for revitalized thought in medicine; the place to
which anonymously written documents were carried, discussed, and,
eventually, rewritten and compiled into a collection of texts that is
called The Hippocratic Corpus. These documents are composed of medical
lore from divergent sources. They include case studies, discourses on
dietetic therapy, pharmacology, surgery, anatomy, and ethics.[53] The
main thrust is toward rational observation with some theorizing, as
well as sections devoted to polemic against 'quacks'. The latter were

defined as healers who continued to subscribe to the notion that diseases were caused by divine wrath to the exclusion of applying secular or rational knowledge.[54] The theme that recurs throughout The Hippocratic Corpus is that illness originates in both spiritual and physical realities and that healing, if it is to be effective, must address both dimensions of the experience. Sigerist describes it this way: "...prayers undoubtedly are a very good thing, but while praying to the gods one must help oneself."[55]

The Hippocratic Corpus is a legacy that permeates the history of Western medicine, partially because it contains the most extensive extant record of ancient medical wisdom but, primarily, because it represents a radical departure from what is called 'archaic medicine'. This means that for the first time in history, healers could augment a trial and error approach to practice with theoretical constructs based on natural philosophy. This is in contradiction to ecclesiastical theorizing and the case study method that characterized medical texts in Babylonia and Egypt. Sigerist describes these changes in the following passage:

> In archaic medicine, theory and particularly ana-
> tomy come last. The starting point of all medical
> action is the sick man and his complaints -- that
> is, the symptoms of disease. Hippocratic medicine
> is no longer archaic. Theories play a very impor-
> tant part in it, and when a physician prescribed a
> diet or drugs, he was not guided by experience
> alone but very often by theoretical considerations,
> endeavouring to evacuate a humor or to aid the
> organisim with its natural healing power. (56)

Hence, abstract thought shifted from a spiritual base to one that inclu-
ded theories about the physical properties of the universe. The synchro-
nous implication for healing, therefore, was that the Greek ideal of

basing all knowledge upon experiential and/or orally communicated infor-
mation was overturned in favour of a more abstract and complex way of
knowing about health and disease.

The shift away from oral communication and a pragmatic base for
medical authority suggests that medical knowledge was about to become
rigid and stagnate under the control of Alexandrian scribes. On the
contrary, though, the corpus remained remarkably open-ended. This is
noted by Sigerist when he writes that "...unlike the Hermetic books of
Egypt, the Corpus Hippocraticum was never firmly constituted, never
divided into a set number of books, never rigidly fixed."[57] In this
sense, medical knowledge that was written during Greece's greatest
period of achievement reflected the kind of ideal that Innis found in
Aristotle's writings: "His sytem was provisional and open, and pointed
to a striving toward totality of problems rather than finished knowledge"
(Empire, 93). In short, a balance between time and space provided
conditions that were most favourable for rational thought in classical
medicine.

Several factors can account for a prolonged period of creativity
after medical knowledge was formalized through writing. The first
pertains to the fact that, even though supplies of papyrus were easily
accessed during Macedonian rule (Empire, 93), writing never replaced
Greece's oral tradition but merely supplemented it. Egyptian script
was displaced by the alphabet which, according to Innis, had the effect
of destroying the East's monopoly of complex systems of writing. The
alphabet lent itself to spoken language and, hence, checked the tendency

of written communication to enhance uniformity in knowledge (Empire, 84 and 91).

These ideas are born out in terms of developments in medicine. Texts were characterized by debates between competing ideas in natural philosophy. For example, Herophilus' concept that the brain was the centre of the nervous system was included with passages by Aristotelians who argued that the heart was the organ responsible for intelligence.[58] And, because notetaking became an adjunct to oral instruction at the schools,[59] many practical observations from the field found their way into the production of written knowledge. Hence, medical texts were characterized by a continuous series of competing ideas and empirical data as opposed to dogmatic tracts that were sealed against evicence that contradicted theoretical guidelines.

Another explanation for why healing escaped rigid institutionalization is that the temples of Asclepius were located on the margins of civilization -- in colonies that were on the periphery of Greek influence.[60] Temples, therefore, served to connect medical education and practice to Greek thought and to legitimate the physicians' expertise.[61] But, the priesthood could not exercise firm regulatory power, like that of Babylonia, because priests lacked an hermetic corpus from which to exact laws. For example, The Hippocratic Oath, when compared to The Code of Hammurabi, is very loosely conceived and does not lend itself to the formulation of strict legal codes:

> I will apply dietetic measures for the benefit
> of the sick according to my ability and judge-
> ment. I will keep them from harm and injustice.
> I will neither give a deadly drug to anybody if
> asked for it, nor will I make a suggestion to

> this effect. Similarly I will not give to a woman
> an abortive remedy. In purity and holiness I will
> guard my life and my art. (62)

Given the flexible nature of religious organization and written know-ledge, Greek healers benefitted from the temples in terms of increased status and continuity with Greek ideas while, at the same time, remaining free to innovate with ideas from neighbouring cultures and with evidence that arose in clinical settings.

The foregoing suggests that rational medicine, in Greece, achieved an ideal that corresponds to Innis' and Illich's concepts of culture. In Innis' terms, Greek healers maintained a balance between continuity and permanence in knowledge as well as exhibiting an openness to innova-tion: they had the means of solving problems in terms of time and space. Or, from Illich's frame of reference, classical medicine of the West was convivial because healing hinged on a balance between autonomous and interdependent activity. Illustrations to this effect can be found throughout the Hippocratic documents. For example, preventative measures such as diet, exercise, and harmony in one's life were emphasized.[63] Similarly, curative medicine was aimed at restoring the body to its natural state through the use of convivial treatments consisting primarily of dietetic therapy, philosophical counsel, and common or local herbs. Extraordinary interventions such as blood-letting, the prescription of uncommon drugs, and radical forms of surgery, were not condoned in the Hippocratic Oath.[64] Hence, the rational dimension of medicine was compatible with spiritual values because the healing role had not been segmented into literate priests/philosophers and illiterate craftsmen as it had been in Babylonia.

The period of greatest achievement in Greek medicine began in the sixth century B.C. and lasted into the third century, at which point healing began to decline in the face of specialization. Open-ended debates in written communication were transformed into rigid doctrines, the first of which was Empiricism. It emerged as a critique of the theoretical and, what many regarded as overly speculative thrust of Greek medicine. Empiricism was challenged around 140 B.C. by the Methodists who rejected the Hippocratic humoral theory and took the position that disease was the result of particular body motions.[65] Conflict continued to arise in connection with theoretical doctrines that were associated with the Cynics, Epicureans, and other distinct schools of thought.[66] The implication for medical knowledge was that it took on rigid divisions; became dogmatic; and, eventually, links between thought and practice were weakened. In this sense, healing reflected the general patterns of erosion that Innis found in the culture at that time (Empire, 95-96). For a while, the flexibility of Greece's system of communication created conditions that facilitated unprecedented developments in rational thought but, in so doing, it "enhanced the problems of government with fatal results to large-scale political organization" (Empire, 84). The results to which Innis refers came by way of Roman invasions and the decline of rationalism in the West.

GREEK MEDICINE UNDER THE ROMAN INFLUENCE

Achievements in rational medicine are said to have culminated with the work of Galen of Paragamum, A.D. 130-201. He is credited with systemmatizing the functions of body organs and was known to be a great

physiotherapist and surgeon.[67] But, as early as A.D. 30, the scope and
originality of rational thought had all but disappeared. Historians,
like Bullough, attribute this to Roman empire building: "Roman domina-
tion of the Mediterranean led to a wider dissemination of Greek medical
ideas and concepts, but it also led to a loss in status for the Greek
physician."[68] Pliny's statement that a Greek physician was the "only
person who could kill another with sovereign impunity" typifies the
attitude that Romans held toward medicine.[69] It was regarded as a
plebeian craft; suitable for slaves and foreigners but not for freemen
of the educated classes.[70]

Roman neglect of medicine had created conspicuous shortages of
healers, especially in Rome, where medical needs increased with popula-
tion density. During the reign of Caesar Augustus, 27 B.C. to A.D. 14,
there was a resurgence of magic being used for curative purposes.[71]
Prompted by a desire to enforce laws against magic and, to a certain
extent, satisfy pressing health care needs that arose during famines,
Augustus began to encourage foreign physicians to come to Rome. He
devised sickness insurance schemes, hired public physicians, and granted
the latter immunity from taxes.[72] Hence, for a brief period, it seemed
as though the ideals of rational healing would take root in Rome.

But, rather than elevating the status of secular physicians,
Caesar's legislation merely precipitated a wave of mass education.
Many self-proclaimed physicians were anxious to capitalize on the new
incentives and established six-month training programs that eventually
became the norm for educating public physicians.[73] As a result,
graduates lacked theoretical backgrounds as well as experience with

diagnostic, surgical, dietetic, and prognostic techniques. They tended to rely on anatomy manuals -- forms of communication that had hitherto been unknown in medicine.[74] The predictable outcome of these events was that the quality of healing and the status of rational medicine declined even further.

Ackerknecht contends that during Augustus' time, links between theory and practice were weakened.[75] His research concurs with Innis' supposition that Augustus attempted "to build up the prestige of Rome to offset that of Alexandria by establishing libraries" (Empire, 105). Eventually, native languages in southwestern lands were displaced by Latin and book-making overtook many forms of oral communication (Empire, 106). In terms of medicine, Ackerknecht notes that when Roman scribes, such as Celsus and Pliny, began to compile texts, they were concerned with copying and translating as opposed to incorporating information that originated through practical experience.[76] As a result, surgery was written out of sections pertaining to internal medicine.[77] In a broader sense, the result was the beginning of the end for the classical tradition of fusing theory with first hand observation.

Implications for practice were quickly realized as the few remaining physicians of prominence, such as Galen, terminated the custom of performing surgery. Rather, they began to read from texts while supervising operations that were performed by apprentices.[78] The texts that physicians followed acquired a new character, especially after Celsus' encyclopedia conventionalized and artificially segmented information into four distinct doctrines: Dogmatism, Empiricism, Methodism, and Pneumaticism.[79] While these divisions existed during the classical

period in Greece, strict parameters had never been designated until Roman scribes dominated intellectual activity in the West. Thus, a wedge had been driven between the theoretical/written and the rational/ oral dimensions of healing and knowledge rigidified.

Deterioration in rational medicine was more or less consolidated by Germanic invasions during the fifth century. According to Bullough, German control hastened the pace of ruralization and illiteracy, both of which were already underway in the Roman empire.[80] These develop- ments tended to destroy a modicum of support for secular healers and to increase the power of the church over medical issues:

> The decline of the city led to a decrease in the
> number and types of specialists....Coinciding
> with these developments was a basic change in
> educational concepts and institutions as they
> were brought under the influence and then domina-
> tion of the Christian Church. The result was to
> give the Christian priest most of the functions
> previously reserved to particular specialists.
> In a society in which literacy was on the decline,
> the priest had the advantage of being literate.
> This combined with his position in the community
> as a symbol of God's church, served to give him
> many of the powers of the ancient shaman. (81)

Thus, as rural communities grew around cathedrals, priests assumed the healing role within parishes and Western civilization moved into the Middle Ages when medicine was dominated by religion.

HEALING DURING THE MIDDLE AGES

Parchment was the medium of communication that facilitated the growth of a powerful religious hierarchy in the West. After Augustus, when redemptive religions were encouraged in response to a resurgence of magic, or what Innis calls "widespread demand for individual salvation"

(Empire, 108), parchment proved to be a competitive medium that gave

Christians an advantage over Eastern religions that were founded on

papyrus: "Used on both sides parchment was economical, durable,

convenient, easy to transport, to write on, to read, and to consult"

(Empire, 109). These features of parchment made it possible for

Christians to record and preserve religious developments in Jerusalem

and Antioch and to compile sacred books for transport to Rome which

became the most important Christian centre (Empire, 110).

Apart from a few monks such as St. Jerome, St. Benedict, and

Cassiodorus,[82] the church had little appreciation for medicine. To

this effect, Ackerknecht writes:

> This is evidenced as late as the sixth century in
> the writings of Pope Gregory and St. Gregory of
> Tours. They emphasized interest in the soul as
> opposed to concern for bodily ills. Christianity
> originally held its own theory of disease; disease
> was either punishment for sins, possession by the
> devil, or the result of witchcraft. It also had
> its own therapeutic methods -- namely, prayer,
> penitence, and the assistance of saints. Every
> cure, under these circumstances, was basically
> regarded as a miracle. (83)

Monastic concepts of disease were reflected in medieval parishes where

people relied on the use of Christian amulets to solve health related

problems. Priests instructed their parishioners to pray in the name of

Abraham, Isaac, and St. Blase instead of entreating pagan dieties for

cures.[84]

By the dawn of the Middle Ages, monks had reworked medical informa-

tion into a form that served the Church. Bullough found that popular

medieval medical texts contained very few references that matched classi-

cal documents with accuracy. For example, the text entitled Herbarium

included inherited information about plants but excluded classical treatises on animal and mineral drugs.[85] Similarly, in the _Dynamidia Hippocratis_, Greek inspired dietetic therapy was well represented but most other areas of the original _Hippocratic Corpus_ were excluded.[86] The writings of Cassiodorus included sections of the original _Hippocratic Corpus_ but they were, as were most medieval documents, dominated by Galen's work in anatomy and his principle of reasoning by inductive analogy.[87] Furthermore, monks replaced the case study method of recording observations with short "epistles", "dialogues", "catechisms" and "didactic treatises".[88] The preservation of rational knowledge was further impaired in the seventh century when medicine was dropped from the liberal arts curriculum in monastic schools. It was reasoned that because "celestial beings did not suffer from illness", the healing arts should be excluded from the consecrated arts such as theology, law, and astrology.[89] These findings led Bullough to conclude that rational medicine barely survived the church's monopoly of knowledge during the seventh and eighth centuries.

Early in the ninth century, medical education was restructured when Charlemagne ordered all monasteries and cathedrals to establish medical schools.[90] Alcuin, Charlemagne's educational advisor, classified medicine as one of seven branches of physica which also included arithmetic, astronomy, geometry, music, mechanics, and astrology.[91] While elevating the status of the healing arts, this decree did little to actually increase medical knowledge. In the first place, texts were housed by a few monasteries and were, therefore, inaccessible to most schools.[92] Secondly, medicine was still considered to be a sideline for monks whose

primary obligation was to copy theological manuscripts.[93] The subor-
dinate relationship of medicine to theology is illustrated by the ninth

century library of St. Gall's cloister in Switzerland. Six texts

represented the extent of medical information while one thousand

theology books were housed in the same monastery.[94] Eventually, medi-

cine was deemed to be a disruptive element in cloistered life so that,

in 1130, the Council of Clermond forbade monks to practice the healing

arts.[95] Despite these setbacks, Bullough maintains that Charlemagne's

support for medical education laid the groundwork for its incorporation

into medieval universities which was, ultimately, the first step toward

revitalization.[96]

Late in the nineteenth century, innovations in medical thought

coincided with the introduction of paper in Europe and the growth of

commerce, cities, and universities. The church's monopoly of knowledge,

based on parchment, began to wane as paper carried Arabic information

to commercial centres in the south (Empire, 128-139). In the following

passage, Bullough traces the routes whereby medical knowledge was trans-

mitted from East to West:

> ...Arabic medical knowledge reached western Europe,
> first through Spain, and then through Sicily and
> southern Italy, where many Greek-speaking peoples
> continued to reside. Finally, westerners began
> traveling to the Byzantine capital of Constantinople
> to seek out Greek originals instead of Arab trans-
> lations. One of the key groups in the transmission
> of Arabic and Greek medical ideas and concepts to
> the Latin West during the medieval period were the
> Jewish physicians who traveled in both Islamic and
> Christian lands. One explanation for the large
> number of Jewish physicians in the medieval period
> might be that rabbis were encouraged to earn a
> living outside of the synagogue. Moreover, the

> rabbi had the education to acquire the various
> theoretical concepts about medicine and enough
> patients to develop effective empirical abili-
> ties. (97)

Given this course of events, it is not surprising that medical schools

in the south acquired great reputations; the most prominent of which

were located at the universities of Salerno, Montpellier, and Bologna.[98]

Ackerknecht contends that rational medicine was preserved through-

out Islamic expansion because the East had retained urban centres where

knowledge of the conquered Greeks and Persians had been translated into

Arabic.[99] When this information reached the West, scholars, or, more

accurately, teaching orders, such as the Franciscans and Dominicans,

began to take a new interest in the physical dimensions of healing.

As a result, texts began to include material that had been written out

of earlier monastic compilations. For example, Constantine's treatises

on diets, fevers, urines, pulses, and anatomy reflect a rebirth of

rational thought within literary circles.[100] A renewed emphasis on

rational concepts and a steady flow of new information tended to increase

complexity and specialization in medical knowledge. Bullough notes that

as the pace of new information quickened, so did the method of univer-

sity instruction: "Commentaries had been a common teaching method since

the classical period" but now "instruction was based on the reading and

explanation of authoritative texts."[101] Medicine was, in his opinion,

on the threshold of modernization.

Organizational developments in the late Middle Ages reinforce the

idea that healers were ready to cast off the weight of religion and

move into a new era. The University of Paris formulated and implemented

a curriculum and qualifying examinations that led to a post-graduate

degree in medicine.[102] Graduates assumed the title of 'doctor' which is derivative of the latin verb 'docere' (to teach). This educational model spread throughout Western Europe, and by the fourteenth century, physicians were not officially acknowledged as such unless they had graduated from a recognized university.[103]

During the monastic period of medical history, educated secular healers had all but disappeared.[104] But, as commercial centres grew, so did the demand for specialized healers in communities. Surgery was performed by barbers, bath-keepers, hangmen, and sow-gelders.[105] Herbalists and apothecaries began to prescribe and dispense drugs. It is thought that apothecaries possessed some theoretical knowledge of medicine because their title appeared in manuscripts alongside of *medicus* and *physicus** as opposed to being grouped with *cirurgicus*.****[106] Regardless of any previous affiliation with institutional medicine, apothecaries were, by the fourteenth century, regarded as irregular healers. They ranked with midwives, barbers, herbalists and other types of uneducated specialists.

For the most part, doctors remained in the universities to teach and/or restricted their practices to royal and papal patronage.[107] However, despite their favoured position, they needed skills that irregular healers possessed, particularly knowledge in surgery and drugs. For these reasons, Bullough contends that the impetus for establishing

---

*   Medicus and physicus - were used interchangeably with reference to clerical or educated practitioners.

**   Cirurgicus - was the term used to identify irregular or uneducated healers.

guilds came, not from community-based healers, but from doctors who required their resources to conduct practices.[108] Hence, doctors orchestrated the formation of several para-professional groups. During the fourteenth century, after many legal disputes, guilds for barbers, barber-surgeons, and apothecaries were commonplace throughout Western cities. Each group was subject to varying degrees of control by the university-based physicians because the doctors' regulatory power depended upon court rulings that were characterized by regional peculiarities.

Hospitals represent another important organizational development during the late medieval period. During the second century, Roman rulers built hospitals but they were little more than shelters for soldiers, crusaders, and disabled people.[109] In the twenfth century, religious orders began to make charitable visits to treat the sick. By the turn of the thirteenth century, hospitals took on more specific medical functions and their maintenance and regulation was taken over by city administrators.[110] While medieval hospitals were generally regarded as "pestholes" or as "a last resort" (Limits, 162), the fact that they were linked to institutionalized medicine was an important prelude to the major role that they would play in medicine's process of modernization.

Thus, healing was cloistered in monasteries during the Middle Ages. In effect, monks assumed a 'diviner' role while parish priests functioned like Babylonian âshipu-priests. Knowledge was reworked into

concepts that were congruent with Christian theology and stagnated under the demands of time.

Significant changes occurred after the introduction of paper and the rise of commercial centres. Arabic information and classical texts that had been lost to the West since the fifth century were incorporated into Latin writings, thus lending a secular character to knowledge. Medicine was liberated from rigid monastic control and institutionalized into universities. This was followed by the formation of para-professional guilds and the use of hospitals for medical purposes. The importance of these latter developments will become evident in the following part of this thesis, where healing's transformation into modern medicine is discussed.

FOOTNOTES TO CHAPTER THREE

[1]Vern Bullough, The Development of Medicine as a Profession (New York: Hafner Publishing, 1966), p. 7.

[2]Ibid., p. 6.

[3]Ibid., p. 8.

[4]Ibid., p. 7.

[5]Roberto Margotta, The Story of Medicine (New York: Golden Press, 1968), p. 18.

[6]Patrick Pringle, The Romance of Medical Science (London: George G. Harrap and Co., 1948), p. 16.

[7]Vern Bullough, Development, p. 7.

[8]Paul Radin, The World of Primitive Man (New York: E.P. Dutton and Co., 1971), p. 47.

[9]Vern Bullough, Development, p. 9.

[10]Ibid., p. 9.

[11]Roberto Margotta, Story, p. 68.

[12]Ibid., p. 68.

[13]Vern Bullough, Development, p. 10.

[14]Roberto Margotta, Story, p. 67.

[15]Ibid., p. 67.

[16]Ibid., p. 67.

[17]Ibid., p. 67.

[18]Vern Bullough, Development, p. 10.

[19]Quoted in Roberto Margotta, in Story, p. 68.

[20]S. and Vera Leff, From Witchcraft to World Health (New York: Macmillan and Co., 1958), pp. 27, 38-41.

[21]Vern Bullough, Development, p. 11.

[22]Ibid., p. 10.

[23]S. and Vera Leff, Witchcraft, p. 36.

[24]Ibid., p. 37.

[25]Ibid., p. 37.

[26]Patrick Pringle, Romance, p. 20.

[27]Greek historian, Diodorus Siculus (100 B.C.), quoted by Vern Bullough in Development, p. 13.

[28]Vern Bullough, Development, p. 12.

[29]Ibid., p. 12.

[30]Patrick Pringle, Romance, p. 20.

[31]Vern Bullough, Development, p. 12.

[32]S. and Vera Leff, Witchcraft, p. 38.

[33]Ibid., p. 34.

[34]Vern Bullough, Development, p. 13.

[35]Henry Sigerist, A History of Medicine (London: Oxford University, 1961), p. 85.

[36]Ibid., p. 84.

[37]Vern Bullough, Development, p. 14.

[38]E.D. Phillips, Greek Medicine (London: Thames and Hudson, 1973), pp. 16-17.

[39]Vern Bullough, Development, p. 14.

[40]Erwin Ackerknecht, A Short History of Medicine (New York: Ronald Press, 1968), p. 50.

[41]Vern Bullough, Development, p. 15.

[42]Henry Sigerist, History, p. 86.

[43]John Dolan and William Adams-Smith, Health and Society (New York: Seabury Press, 1978), pp. 25-26.

[44]Henry Sigerist, History, p. 307.

[45]Vern Bullough, Development, p. 15.

[46]Ibid., p. 17.

[47]Ibid., p. 15.

[48]Erwin Ackerknecht, Short History, p. 51.

[49]Vern Bullough, Development, p. 16.

[50]Ibid., p. 21.

[51]Ibid., p. 22.

[52]E.D. Phillips, Greek, p. 38.

[53]Henry Sigerist, History, p. 84.

[54]E.D. Phillips, Greek, p. 40.

[55]Henry Sigerist, History, p. 283.

[56]Ibid., p. 275.

[57]Ibid., p. 274.

[58]John Dolan and William Adams-Smith, Health, p. 36.

[59]Henry Sigerist, History, p. 300.

[60]John Dolan and William Adams-Smith, Health, p. 24.

[61]Vern Bullough, Development, p. 15.

[62]John Dolan and William Adams-Smith, Health, p. 24.

[63]Vern Bullough, Development, p. 20.

[64]John Dolan and William Adams-Smith, Health, p. 28.

[65]Ibid., p. 37.

[66]Ibid., pp. 37, 40.

[67]Ibid., pp. 47-51.

[68]Vern Bullough, Development, p. 23.

[69]Ibid., p. 24.

[70]John Dolan and William Adams-Smith, Health, pp. 51-52.

[71]Ibid., p. 52.

[72]Erwin Ackerknecht, Short History, p. 79.

[73] Vern Bullough, Development, p. 23.

[74] Ibid., p. 18.

[75] Erwin Ackerknecht, Short History, p. 74.

[76] Ibid., p. 74.

[77] Vern Bullough, Development, p. 27.

[78] Erwin Ackerknecht, Short History, p. 79.

[79] Ibid., p. 66.

[80] Vern Bullough, Development, p. 30.

[81] Ibid., p. 32.

[82] Ibid., p. 33.

[83] Erwin Ackerknecht, Short History, p. 83.

[84] John Dolan and William Adams-Smith, Health, p. 56.

[85] Vern Bullough, Development, p. 33.

[86] Ibid., p. 34.

[87] Ibid., pp. 34, 40.

[88] Ibid., p. 34.

[89] Ibid., p. 30.

[90] Vern and Bonnie Bullough, "A Brief History of Medical Practice". In Medical Men and Their Work, ed. by Eliot Friedson and Judith Lorber (Chicago: Aldine Atherton, 1972), p. 91.

[91] Vern Bullough, Development, p. 37.

[92] Ibid., p. 36.

[93] Ibid., p. 36.

[94] Erwin Ackerknecht, Short History, p. 84.

[95] Ibid., p. 84.

[96] Vern Bullough, Development, p. 38.

[97] Vern and Bonnie Bullough, "A Brief History of Medical Practice", pp. 90-91.

[98] Erwin Ackerknecht, Short History, p. 87.

[99] Ibid., pp. 84-85.

[100] Vern Bullough, Development, p. 43.

[101] Ibid., p. 44.

[102] Ibid., p. 69.

[103] Ibid., p. 69.

[104] Ibid., p. 35.

[105] Erwin Ackerknecht, Short History, p. 89.

[106] Vern Bullough, Development, p. 38.

[107] Vern and Bonnie Bullough, "A Brief History of Medical Practice", p. 91.

[108] Vern Bullough, Development, p. 88.

[109] Erwin Ackerknecht, Short History, p. 74.

[110] Ibid., p. 93.

PART TWO: CONCLUSION

In pre-literate societies, the shaman's knowledge was bound to the logic of concrete experience. It was limited in time to things that could be remembered and it was confined in space to places that were known (Empire, 10). Disease was conceptualized as an evil force and the healer's authority rested with his ability to negotiate the best terms from the offending demons. His power was actualized through stories, chants, massage and surgery -- all of which made sense in terms of magical symbolism. Magic was nothing other than the society's way of abstracting from personal experience and healing was wholly integrated into this coherent and personal world view.

With the introduction of writing, magic was transposed into religion. Writing endowed civilization with a 'transpersonal memory' by increasing people's capacity for abstract throught: "individuals applied their minds to symbols rather than things and went beyond the world of concrete experience into the world of conceptual relations created within an enlarged time and space universe" (Empire, 10). With the exception of the Greek alphabet, early writing systems were not easily adapted to spoken language and were, thus, monopolized by priesthoods and/or oligarchies. This had the effect of dividing society into literate and illiterate spheres and, by implication, segmenting healing into priestly and secular realms.

Priest healers conceptualized illness as spiritual need states and employed temporal constraints, such as moral law and prayer, as prescriptions or sanctioned sources of satisfaction. Babylonian priests,

for example, developed an abstract system of classification that broke illness into distinct disease entities that were caused by specific immoral acts, and that were amenable to cure through prayers and other gestures of atonement. Variations upon this theme occurred in Egypt, Greece, and Rome. Priestly power to define and satisfy health related needs was derived from authority that was couched in sacred texts.

Secular healers were often illiterate. While they may have embraced their culture's dominant religious beliefs, secular healers emphasized the rational dimension of medicine. They tended to specialize in surgery, mid-wifing, or herbal remedies, and practiced their crafts on a fee-for-service basis. Their authority was grounded in folk wisdom and their ability to effect cures. Lacking in priestly or written knowledge, the secular healer's authority retained a large measure of pre-literate concreteness. Except for periods in Babylonia, under Hammurabi's rule, and in Rome, under Augustus, purely secular healers rarely achieved 'official' recognition.

As a rule, traditional medicine was split between abstract/literate/religious and concrete/oral/secular knowledge. When priesthoods exercised rigid control, medical knowledge was characterized by an emphasis on spiritual phenomena to the near exclusion of physical needs and sources of satisfaction. For example, Babylonian medical texts excluded the âsus' craft skills and/or rational knowledge because of the latter's illiteracy. Similarly, Christian monks rewrote classical texts and deleted many treatises pertaining to the physical dimension of healing. As a result of these temporal biases in medicine, priest healers

followed their texts to the letter and institutionalized healing declined under the pressure of rigid adherence to written precedents.

The same principle was in operation when medicine was institutionalized by secular healers in Hammurabi's and Augustus' centralized empires In these examples, though, medical knowledge was characterized by a spatial bias of communication. The emphasis was on cause and effect relations between physical intervention and treatment outcomes. Needs and sanctioned sources of satisfaction were delineated by rigid civil codes for professional conduct in relationship to the patient's social rank, types of treatments, and forms of payment. Secular healers, within rigid systems of power, also faced severe penalties for deviating from precedent and were superceded by competing and/or religious healing programs.

There were, however, periods of stability in traditional medicine; epochs when institutional healers fused priestly and secular knowledge. For example, in Egypt during the third century B.C., temple priests and secular specialists enjoyed equal status as official healers. Knowledge reflected a balance between spiritual and physical concerns. This was particularly evident in sacred texts that incorporated innovations by army surgeons. Classical Greece is most exemplary of achievements in medicine that resulted from flexible interplay between priestly and secular knowledge. Because Greece's healing programs were grounded in a strong oral tradition and because its alphabet facilitated an open-ended exchange between priests, natural philosophers, and craft-oriented practitioners, medical knowledge escaped rigid institutionalization.

Classical medicine reflects, in Innis' terms, an ideal balance between the needs of time and space.

Greek healers derived their authority from formal or transpersonal legitimations as well as informal or personal sources of knowledge. The selection process for public physicians aptly illustrates the dual nature of authority in classical medicine. In larger centres, where the population could support practitioners on a full-time basis, local authorities would canvas some of the better known schools for candidates who had studied under famous teachers. Once prospective practitioners had been secured, the balance of the decision to hire rested with oral testimonials as to cures.[1] Hence, the institutional healer was not authorized to hold a public office on the basis of educational credentials alone; his authority was ultimately granted on the basis of legitimations that arose through personal experience. Classical medicine was, from Illich's point of view, eminently convivial.

Whether it was institutionalized into rigid or manipulatory systems of power or more flexible, or convivial ones, medical education could not be standardized in the strict sense of the term. Because traditional healers lacked the means of systematically retrieving and recording a full range of theoretical and clinical information, official knowledge was irregular and loosely woven by modern standards. Traditional medicine was, in Friedson's words, "a variety of traditional conceptions supplemented by quite variable individual clinical judgement."[2] In this sense, institutional healing was an imprecise art.

Because of the subjective and irregular character of medical knowledge, official healers could not exercise, what Illich calls, a radical

monopoly. In other words, it was impossible for priests and/or educated
secular practitioners to win unilateral public confidence in their
services. The burden of proof did not rest solely with the imputed
authority of sacred texts and academic credentials. When institutional
medicine failed to produce the desired results, patients could always
turn to unofficial sources of expertise. Competition from midwives,
rootcutters, barbers and other types of folkhealers, was endemic to
traditional healing programs. It is this factor that leads several
sociologists to conclude that the ultimate source of legitimation for a
healer's authority rested with subjective evaluations of his/her
performance.[3]

Thus, from antiquity to the close of the Middle Ages, medical
knowledge was institutionalized by groups who controlled the instruments
of communication. Healing was confirmed by temporal biases of communi-
cation when it was monopolized by priesthoods in Babylonia, Egypt, and
Rome. Priestly power was established and maintained through authority
that was couched in sacred texts; through knowledge that was shaped by
complex systems of writing based on clay, papyrus, and parchment.
Medicine was also biased in favour of space in Hammurabi's and Augustus'
centralized empires. Official codes for medical practice were written
on stone, in Babylonia, and on papyrus, in Rome. Both media lent
themselves to the development of a specialized system of writing that
favoured relatively precise secular laws and rapid dissemination of
information across geographic and cultural barriers.

The quintessence of classical Greek medicine, which represents traditional healing in the absence of monopoly, was a synthesis of supernatural and natural knowledge, combined with objective representations of experience and subjective interpretations of health and disease. Healing was a personal art; its written rules were open-ended concepts that were continuously adjusted in light of contradictory evidence that emerged in practice. Conflict, which was endemic to this loosely structured enterprise, was oriented toward the resolution of practical problems -- toward better ways of healing. This personal and variegated art did not carry over into modern day practice because, as Illich contends, certain factors drove a wedge between "soul and body" as well as between "the patient's complaint and the physician's eye" (Limits, 166). This 'wedge' will be shown to stem from developments in communication during the period in which Western medicine was modernized. It is the topic to be discussed in Part Three.

FOOTNOTES TO PART TWO: CONCLUSION

[1]Vern Bullough, The Development of Medicine as a Profession (New York: Hafner Publishing, 1966), p. 19.

[2]Eliot Friedson, Profession of Medicine (New York: Harper and Row, 1970), p. 17.

[3]Magali Larson, The Rise of Professionalism (Berkeley: University of California, 1977), p. 33. Terence Johnson, Professions and Power (London: Macmillan Press, 1972), p. 43. Eliot Friedson, Profession, p. 18.

PART THREE

MODERNIZATION AND THE GROWTH OF NEW SYSTEMS

OF AUTHORITY IN WESTERN MEDICINE

PART THREE: INTRODUCTION

This part is a discussion of major changes in Western European medicine after the introduction of printing. It emphasizes print-related factors that underscored a transformation of healing as an art into a unified system of scientific medicine. The process of modernization is presented as a series of three interlocking steps: (1) A period of intellectual and organizational confusion following the invention of the printing press and the erosion of monastic control; (2) A phase of revolutionary changes in education marked by the introduction of written examinations and a return to clinical teaching; and (3) The institutionalization of medicine in reformed universities. The third and final step takes the reader into the twentieth century but stops short of discussing the growth of modern medicine in relationship to developments in electronic communication.

The first chapter is a broad overview of events in medicine during the early modern period which is defined as the epoch beginning in the fifteenth century and ending with the Enlightenment. This was a time when the unified world view that united Christian doctors across Western Europe gave way to regional and national differences. The medieval university system was splintered and weakened; learned societies in lay circles were established; and medical guilds strengthened their control. The actual practice of medicine remained essentially unaltered from medieval years but the turmoil that characterized healing during the early modern period was an important prelude to radical changes in medical practice that crystallized in the nineteenth century.

The second chapter focusses on revolutionary activities during the first half of the nineteenth century. It looks at how medical reform was linked to broader social and political changes that were inspired by Enlightenment philosophy. This step toward modernization is often referred to as the 'hospital revolution' and/or medicine's 'clinical phase' because, in many cities, doctors were forced out of university debating halls and into city hospitals as bases for teaching. As a result, the emphasis in healing shifted toward observation and away from speculative theorizing. It was also a time when written examinations were introduced and used by medical groups to consolidate new interests.

The third chapter is a discussion of late nineteenth and early twentieth century developments that led modern clinicians back into the universities with a renewed interest in theory -- scientific theory and laboratory-inspired methods for practice. It also includes references to major factors that entrenched science as the model for medicine's modern monopoly of knowledge. The assumption that permeates this chapter, and Part Three as a whole, is that scientific doctors' monopoly over healing was founded on the bias of printed communication.

In the conclusion to this part, I argue that modern medical doctors exercise the same kind of authority that their traditional counterparts enjoyed. In other words, the monopoly of knowledge in modern medicine is, in many respects, comparable to monopolies that characterized institutional healing programs in traditional empires. But, in one significant way, modern medical authority diverges from historical models. Therefore, I conclude that the nature of authority in modern

medicine is unparalleled in Western history and that its uniqueness can be seen as an outgrowth of the bias of printed communication.

CHAPTER FOUR

THE EARLY MODERN PERIOD: A SURVEY OF DEVELOPMENTS IN MEDICINE

FROM THE FIFTEENTH TO THE NINETEENTH CENTURY

Since their commodities were sponsored and
censored by officials as well as consumed by
literate groups, the activities of early printers
provide a natural connection between the movement
of ideas, economic developments and affairs of
church and state.

Elizabeth Eisenstein

The early modern period began in the Renaissance and concluded around the turn of the nineteenth century. In this chapter, I endeavour to capture a general sense of turmoil that characterized Western medicine during these centuries. Early forms of printed communication are shown to be related to the decline of traditional authority in medicine. Particular emphasis is given to revival movements that clustered around the mechanical production of sacred medical manuscripts and a rebirth of Hippocratic inspired clinical practice. These early modern revivals are discussed in terms of how they exposed the limitations of traditional codes of knowledge and furnished a basis for new sources of authority in medical thought.

This discussion is followed by a look at how tradition-bound doctors responded to early modern breaks with inherited wisdom as well as a section on print-related factors that served to strengthen the rise of medical guilds. The chapter concludes with an examination of seventeenth century censorship issues that resulted in a temporary period of what appeared to be restored order in medicine.

REVIVALS AND REVISIONS IN TRADITIONAL MEDICAL KNOWLEDGE

In his social history of healing, Cartwright describes the period beginning in the fifteenth century and extending to the close of the eighteenth century as a time of 'anarchy' in Western medicine: Changes in communication and transportation "weakened the power of the church, virtually destroying its temporal authority in England and part of the European continent."[1] His assessment is congruent with Innis who writes:

> The flexibility of the alphabet and printing
> introduced an overwhelmingly divisive influence
> in Western civilization by emphasizing the place
> of vernaculars....By the end of the sixteenth
> century the monopoly of knowledge built up in
> relation to parchment had been overwhelmed and
> a fusion achieved with a new monopoly of know-
> ledge built up in relation to paper in the
> establishment of separate kingdoms in which the
> Church was dominated by the state as in
> Lutheranism and Anglicanism (Empire, 148).

Thus, the early modern period was a time of political, economic, and social realignments that appear to stem from the displacement of sacred manuscripts with new forms of printed communication.

The divisive influence of these general developments registered in medical education. As was mentioned in the preceding chapter, medieval medical schools adopted the educational model that originated at the University of Paris. Except for some studies in anatomy and physiology, doctors were educated in the classics and, because of Church domination, shared a common frame of reference that extended between European cities. This continuity was splintered as cities grew and monarchies strengthened their control over religion, commerce, and the professions of law and medicine. Hence, what had been relatively continuous links between university medical centres gave way to a divergent emphasis.

The most dramatic change in medical education began in Italy, where doctors were the first to seriously entertain anatomical discoveries that are credited to men like Thomas Linacre, Leonardo de Vinci, and Andreas Vesalus, as well as to experiment with physiological and patho-logical treatises that were written by Jean Francois Fernel and Para-celsus.[2] However, historians and sociologists like Cartwright, Bullough and Friedson, take classical revival movements and revolutionary thought

experiments that emanated from Italy, somewhat for granted. That is to say, they do not address the question: Why did the weight of traditional codes in medical knowledge lighten and give way to new ways of thinking about the human body?

An example of this oversight occurs in Friedson's work when he notes that Galen's treatises dominated medical thought prior to the sixteenth century:

> So authoritative had his work become by the late
> Middle Ages that doctors supervising dissections
> of human cadavers would see no more than what
> Galen described, even though Galen had apparently
> never dissected a human and postulated such
> patently peculiar features of anatomy as the horned
> uterus and the five-lobed liver. (3)

In recognition of this, however, Friedson does not probe for factors that might explain why doctors were able to cast off the blindfold of tradition when, just prior to the sixteenth century, they were able to see *only* those parts of human anatomy that corresponded to Galenic codes?

Elizabeth Eisenstein is one historian who searches for answers to such questions. In her book, The Printing Press as an Agent of Change,[4] she presents some illuminating evidence in support of Innis' idea that printing underscored the early modern collapse of religious power and the formation of secular monopolies of knowledge. While she does not address Innis' work, or the subject of medicine, specifically, her research is used here to supply some missing links between the fall of monastic medicine and the rise of modern scientific thought in medical circles.

Latin manuscripts that carried medical knowledge through the dark ages into the Renaissance were characterized by a blend of rational and spiritual ideas or, as Eisenstein states, "Scientific inquiries about 'how the heavens go' were linked with religious concerns about 'how to go the heaven'."[5] Because monastic scribes hand copied information and because traditional scholars were "trained to win 'victory in debate' rather than to 'search for the truth'", Eisenstein contends that traditional codes of knowledge were irregular and unspecialized.[6] This idea is reinforced by Thomas Kuhn's observation that writers in natural philosophy, prior to the scientific revolution, were "able to take no common body of belief for granted" and that there "was no standard set of methods or of phenomena" to which scholars were obliged to conform.[7]

Like Innis, Eisenstein argues that the character of knowledge changed as printing changed the conditions under which knowledge was produced.[8] In terms of classical revival movements in Italy, print furnished Renaissance scholars with new forms of communication through which to look at old information and to, paradoxically, critique and surpass the very roots they set out to discover. Concurrently, printing provided the means whereby scholars could speak to one another and to the world in a novel fashion. Thus, printing via moveable type, changed the processes of assessing and amending tradition formulae: First, it exposed unforeseen errors in traditional codes of knowledge and, second, it resulted in an entirely new way of producing scientific knowledge. Revisions to traditional codes did not involve, merely, the bracketing

of errors and the insertion of missing pieces but, rather, an overall

recasting of the mold into which knowledge would fit.

Vesaluis' retrieval and reproduction of Galen's work is an example

of how the bias of printed communication played a major role in

classical revival and its subsequent demise. Like many scholars of his

time, Vesaluis was:

> ...aiming at reconstituting, reforming, and
> amending rather than replacing or discarding an
> ancient art. 'Anatomy will soon be cultivated
> in our academies,' he wrote hopefully, 'as it
> was of old in Alexandria.' He sought to 'restore
> from the world of the dead the knowledge of the
> parts of the human body that had died long
> ago' -- to come closer to a 'pristine' knowledge
> that had become corrupted and confused. (9)

His intentions may well never have been formulated nor, indeed, acted

upon, had it not been for the reproduction and circulation of tradi-

tional knowledge in new forms of communication like printed textbooks

and journals. Unlike scribal scholars, who were restricted by the time-

consuming process of handcopying, Vesaluis gained access to a wide range

of hitherto lost or fragmented texts, and he set the task of restoring

Galen's work to its original form. But, as Eisenstein notes, "full

recovery of the Galenic corpus was merely a prelude to an era that saw

Galen surpassed."[10] Thus, despite Vesaluis' intentions, something

served to violate the spirit of his revival and restoration of Galenic

codes of knowledge.

That 'something' appears to be printed communication. Early modern

revivals of medical knowledge differed from those that began in the

Middle Ages because the bias of print resulted in an entirely unexpected

and novel reorientation. That is to say, print-using scholars, like

Vesaluis, were able to see old information in a new way. The very act
of retrieving and compiling scattered descriptions and theories
associated with Galenic anatomy, opened a window through which many eyes
could gaze. For the first time, Vesaluis and his readers were able to
see discrepancies that existed between Galen's observations and theories
about anatomical functions. They saw, for example, that Galen had
observed cattle and monkeys, and that he had incorrectly extrapolated
this data to the unseen workings of the human body.[11]

When one considers that Vesaluis had the benefit of scanning
Galen's work in total, as well as comparing it to clearly labelled
diagrams of human dissections, it stands to reason that he would detect
errors that had escaped the attention of scribal scholars. Eisenstein
maintains that print fostered a new kind of trust in "one's own eyes"[12]
which, ultimately, resulted in the extirpation of traditional codes of
knowledge:

> The 'attitude of scrupulous diligence' toward
> 'observation' and 'description of factual data'
> exhibited by Vesaluis and some of his fellow
> anatomists has been singled out by many authori-
> ties...the new attitude placed 'traditional frames
> of knowledge...in a crisis situation.' (13)

The crisis for traditional codes of knowledge rested with the fact that
new processes of appraisal ran counter to old processes of production.
Philosophical exposes that made sense to scribal scholars looked
incorrect in the eyes of early modern scholars.

Apart from lending themselves to comparative studies that exposed
errors in traditional codes of knowledge, printed forms of communication
also released medicine and other branches of knowledge from a closed
corpus and replaced traditional production processes with an "open-

ended investigatory process."[14] For example, early in the seventeenth

century, William Harvey, while studying in Italy, successfully completed

the first experiment that demonstrated the value of the scientific

method for medical practice. Aided by microscopes and inductive reason-

ing, he discovered how blood circulates, while simultaneously disproving

Galen's sacred ebb and flow theory:

> Harvey's Exercitatio Anatomica de Motu Cordis et
> Sanguinis in Animalibus (1628) is not only a
> medical classic but the first true text book of
> experimental physiology. His 'circulation of the
> blood' was no mere speculation, but positive fact
> proved by rational observation and experiment. (15)

As Cartwright notes, Harvey's book was the first example of medicine's

departure from medieval speculative theorizing and a move toward com-

bining Bacon's inductive reasoning with Descartes' notion of the body

as machine. Harvey's work triggered a chain of follow-up experiments

by men like Robert Boyle, Robert Hooke, and John Mayow, whose cumula-

tive efforts established the basic principles of circulatory and

respiratory physiology; all of which were in print and disseminated

among learned circles by the end of the seventeenth century.[16]

While Italy was a primary source of revolutionary ideas, northern

medical schools, such as Leyden, Glasgow, and Edinburgh, became known

for their outstanding teachers who translated new ideas into bedside

medicine. Early in the eighteenth century, after the release of Carl

Linné's (Linnaeus) botanical discoveries, several physicians adapted

Linné's system of classifying plants to ordering observations pertaining

to the symptoms of diseases. For example, Hermann Boerhaave of Leyden

and William Cullen of Glasgow and Edinburgh, revived the ancient

practices of observing, recording, and clinical teaching.[17] They opened

clinics in affiliation with university medical schools and attracted

students from all over Europe.

In the last half of the seventeenth century, after Hippocratic

inspired teaching methods were reintroduced, doctors in Scotland and the

Netherlands began to see the value of reuniting surgery with internal

medicine. Their goal was strengthened by Lavoisier's theory of oxi-

dation, which sparked the chemical revolution. This radical turn of

thought was soon followed by Joseph Black's discovery of carbon dioxide

gas, which led to the invention of anaesthetics; all of which increased

the precision and status of surgery.[18] Despite these developments,

however, most European doctors regarded clinical medicine and surgery

with a jaundiced eye -- especially in London, Paris and Rome.

DEFENDERS OF THE STATUS QUO

Medical schools in Leyden and Edinburgh were part of the earliest

'open' universities where students were admitted regardless of race or

status.[19] Because of this factor, university educated doctors, surgeons,

and apothecaries tended to co-operate. However, this was not the case

in London and Paris where doctors were very status conscious and anxious

to protect their traditional authority. Bullough contends that the

growth of cities, monarchies, and universities enabled physicians to

gain important allies in their attempts to limit the field for non-

aligned healers:

> Lawyers, higher clergy, and physicians could
> approach one another as equals and each used their
> influence to bolster the other: the higher clergy

> through episcopal or papal sanctions, the lawyers
> through their influence on kings and bishops. The
> physicians justified this new support through
> their emphasis on the higher ethic of the univer-
> sity practitioner. (20)

These general patterns were most evident in London and Paris, which

became centres for political battles and, eventually, the places where

reform movements gathered public support to change the structure of

medicine in the nineteenth century.

Despite extraordinary transitions in medical thought in some

northern and southern universities, Parisian doctors continued a secure

patronage system and the sanctification of their discipline within a

traditional curriculum. They placed a high premium on a liberal arts

education, valued skills in disputation, and rarely examined a patient

prior to graduation.[21] They regarded their vocations as a sacred art:

"disease is a function of the wrath of God, healing medicines are a

function of His mercy, and the physician is His instrument."[22] In many

respects, they retained medieval concepts and values and virtually

ignored innovative trends in Italy and the Netherlands.

In London the situation was comparable. In 1518, Henry VIII

granted regulatory power to the Royal College of Physicians on the basis

of curbinb "the audacity of those wicked men who shall profess medicine

more the the sake of their avarice than from the assurance of any good

conscience."[23] The 'good conscience' that is mentioned in the king's

charter implies agreements between gentlemen of the Church of England;

agreements that were directed at excluding doctors of different

religious backgrounds as well as limiting irregular healers.

Officially, licentiates in the College were men who had graduated

in physics, from the Universities of Oxford, Cambridge, Dublin and

Edinburgh. Informally, though, Fellows were often denied entry if they

had not graduated from one of the universities in London. This had the

effect of excluding men who were not members of the Church of England.[24]

Furthermore, if an Irish or Scottish Fellow was admitted to the College,

his lack of social connections in London high society would invariably

reduce his chances of securing favourable patrons. These factors led

one historian to conclude that London's Royal Society was the last group

of doctors to recognize the growing importance of basing professional

membership on proof of medical competence.[25] The issue of competency

was at the core of medical reforms that upset the status quo early in

the nineteenth century.

THE RISE OF MEDICAL GUILDS

Up until the Great Plague of 1665, the apothecaries guild was

subject to stringent regulatory control by the Royal College in London.[26]

When the doctors left the city for relative safety in the countryside,

apothecaries took advantage of their regulators' absence and emerged as

the principle source of medical care for London's growing population.

They established stronger lines of communication within city limits, and

identified themselves as healers* by severing affiliations with grocers

and druggists. Disassociation from the retail aspect of their craft

---

* As opposed to drug retailers.

enabled apothecaries to circumvent the Society's subsequent attempts to revoke their prescriptive powers.[27]

Other factors that furthered the apothecaries' cause came by way of developments in commerce: the patent system was adapted to a growing drug industry, and the penny press lent itself to advertising the marvels of various tonics and powders. In fact, patent medicine was so popular during this time that it became, in Bullough's words, "the mainstay of newspaper advertising until almost the twentieth century."[28] While there is no evidence to suggest that these drugs were more effective than other remedies of the time, there are reasons to believe that, at the very least, drugs were the most agreeable and risk-free form of existing treatments. Andrew Allentuck believes that drug therapy involved the least danger to patients because of continuous links with ancient wisdom:

> During the two and half mellenia that passed from
> the time of ancient Greece to the end of the
> nineteenth century, western medicine had about
> four dozen basic drugs, most derived from plants,
> and the risk of adverse reaction was minimized
> through long experience with them. (29)

Hence, because drugs were the least damaging of existing therapies and because mass demand for them had been generated by the press, the courts continued to rule in the apothecaries' favour on matters pertaining to regulation.[30] Apothecary guilds across Western Europe soon followed the British lead.

Surgeons were, by all accounts, despised by The Royal Society, and regarded with fear and suspicion by the population at large.[31] This was the case in London because surgeons were often foreigners and lacking

classical training, thereby making them unacceptable to the status

conscious doctors. The public associated them with sensational news-

paper stories about the body-snatching trade. Bad press about the

surgeons' practice of dissection persisted until legal channels for

protecting cadavers were established in the early eighteen hundreds.[32]

But, until that time, surgeons were compelled to practice in the

provinces and/or the army.

In Paris, surgeons tried to divest themselves of association with

the barbers by establishing their own college and by emulating the

unspecialized approach to medicine that was valued by internists or

university educated doctors.[33] This prompted Parisian doctors to form

an alliance with the barbers that eventually undermined the surgeons'

attempts to attract clients within city limits. Thus, french surgeons

were, as in London, forced into country towns and the army.[34]

In the final analysis, the surgeons' banishment to the periphery

of the doctors' control, worked in their favour. In England, for example,

surgeons consolidated their interests in provincial towns by organizing

solo practices and referral systems, clinics, and schools. Public

support for their services increased as surgical techniques were

refined -- largely through their use of direct observation and dissec-

tion as teaching methods, and partly through the application of Vesaluis'

and Harvey's discoveries.[35] Because surgeons were not, in Reader's

words, "hampered by veneration of the classics,"[36] they were able to

adopt some of the important scientific ideas that were emanating from

learned societies and printing houses -- ideas that were regarded as

heresies by the tradition-bound doctors in London and Paris. As a

result, surgeons enhanced the precision of their craft and their reputations as healers rose in the public's estimation.

By the middle of the eighteenth century, doctors, apothecaries, and surgeons had acquired distinct identities and the boundaries for practice had been etched by regulatory provisions. They maintained an aggressive posture toward one another, but had resolved major territorial disputes by appealing to quite separate markets. They emerged as the most favoured groups of healers by local and national governments.

This is not to suggest, however, that other kinds of healers were forced out of competition. In fact, quackery was rampant because of new commercial incentives that came along with industrialization. Medicine shows were common spectacles in market areas in villages and cities. Some healers were accompanied by comedians to entertain and attract a crowd before the patent medicines were displayed and sold or while surgeons demonstrated the latest techniques.[37] According to Friedson, this state of affairs persisted into, and throughout, the nineteenth century. No single group of healers could prove that they were more competent than the other and hence, could not create widespread public confidence in any particular service.[38]

Despite some extraordinary changes in thought during the early modern period, the state of the medical arts had not really changed since the Middle Ages.[39] Except for some innovations in surgery and drugs, healing was at one of its lowest points in history. Preventive medicine was virtually unknown, and curative measures were often more dangerous than no treatment whatsoever. In terms of the scientific revolution, most doctors failed to appreciate the implications that new

ideas held for medical practice. According to sociologist, Phillip Elliott, scientific discoveries had generated interest in university medical schools but, by the eighteenth century, the "novelty of the scientific revolution has worn off."[40] For the most part, doctors clung to traditional codes of knowledge and, as Cartwright notes, continued to depend upon the 'five senses' for diagnoses and treatment and continued the medieval practice of 'care' as opposed to 'cure'.[41] They were more preoccupied with territorial disputes than they were with improving or changing the basis of treatment and the quality of care.

CENSORSHIP AND THE SILENCING OF SCIENCE

Elliott's observation, that scientific ideas had lost their appeal in established medical schools, is consistent with Eisenstein's research. She found that printing ventures surrounding important and controversial studies by noted scientists like Galileo, Halley, Newton and Harvey, began to wind down because of new controls enacted by the Catholic Church. She notes that experiments and theories abated and warnings, such as the following, appeared in private letters that circulated between scientists: "It is dangerous to make original conjectures, so look again before giving it to a printer."[42]

The great embryologist, Malpighi, exemplifies the bind in which scientists were caught. His work was delayed as he had to secure technical literature from England because local booksellers were forbidden to deal in many subject areas. For the same reasons, he had to conceal his discoveries for fear that he would suffer a heretic's fate.[43] As it turned out, Malpighi's treatise on the silk worm won him acclaim.

He, like many other scientific virtuosos on the continent, found support

for his ideas in Britain, where the anti-papal cause was strongest.[44]

This is not to suggest that England was exempt from censorship

problems but, rather, the task of defining true science had been taken

out of full public view. Members of the Royal Society established

printing guidelines that enabled intellectuals to prudently debate

controversial issues. To this effect, Eisenstein writes:

> In securing support for the new form of 'public
> knowledge', the founders of the Royal Society
> used tactics similar to those deployed by Mersenne.
> They took care to present the study of nature in
> its most neutral, innocuous guise; ·treading a
> cautious middle path between Hobbits 'atheistical
> materialism' on the one hand and occult
> 'Familiastical-levelling Magical' trends on the
> other. Even while upholding claims to Reformation,
> welcoming contributions from artisans, and advo-
> cating the use of unadorned vernacular prose,
> Bishop Sprat emphasized the apolitical non-
> partisan character of the Society. Not only
> poetry and magic, but also religion and politics
> were banned. There is more than a hint of a
> suggestion in Sprat's apologia that the neutral
> scientific society had taken over functions once
> assigned to the medieval Church by providing a
> peaceful sanctuary for factions who were otherwise
> at each other's throats. (45)

Thus, through the efforts of this learned society, the task of defining

the contours of knowledge was taken out of the public's domain; it was

encased in a new language that, by necessity, involved speaking to

issues in a neutral tone.

It is important to note that the politics of censorship appear to

underscore the transformation of science as an open investigatory process

into an elitess venture that employed a complex system of writing. It

was at this point in history, that a potentially convivial tool was

converted into a manipulatory one. Prior to the middle of the seventeenth

century, the Commonwealth of Learning, represented by journals associated

with the Royal Society in London, Academie des Sciences in Paris, and

Accademia dei Lincei in Rome, exchanged novel ideas, regardless of

their sources, and in the absence of distinctions between 'true' and

pseudo science, Eisenstein clarifies this point in the following quote:

> From Paracelsus through Mesmer and on to the
> present, the press has lent itself to the purpose
> of pseudo-scientists as well as those of real
> scientists, and it is not always easy to tell
> the two groups apart. Distinguishing between
> scientific journals and sensational journalism is
> relatively simple at present. But during the
> early years of the Royal Society when sightings
> of monsters and marvels were still being credited
> and recorded, the two genres were easily confused.
> Confusion was further compounded by the workings
> of the Index which lumped dull treatises on
> physics with more sensational forbidden tracks
> and transformed advocacy of Copernicanism into a
> patriotic Protestant cause. (46)

However, by the late eighteen hundreds, monopolies were built around new

forms of communication that were devoted to 'true' scientific knowledge.

The politics of censorship fostered a new way of writing that purified

the Commonwealth of Learning of prior association with what Eisenstein

calls the "soul of nature" and advanced scientists in the pursuit of

"mechanistic" truths.[47]

Thus, while traditional medical doctors, particularly in Paris and

London, concentrated on maintaining the status quo, new alignments

between scientists, surgeons, apothecaries, and social reformers, were

being forged. These latter groups began to organize around and through

printing ventures associated with learned journals, magazines, and text-

books. Motivated by the spirit of Enlightenment philosophy, and backed
by printers, they began to prepare a case against the traditional
medical profession. The result was that, early in the nineteenth
century, university doctors were overthrown and medicine fell into step
with revolutions in science, industry and philosophy.

FOOTNOTES TO CHAPTER FOUR

[1]Frederick Cartwright, <u>A Social History of Medicine</u>
(London: Longman Group Ltd., 1977), p. 17.

[2]Ibid., p. 16.

[3]Eliot Friedson, <u>Profession of Medicine</u> (New York:
Harper and Row, 1970), p. 14.

[4]Elizabeth Eisenstein, <u>The Printing Press as an Agent
of Change</u> (Cambridge: Cambridge University, 1979).

[5]Ibid., p. 696.

[6]Ibid., p. 498.

[7]Thomas Kuhn, <u>The Structure of Scientific Revolutions</u>
(Chicago: University of Chicago, 1970), p. 13.

[8]Elizabeth Eisenstein, <u>Press</u>, p. 168.

[9]Ibid., p. 571.

[10]Ibid., p. 573.

[11]Ibid., pp. 502, 573.

[12]Ibid., p. 502.

[13]Ibid., p. 568.

[14]Ibid., p. 687.

[15]Frederick Cartwright, <u>Social History</u>, p. 18.

[16]Ibid., p. 18.

[17]Ibid., p. 19.

[18]Ibid., p. 19.

[19]Ibid., p. 47.

[20]Vern Bullough, <u>The Development of Medicine as a
Profession</u> (New York: Hafner Publishing, 1966), p. 108.

[21]Ibid., p. 47.

[22]Quoted by Elliott Krause in <u>The Sociology of Occupations</u>
(Boston: Little, Brown and Co., 1971), p. 111.

[23] Quoted by Jethro Lieberman in _The Tyranny of the Experts_ (New York: Walker and Co., 1970), p. 36.

[24] W.J. Reader, _Professional Men_ (New York: Basic Books, 1966), p. 16.

[25] Ibid., p. 20.

[26] Phillip Elliott, _The Sociology of the Professions_ (London: Macmillan, 1972), p. 33.

[27] W.J. Reader, _Professional_, p. 40.

[28] Vern and Bonnie Bullough, "A Brief History of Medical Practice". In _Medical Men and Their Work_, ed. by Eliot Friedson and Judith Lorber (Chicago: Aldine Atherton, 1972), p. 94.

[29] Andrew Allentuck, _Who Speaks for the Patient?_ (Don Mills: Burns and MacEachern, 1978), p. 64.

[30] Phillip Elliott, _Sociology_, p. 31.

[31] S. and Vera Leff, _From Witchcraft to World Health_ (New York: Macmillan and Co., 1958), p. 114.

[32] W.J. Reader, _Professional_, p. 37.

[33] Vern and Bonnie Bullough, "A Brief History of Medical Practice", pp. 92-93.

[34] Michel Foucault, _The Birth of the Clinic_, translated by A.M. Sheridan (New York: Vintage Books, 1975), p. 81.

[35] Erwin Ackerknecht, _A Short History of Medicine_ (New York: Ronald Press, 1968), pp. 104, 106, 114, 115.

[36] W.J. Reader, _Professional_, p. 32.

[37] S. and Vera Leff, _Witchcraft_, p. 125.

[38] Eliot Friedson, _Profession_, p. 19.

[39] For an interesting account of eighteenth century medicine, refer to Guy Williams, _The Age of Agony_ (London: Constable and Co., 1975).

[40] Phillip Elliott, _Sociology_, p. 34.

[41] Frederick Cartwright, _Social History_, pp. 20, 22.

[42] Quoted by Elizabeth Eisenstein in _Press_, p. 647.

[43] Elizabeth Eisenstein, _Press_, p. 665.

[44] Ibid., p. 668.

[45] Ibid., p. 670.

[46] Ibid., p. 695.

[47] Ibid., p. 681.

CHAPTER FIVE

THE HOSPITAL REVOLUTION:

A LOOK AT EARLY NINETEENTH CENTURY CLINICS

Illnesses have always been used as metaphors to
enliven charges that a society was corrupt or
unjust.

Susan Sontag

Hospitals, as we know them today, are relatively recent developments in medical history. They began in Paris at the turn of the nineteenth century when doctors were forced out of the university and obliged to practice in city clinics. As a result, Parisian doctors began to regard their vocations in a different light and set themselves the task of re-defining medical problems. They, in effect, created modern diseases within the milieux of nineteenth century clinics. This is the subject of the first section in this chapter.

Clinical medicine stirred the imaginations of social reformers who began to connect the idea of competence and/or demonstrated mastery of skills, with medical licensing and professional authority. These reformers, particularly in Britain, used the press to denounce traditional medical education and to convince government officials that standardized written examinations were a more enlightened measure of the value of a practitioner's knowledge. Thus, the notion of written proof of competency supplanted the traditional virtues of oral debating skills and cultured gentility as criteria for conferring authority and status to healers. This topic is discussed in the second and concluding segments of the chapter.

CLINICS AND THE CREATION OF MODERN DISEASES

The dawn of the nineteenth century is best described as a period when laymen were very active in health related matters. This orientation began during the last half of the eighteenth century when Voltaire, Rousseau, and other philosophers of the Enlightenment, wrote about the virtues of rational approaches to problem-solving. Medical reformers,

guided by modern rationality, thoroughly rejected a lingering belief
that disease was the result of evil deeds. They also dismissed a
revived classical notion that climatic conditions were primarily respon-
sible for illness. Instead, they focussed on industrialization and
regarded social change as the only means of improving appalling health
conditions in cities, armies, navies, prisons, and hospitals.[1] As one
historian notes:

> The need for sanitary reform emphasized the need
> for social reform in general....Hence the liberal
> movements that developed in all Western nations
> between 1820 and 1848, in opposition to the
> reactionary governments of that period, were
> closely associated with the movement for sanitary
> reform. It was no accident, for instance, that
> such a medical master as Virchow sympathized with
> the Revolution of 1848; or that on the other hand,
> Friedrich Engels prepared his indictment of
> English society largely in terms of unnecessary
> disease and death. (2)

In this sense, medical issues occupied a front-centre position in the
revolutionary dramas of the early nineteenth century.

The work of noted reformers such as John Howard's indictment of
sanitary conditions in British prisons, and J.R. Tenon's exposé on the
inhumane treatment of patients in Parisian hospitals,[3] created wide-
spread public support for medical reform. But change did not occur
until the control and privileged position of university educated doctors
was shaken. This first happened in Paris, during the revolution of 1789,
when doctors of the Ancien Régime were forced out of the university and
into hospitals as bases from which to continue teaching.[4] Hence, a
turning poing for medicine was its departure from the context of
libraries and debating halls and its entry into hospitals that were

being transformed from shelters into what Illich calls 'museums of

disease' (Limits, 167).

Nineteenth century Parisian hospitals were reminiscent of the great

schools of classical Greece and the early modern clinics in Scotland and

the Netherlands, in terms of basing knowledge on direct observation.

But, according to Ackerknecht, there were three significant differences

between pre and post-revolutionary clinics:

> To begin with, it was large-scale. While the
> famous clinic of Boerhaave consisted of only six
> beds for men and six beds for women, Bouillard,
> one of the leaders of the Paris Clinical School,
> could boast of having seen twenty-five thousand
> cases within five years. Furthermore, nineteenth
> century clinical observation was no longer the
> passive art practiced by clinicians from Hippo-
> crates to Sydenham and Boerhaave; it was trans-
> formed into active examination through the large-
> scale application of new and revived methods of
> physical diagnosis. Finally, observation was no
> longer concerned with unexplained symptoms, but
> with symptoms considered in the light of lesions
> found at the autopsy table. (5)

Hence, clinical education became a large-scale enterprise in which

patients figured as objects for study -- both while they were living and

after death. Traditional taboos against handling corpses were superceded

by modern ideas about death such as those that appeared in the writings

of Paracelsus: "A man's death is nothing but the end of his daily work,

an expiration of air, the consummation of his innate balsamic self-

curing power, the extinction of the rational light of nature...."[6]

Human life and death were taken out of the realm of metaphysics and

conceptualized as natural phenomena.

As the method of instruction shifted from university-based specula-

tion and theorizing to first-hand observation in clinical settings, the

way that health and illness were thought about, also changed. Illich
contends that Parisian hospitals were the places where modern diseases
were invented and where health related needs were first standardized:
"If 'sickness' and 'health' were to lay claim to public resources, then
these concepts had to be made operational" (Limits, 165). This standar-
dization process owed much to a precise, mathematical and neutral
language, as well as innovations in measuring devices that came from
printers. Printing workshops, according to Eisenstein, had become
centres for the exchange of ideas and artifacts between scientists,
craftsmen, artists, reckon-masters, mechanics, preachers, merchants,
bureaucrats, and a variety of enterprising laymen.[7]

Products that were outgrowths of printing ventures altered the way
that clinicians approached the problem of diagnosing illness. For
example, cylinders added precision to the ear, enabling doctors to
match the sounds that emanated from patients' chests to lesions that
were found later, during autopsies. For these reasons, Laennec chose
the word 'stethoscope' for his invention; it is derived from the Greek
words for 'chest' and 'I view'.[8] Similarly, John Floyer's 'one minute
watch' improved the accuracy of a clinician's sense of touch while
determining pulse rates.[9] Thermometers were adapted for clinical use
and gave doctors a visual reading of what had traditionally been
subjective assessments of hot, warm, cool, and cold body temperatures.[10]
In short, instruments added precision to sensory based observations by
representing experience according to visual, objective, and quanti-
fiable signs. This is consistent with Innis' view that the bias of

printed communication predisposed individuals to appraise problems in mechanized and/or standardized terms.[11]

Because the way that nineteenth century clinicians appraised problems had changed, it stands to reason that their approach to solutions was also altered. The traditional emphasis on 'caring' for the sick was transposed into a preoccupation with documenting problems. Thus, clinical examinations rarely led to treatment plans but, rather, observations were communicated as data that was charted and graphed to represent new disease entities, rates of illnesses, and patterns of epidemics. This information was catalogued according to new, and ever increasing, specializations such as pathological anatomy, dermatology, syphilology, psychiatry, pediatrics, and public health.[12] Most of this data did not lend itself to improving treatment or effecting cures but, rather, was proof positive that public health standards were in desperate need of corrective action.

Clinicians began to formulate grand-scale solutions to problems and/or needs that were being defined and standardized in hospitals. Reformers who sat on the Paris Public Health Council recommended that internal and external medicine as well as pharmacology be unified and centralized into one system of government supported health care. They argued that public expenditures for centralized medicine were justifiable on the basis of 'public service', 'public interest', and 'social utility'.[13] The spirit of this movement enlivened similar groups across Europe, especially in Vienna, Dublin, and London.[14] However, their attempts to unify medicine were blocked because no one was able to prove that modern clinicians could actually satisfy public health

needs that had been defined and exposed. In short, local governments were not willing to confer monopolistic powers to groups who could not demonstrate superior competence in healing.

TOWARD REFORMING MEDICAL EDUCATION

As it happened, developments in London provided the next crucial step toward modernizing medicine. In the nineteenth century, a new breed of medical men travelled from Dublin, Edinburgh and the continent to establish teaching clinics in London. The Royal College of Physicians remained aloof and, apart from a few token clinics, refused to abandon the traditional patronage system.[15] The new clinicians impressed government officials because they were willing to treat the masses. They introduced the variolation method of preventing small pox;* used accurate medical statistics to record disease rates and causes of deaths; and recommended improvements for sewers, water supplies and housing.[16] Most of these innovations resulted in noticeable improvements -- so much so, that England took the lead in public health and medicine became known as a social science.[17]

Within three decades, statistical evidence of improved standards in public health provided a cogent rationale for reformers to investigate university education with a view to challenging the competence of physicians in the College. When proceedings began in the Select Committee on Medical Education, the physicians failed to respond to the issue of practical and socially useful knowledge. Instead, they

---

* Method used before Edward Jenner perfected the vaccination method.

defended their superordinate position on the basis of a liberal arts

education and social standing:

> ...by the beginning of the nineteenth century
> defenders of the physicians' position as privi-
> leged caste were prepared to argue simply in
> terms of their social standing. As one witness
> to the Select Committee on Medical Education of
> 1834 put it, classical learning and general
> cultivation of the mind were necessary if the
> physician was not to be found at a loss in the
> great houses of the land which it was his duty
> to enter. (18)

When physicians were pressed for information about the extent and nature

of their medical knowledge, it became clear to the committee that, in

Reader's words, "Physicians prided themselves on being learned men,

but not especially on their medical learning...because there was little

to be medically learned about."[19] The doctors' case was further impaired

by the revelation that university examinations were entirely oral, thus

leaving them with no documents to present as proof that medical knowledge,

however limited, had been mastered by Fellows of the College.[20]

These findings generated a host of debates about the relationship

of education to medical competence which were developed and circulated

via publications such as The Lancet, Transactions, Saturday Review,

The Student's Guide, Fortnightly Review, and The Economist.[21] The

physicians' desire to maintain a traditional liberal arts curriculum,

and their capacity to convey the virtues of unspecialized knowledge,

was seriously impaired by attitudes held by the editors of The Lancet

and Transactions. For example, Thomas Wakley, editor of The Lancet, was

a friend of Henry Warburton who chaired the Select Committee on Medical

Education. They shared the view that public health would profit if

theory and practice were united; if doctors, surgeons, and apothecaries were unified through a centralized educational system. Thus, according to Reader, "witnesses were given every chance to put the case for a unified profession and the conservatives who gave evidence were very searchingly examined."[22] Lancet's coverage of these hearings was biased in a similar manner.

A push to reform medical education also came via Transactions. In its preface, the editors expressed the intention of exchanging practical knowledge toward the end of unifying internal medicine with surgery.[23] This journal was largely responsible for reversing the impact of bad press that degraded surgeons during the early modern period. It frequently reported on the discoveries that surgeons had made during times of war, and encouraged the public to accept surgeons as 'gentlemen' in civic life.[24] Essentially, Transactions was the vehicle that enabled surgeons to lobby for public support; to extend their influence beyond the army and the provinces; and to establish clinics and schools in association with prestigious city hospitals.

Despite a hightened awareness that medicine would be better equipped to meet social needs by pooling educational resources, the problem of proving competence in relationship to education remained unresolved. It was at this point that the apothecaries guild emerged as a leader. It had established a formal written examination system that validated the mastery of knowledge by licence holders. This stringent examination policy was the factor that convinced legislators to pass The Apothecaries Act which, in Reader's words:

> ...gave the Society of Apothecaries power to
> determine the education required for entry into
> their profession, to examine for proficiency,
> and on the results of examinations to grant or
> withhold licences which alone would authorize
> their holders to call themselves apothecaries.
> Moreover, the Act gave the Society power to
> prevent unqualified persons from calling them-
> selves apothecaries anywhere in England or Wales.
> These powers were quite unprecedented at the
> time. Both Royal Colleges were examining bodies,
> but the Surgeons had no power to prevent anyone
> from calling himself a surgeon, qualified or not,
> and even the august Physicians' authority,
> founded on a Royal Charter, only extended to
> London and the district seven miles about. (25)

Hence, written exams became a key to resolving the competency issue and,
in large measure, they provided the kind of proof that governments
required to support a monopoly in medicine.

The Apothecaries Act paved the way for the Medical Act in 1858,
which was the first grand-scale move toward eliminating competition in
medicine. It made provisions for a registry of practitioners which
included only those men who had demonstrated written mastery in specia-
lized areas of knowledge. The Act also sanctioned licensed practitioners
to exercise self-discipline: They could control who entered the profes-
sion and strike from the registry those who failed to comply with
internal standards.[26] It was through these provisions that physicians,
surgeons, and apothecaries formally laid claim to hospital resources.
The Medical Act, in Britain, was similar to the creation of the Central
School of Health in Paris and, within a few decades, other European
centres had enacted similar legislation.

Despite the fact that nineteenth century clinicians had won large
concessions from local governments, they were a long way from monopo-

lizing medicine. Friedson notes that they had failed to win unilateral public confidence and, apart from hospitalized patients, they had no means of ensuring that people would seek their services.[27] Neither the wealthy nor the poor were particularly faithful to licensed practitioners and non-aligned healers continued to compete in the medical market.

Krause contends that clinicial medicine had reached its logical conclusion by the second half of the nineteenth century because reformers had emphasized social problems at the expense of recognizing the value of innovations in 'pure' science: "Pasteur, for example, was ignored at this time, for the comment was made that the microscope was 'not particularly useful' and those working with it not to be considered seriously."[28] Clinicial medicine had satisfied some public health needs but it had failed to provide cures for most of the diseases that had been defined.

Ackerknecht's assessment concurs with that of Krause. He claims that advances in hospital-based education had reached a dead end by approximately 1850.[29] The problem stemmed from the fact that clinicians were measuring symptoms but they did not understand the causes of diseases. Hence, treatments were limited to experimenting with symptom reduction and, in most cases, treatment outcomes could not be predicted. Furthermore, in the absence of predictive power, clinicians were unable to secure government sanctions to monopolize healing. The problem facing nineteenth century clinicians, therefore, was to find ways of proving superior competency: first in being able to predict treatment outcomes; and second, to indicate that they could continue to progress

in the future. The answers came in the second half of the nineteenth century when medicine returned to the universities and aligned itself with pure science.

FOOTNOTES TO CHAPTER FIVE

[1] Erwin Ackerknecht, A Short History of Medicine (New York: Ronald Press, 1968), pp. 139-142.

[2] Richard Shryock quoted by Magali Larson in The Rise of Professionalism (Berkeley: University of California, 1977), p. 58.

[3] Erwin Ackerknecht, Short History, pp. 142-143.

[4] Michel Foucault, The Birth of the Clinic, translated by A.M. Sheridan (New York: Vintage Books, 1975), p. 67.

[5] Erwin Ackerknecht, Short History, pp. 146-147.

[6] Paracelsus, Selected Writings, translated by Norbert Guterman, Bollingen Series XXVIII (Princeton: Princeton University Press, 1969), p. 147.

[7] Elizabeth Eisenstein, The Printing Press as an Agent of Change (Cambridge: Cambridge University, 1979), pp. 402-403.

[8] Stanley Reiser, Medicine and the Reign of Technology (Cambridge: Cambridge University, 1978), p. 25.

[9] Frederick Cartwright, A Social History of Medicine (London: Longman Group Ltd., 1977), p. 20.

[10] Ibid., p. 20.

[11] This idea is also consistent with Foucault's notion that nineteenth century clinicians had learned to 'see' in a new way. Sheridan describes Foucault's position in the following quote:

> "For doctors to see what nineteenth century doctors were trained to see those codes had to be transgressed and trans-formed. What occurred was not a return, beneath the level of language to a pure, untrammelled gaze, but a simultaneous change in seeing and saying."

Refer to A.M. Sheridan, Michel Foucault: The Will to Truth (London: Tavistock, 1980), pp. 39-40. Paul Heyer has drawn some interesting connections between the writings of Innis, Foucault and Eisenstein, in terms of modernization and perceptual transformations. Refer to Paul Heyer, "Michel Foucault and the History of Communication". A paper presented at the conference, "Knowledge, Power, History: Inter-disciplinary Approaches to the Work of Michel Foucault", held at the Center for the Humanities, University of Southern California, Los Angeles, 29-31 October 1981.

[12]Erwin Ackerknecht, Short History, p. 154.

[13]Elliott Krause, Power and Illness (New York: Elsevier North-Holland, 1977), p. 22.

[14]Erwin Ackerknecht, Short History, pp. 156-157.

[15]Phillip Elliott, The Sociology of the Professions (London: Macmillan, 1972), pp. 35-36.

[16]Vern and Bonnie Bullough, "A Brief History of Medical Practice". In Medical Men and Their Work, ed. by Eliot Friedson and Judith Lorber (Chicago: Aldine Atherton, 1972), p. 96.

[17]Ibid., p. 96.

[18]Phillip Elliott, Sociology, p. 34.

[19]W.J. Reader, Professional Men (New York: Basic Books, 1966), p. 18.

[20]Ibid., p. 19.

[21]Ibid., pp. 64, 66, 87, 93, 96.

[22]Ibid., p. 59.

[23]Ibid., p. 60.

[24]Ibid., p. 60.

[25]Ibid., p. 51.

[26]Ibid., p. 68.

[27]Eliot Friedson, Profession of Medicine (New York: Harper and Row, 1970), p. 20.

[28]Elliott Krause, Power, pp. 19-20.

[29]Erwin Ackerknecht, Short History, p. 157.

CHAPTER SIX

THE LABORATORY REVOLUTION:

AN EXAMINATION OF CHANGES IN MEDICAL EDUCATION AND

THE CONSOLIDATION OF MODERN PROFESSIONAL AUTHORITY

> All professions are conspiracies
> against the laity.
>
>   George Bernard Shaw

This chapter highlights the final stanza of medicine's modernization. It covers a time span of approximately sixty years, beginning in the middle of the nineteenth century and concluding in the second decade of the twentieth century. During these years the modern profession of medicine was formally organized and doctors consolidated their authority. This began when nineteenth century clinicians adopted methodologies and discoveries from the laboratories of 'pure' scientific researchers. Clinics, en effect, became extensions of laboratories; the latter of which attracted considerable support from private and public funding bodies.

Secondly, medical education moved back into the universities where doctors were educated as scientists and acquired institutional supports to promote modern service ethics. Thirdly, the public learned that scientific doctors were superior to other kinds of healers and patients' perceptions of need began to correspond to doctors' perceptions of service. And, finally, university educated doctors acquired powers to police themselves and a growing number of aligned para-professionals. At the same time, they were legally sanctioned to eliminate competing healers and mandatory consumption of scientific medicine was enforced.

CLINICS AS EXTENSIONS OF RESEARCH LABORATORIES

Until the middle of the nineteenth century, clinical medicine and pure science were quite separate activities. Clearly, practitioners were influenced by revolutionary thought experiments, but they, and government officials, were not convinced that laboratory science could lend itself to solving problems that had been identified in relation to

public health. A radical change in attitudes occurred as a result of the work of German scientists who were the first researchers to be supported by public funds. Ackerknecht suggests that because its universities were modernized without a revolution, the reformed educational system in Germany favoured the development of laboratory medicine.[1] Interestingly, Germany had not produced many outstanding clinicians during the first part of the nineteenth century. But, during the next fifty years, it took a leading role in medical discoveries that resulted in the eventual marriage of clinical practice to speculative research.

The most significant contributions, of German scientists, emerged from improvements that they made to microscopes and the invention of staining methods.[2] These tools extended the power of sight to reveal the structure of cells and chemical compounds which, in turn, lent credence to the theory that epidemics were caused by micro-organisms.[3] Researchers, inspired by that assumption, began to isolate causative agents and to develop preventive and curative measures for diseases that clinicians and reformers had identified as the greatest threats to public health. Hence, through the work of Koch and other German microscopists, practitioners were able to treat the cause of tuberculosis, cholera, gonorrhea, typhoid fever, pneumonia, plague, and syphillis. In a brief span of approximately thirty years, 1875 to 1906, causes and cures were discovered for over twenty diseases.[4]

The science of bacteriology attracted considerable attention from private and public funding bodies across Europe. Government officials and entrepreneurs began to appreciate the practical rewards of supporting speculative research. The story of Pasteur is a case in point:

> As a specialist in micro-organisms he was now
> widely sought by government and private organiza-
> tions to help save French industries, menaced by
> processes which seemed to be the work of micro-
> organisms. His study of the diseases of wine led
> to his invention in 1863 of the process that still
> bears his name, "pasteurization". He studied the
> diseases of the silkworm in 1865 and the diseases
> of beer in 1871. Pasteur's successful identifi-
> cation of the responsible micro-organisms saved
> important branches of the French economy from
> ruin. (5)

Later, Pasteur extended his research to include diseases of higher

animals and, in 1880, he perfected a vaccine for rabies. This and other

'useful' discoveries prompted the French government to establish a

research institute in his name. Clearly, the interests of science,

clinical medicine, governments and industry were dove-tailing.

The implications for medical practice were most noticeable in the

specializations of dietetics and pathology. In the first case, scien-

tists had discovered the dynamics of metabolism. This meant that, for

the first time in history, therapeutic diets could be prescribed with

knowledge of why and how they were effective. Up until the late nine-

teenth century, dietetics had been an entirely trial and error art.[6]

As for pathology, Virchow's research took gross anatomical descriptions

from clinical records, and transformed them into microscopical anatomy.[7]

Hence, physicians and surgeons began to see beyond body organs and

connecting tissues that were visible on the autopsy table. And, by

the same token, practitioners increasingly looked to science for answers

to questions that could not be answered in clinical contexts. According

to Ackerknecht, this was reflected in journals where Virchow was referred

to as the 'pope' of medicine: "It is significant of the spirit of the

times that this role of leadership was now assumed by a laboratory man."[8]

At the turn of the twentieth century, laboratories were central to
medical practice and, as Reiser notes, the scientific method had
replaced traditional clinical protocol:

> The doctor who depended chiefly on technology in
> diagnosing and following the course of illness
> could think of himself as using the same rigorous
> methods as did the scientist who pursued truth in
> his laboratory. To many doctors, the laboratory
> "seemed pervaded by a purer light" than the
> hospital ward, and the laboratory analyst was
> pictured as superior to the clinician -- "the
> incarnation of all that is scientific in medicine
> and whose word cannot be questioned." (9)

Hospitals, once considered pestholes, were modernized: nursing care was
upgraded, antiseptics improved hygienic standards, drugs were controlled;
and well equipped laboratories were installed. All of these features
contributed to a new attitude towards hospitalization. These institutions
were held to be one of the country's chief assets and places where the
best medical care was available.[10]

MEDICAL EDUCATION AND REFORMED UNIVERSITIES

In a span of approximately forty years, laboratory medicine became
the paramount model for delivery of health services in most European
centres. Despite its rapid growth, laboratory medicine met considerable
opposition. For example, conservatives, who clung to the belief that
physicians should be well rounded and versed in the classics, objected
to the specialized and skill-oriented nature of modern clinicians.
Hospitalization and extensive use of diagnostic equipment escalated
costs in medicine. Furthermore, citizens were reluctant to abandon
personal ties to irregular healers until they were convinced that

scientific practitioners were, indeed, more competent than other healers,
and that they were people who could be trusted with personal health
problems.

Several developments in education during the latter part of the
nineteenth century served to appease medicine's detractors and to
cement and extend the control that physicians exercised within hospital
walls. To begin, medical education moved back into the universities
which, according to Magali Larson, paved the way for a professional
monopoly of competence.[11] She argues that the approach taken to produ-
cing scientific knowledge enabled practitioners to produce a commodity
that could be standardized and controlled through commercial market
mechanisms. For example, the products of clinicians' labours were too
intangible to warrant recognition as a commodity in the craft or
industrial sense. For this reason, Larson maintains that *"the producers
themselves have to be produced* if their products or commodities are to
be given distinctive form."[12] The only way that producers can be pro-
duced is through a particular type of cognitive base. In order to
distinguish one type of healing as superior to all others, a group must
lay claim to a cognitive base that is both specific and general at the
same time:

> ...the "best" cognitive basis for a monopoly of
> competence is one which reveals, or activates,
> or maximizes the favourable characteristics of
> a professional market. It must be specific
> enough to impart distinctiveness to the profes-
> sional "commodity"; it must be formalized or
> codified enough to allow standardization of the
> "product" -- which means, ultimately, standar-
> dization of the producers. And yet it must not
> be so clearly codified that it does not allow a

> principle of exclusion to operate: where every-
> one can claim to be an expert, there is no
> expertise. (13)

The cognitive base to which Larson refers, is science.

Clinicians, who possessed scientific training, were advantaged in two ways. First, they could be identified as standardized 'products', thereby distinguishing themselves from 'irregular' healers. Or, in Larson's words:

> What professions obtain from this basic training
> in pure science has no *immediate* bearing upon
> their practice; but the passage through broad
> scientific training puts the future professionals
> through one first phase of effective unification
> and standardization....No less importantly, basic
> scientific training provides a clear principle of
> separation from the exclusion of the "non-standar-
> dized" empirically trained professionals. (14)

Thus, scientific training did not necessarily make university educated doctors more competant as healers, but it did serve to separate them from 'un-produced producers' or quacks.[15]

The second advantage that accrued to university educated clinician was they they automatically became members of privileged scientific groups who monopolized the production of knowledge. And, "in a world where science is the cardinal system of cognitive validation and legitimation," clinicians inherited the supreme source of legitimation for their claims to superiority while simultaneously delegitimating irregular healers:[16]

> In the modern university, which centralizes the
> production of knowledge as well as that of pro-
> ducers, *scientific* educators control and produce
> a constantly changing body of knowledge. The
> cumulative change characteristic of normal
> science makes the passage of aspiring profes-
> sionals through the centers for the standardized

> production of producers *compulsory*, not only be-
> cause of a legislative fiat but "naturally" because
> these centers monopolize new knowledge. (17)

Thus, Larson concludes that scientific education enabled doctors to

determine medical knowledge and to legitimate their monopoly of know-

ledge on the basis of scientific infallibility.[18]

Larson's argument is strengthened by Thomas Kuhn's assessment of

scientific education: "Until the very last stages in the education of

a scientist, textbooks are systematically substituted for the creative

scientific literature that made them possible."[19] The importance of

textbooks for standardizing education is that they exclude divergent

opinions and evidence that scientific theories or paradigms have failed

to explain various phenomena:

> Scientific education makes use of no equivalent
> for the art museum or the library of classics,
> and the result is a sometimes drastic distortion
> in the scientist's perception of his discipline's
> past. More than the practitioners of other
> creative fields, he comes to see it as leading
> in a straight line to the discipline's present
> vantage. In short, he comes to see it as
> progress. (20)

Thus, from Kuhn's point of view, textbooks contain records of scientific

achievements that impart a linear and progressive character to knowledge

while ignoring problems that have not or cannot be solved through

scientific processes of producing knowledge.

He maintains that scientific education acquired these features

during the early modern period, when revolutionary ideas were first

published; when new paradigms or ways of seeing the world led to

coherent and specialized streams of scientific inquiry. Scientists, who

made perceptual transformations in accordance with revolutionary thought

experiments, were able to contribute to specialized journals and texts

that were devoted to articulating new paradigms. As for those who

could not make perceptual leaps, they were denied entry into the

pursuit of scientific truths. To this effect, Kuhn writes:

> But there are always some men who cling to one
> or another of the older views, and they are
> simply read out of their profession, which there-
> after ignores their work. The new paradigm
> implies a new and more rigid definition of the
> field. Those unwilling or unable to accommodate
> their work to it must proceed in isolation or
> attach themselves to some other group. Histori-
> cally, they have often simply stayed in the
> departments of philosophy.... (21)

Thus, monopolies that grew up around journals and textbooks during the

early modern period, served the interests of nineteenth century

clinicians. These new forms of communication, initially having served

to challenge traditional authority, were used to entrench the authority

of modern physicians.

Apart from standardizing medical education, the reformed univer-

sities served other important functions in modern doctors' claims to

superiority and their push for monopolistic powers. Krause believes

that university education lent an aura of respectability to scientific

medical practice. By virtue of long theoretical training, the establish-

ment of a code of ethics, and organized self-policing efforts, university

educated practitioners convinced the public that medicine was "a calling

carried out by morally superior individuals."[22] At the same time, he

reasons, the ideology of professional commitment to public welfare made

it difficult for citizens to take issue with professional practices

without a sense of guilt.[23]

Universities also proved to be useful in terms of reconciling contradictions between professional ideology and the profit motive that was inherent in fee-for-service consulting and attractive hospital appointments. Elliott notes that traditonal boundaries that had set learned professionals apart from commerce began to blur when university officials became more involved with placing their graduates in leadership roles:

> Throughout the second half of the nineteenth century the universities gradually became more concerned that their students should find appropriate places in society. They began to prepare students for the competitive examinations and to show concern about employment opportunities for graduates in the Church and the professions. By the end of the century an employment agency had been established at Cambridge and dons were even beginning to consider the possibility of students entering on a business career. (24)

The universities' competitive examination system and concern with career placements were largely responsible for changing attitudes toward work. It became socially acceptable for practitioners to earn a living, so long as they demonstrated that they had mastered certain skills. Hence, the traditional virtue of cultured gentility carried over, and was fused with the modern value of competence, via the reformed universities. Medical professionals nurtured the idea that they should be paid in order to work rather than work in order to be paid. By the turn of the twentieth century, the service motive was more or less engrained in public consciousness.[25]

EDUCATING THE PUBLIC

Acquiring a distinctive identity through standardized education was one thing, but it did not guarantee that the graduating products

could eliminate competition altogether. Medicine, like other professions

during the formative years, had to create needs that corresponded to

specialists' perceptions of service. Or, in Larson's words, "no amount

of coercion could force a clientel to switch allegiances and seek pro-

fessional services which it did not even know it needed."[26] Thus,

scientific doctors had to educate citizens to recognize that they needed

particular services before demand could justify large-scale public

support for centralized delivery systems.

Cartwright maintains that public awareness of scientific doctors'

superiority was heightened in relation to improvements in transportation

and communication.[27] For example, steam power, efficient postal systems,

and weekly publications, increased the speed at which people became

aware of laboratory inventions and their medical applications. The

story of x-rays is a case in point:

> Röntgen communicated his discovery to the Würzburg
> Physico-Medical Society in a paper published in
> their Proceedings on 28 December 1895. A trans-
> lation by Arthur Stanton appeared in the British
> journal Nature on 23 January 1896. Two days later,
> on 25 January, the Lancet carried photographs of a
> human hand and of a frog made by A. Campbell Swinton
> in his laboratory at 66 Victoria Street, London.
> On 22 February the Lancet published a report from
> Liverpool that an airgun pellet had been localized
> by means of x-rays and successfully removed. (28)

Hence, it was less than two months between the time Röntgen's discovery

was reported in Germany and its first known use for diagnosis in Britain.

The creation of new medical needs was also strengthened by com-

pulsory education. When the majority of people became literate and

learned about achievements in science and its potential to progressively

alleviate human suffering, public confidence in scientific practitioners

was bolstered. Friedson writes that, as a result of mass education, "the public developed knowledge and belief that became more like that of the physician himself and therefore it became more receptive to his work."[29] This idea is reinforced by Reiser's selection of early twentieth century medical anecdotes:

> Physicians in the 1930s reported that patients
> often demanded "an x-ray all over" to evaluate
> their diseases, and were encouraged by a popular
> press that surrounded the activities of medical
> science with an atmosphere of omniscience and
> omnipotence. Sensational news stories could
> prompt a patient to demand his doctor use the
> "most scientific" instruments possible, whether
> or not diagnostically necessary or economically
> prudent....Thus, one day the vice president of
> a big company came in and said, "Send me for an
> electrocardiogram; I want to check up on my
> heart." (30)

Thus, it appears that Illich's notion of 'counterproductivity' and Innis' idea that modern people 'demand the miraculous', were evident in modern medical practice at an early date; as soon as the public had learned to need the services of scientific doctors.

PHYSICIANS CONSOLIDATE THEIR INTERESTS

Because the production of doctors was a long and expensive process, and because it took approximately six decades for a heterogeneous public to become a homogeneous and 'properly educated' consuming group, university educated doctors required some insurance that their interests would be protected. Larson notes that this insurance came through state regulatory channels:

> In a market situation, the guarantee against risks
> incurred tends to take the form of monopoly, or at
> least of special protection by public authorities.

> In this case, the nature of the products and the
> state of their markets were such that only the
> state, as the supreme legitimizing and enforcing
> institution, could sanction the modern professions'
> monopolistic claims of superiority for their
> "commodities". The attitude of the state toward
> education and toward monopolies of competence is
> thus a crucial variable in the development of the
> professional project. (31)

As was discussed with reference to Pasteur's research, the attitude of

governments toward supporting scientific enterprise was most favourable.

Thus, university educated physicians, through their association with

science and/or the dominant system or producing and legitimating know-

ledge, won monopolies of competence from regional governments.

While late nineteenth century legislation varied from region to

region, scientific practitioners, regardless of location, acquired

diagnostic and prescriptive powers. This mean that they and *only* they

could determine the nature of illnesses and appropriate treatments.[32]

These powers greatly enhanced doctors' control within and beyond

hospital walls, in ways that, according to Larson, took the "form of

arbitrary exclusive practices against other practitioners."[33] For

example, apothecaries* were included in the professional hierarchy while

herbalists, who performed similar tasks, were driven underground into

urban slums or the countryside.[34]

Not only did diagnostic and prescriptive powers enable doctors to

eliminate competing practitioners, it also provided the means whereby

they could control the division of labour within a growing medical hier-

---

* By the twentieth century, apothecaries were called pharmacists,
  druggists or chemists.

archy. Again, with reference to the apothecaries, physicians elected to incorporate this group into centralized medicine because the apothecaries guild had proved competency through written examinations and had won favour with government officials. Once included, however, apothecaries lost their autonomy as healers and were reduced to an auxillary role of dispensing drugs to patients who had been diagnosed and referred with prescription in hand. Hence, the physicians' monopoly of knowledge enabled them to control the growing number of para-professionals such as nurses and laboratory technologists, as well as channeling patients through the system in a way that assured the maintenance of their central position of power.

During the years that scientific practitioners consolidated their authority, territorial disputes and public purgings of quacks were commonplace.[35] But, by the turn of the twentieth century, doctors were indisputably the high priests of centralized medical delivery systems in European cities. Krause contends that para-profesisonal and lay resistance to the doctors' monopolistic powers was attenuated by the combined force of late nineteenth century legislation and increased complexity in specialized scientific knowledge: "Domination is perpetuated through the two processes of insulation from observability and of political action to combat legislation which would charge the present degree of insulation."[36] Thus, doctors, through their affiliation with science, acquired absolute authority to determine what is worth knowing about health and illness and how medical problems are to be solved.

Their insulation from public intrusion was established, and is maintained, on the basis of complex and centralized systems of producing

knowledge that exclude non-scientists from commenting on and critiquing
professional action. To this effect, Johnson writes:

> In all service-related matters the occupational
> community is believed to be wiser than the lay-
> man. From such beliefs the occupational commu-
> nity derives an ethical sense of full responsi-
> bility. No group is more morally outraged when
> laymen put forward opinions on occupationally
> related matters. (37)

And, as was suggested in Kuhn's analysis of scientific education, doctors
are predisposed to see their work in a distorted or infinitely progres-
sive light, thus making it difficult for them to assess the limitations
of their knowledge. In the event that scientists fail to internalize
sanctioned beliefs, they are 'written out' of the profession and/or
delegitimized in the eyes of their colleagues and the public. In the
case of consulting practitioners, professional self-policing mechanisms
usually take the form of withdrawing hospital admitting privileges,
closing informal referral channels, or revoking licences to practice.

By the turn of the twentieth century, medicine was monopolized into
centralized systems within European cities, but it was not standardized
across regional or national boundaries. For the most part, the doctors'
authority was limited to centres where university medical schools were
located. But, as mobility increased with improvements in long distance
forms of transportation and communication, the spatially biased ideas
of national and international medicine were realized.

The standardization of medicine across regional and national
boundaries was not an expressed objective of physicians. In fact, they
preferred regional autonomy and fought against pressures to expand.[38]

But, national health programs began in 1911, when the German government

introduce National Health Insurance,[39] and the first international

medical organization was established as early as 1907 in Paris.[40]

Cartwright argues that while physicians opposed to governmental inter-

ference, they were obliged to decentralize in location because of needs

that arose in relationship to increased mobility:

> The first contact of one community with another
> may bring disaster. Plague, syphillis, cholera,
> and probably virulent smallpox have all reached
> Western Europe from exotic sources. Such has
> been the case since the first ships of the
> Mediterranean civilization made contact with
> Africa and the East. An epidemic on a small
> slowly-moving sailing vessel tended to die out
> during the voyage...but the rapid steamer
> increased the risk of carrying infection from
> one land to another. (41)

Thus, apart from transmitting information and people, rapid forms of

transportation increased the spread of disease, from region to region,

and country to country.

The science of epidemiology, and regional, national and international

health organizations grew in response to the need to protect communities

against communicable diseases. As a result, drugs, preventive programs,

and treatment protocol have been progressively standardized.[42] Even

though medical education and practice have retained many regional and

national traits, a patient can receive essentially the same kind of

treatment in cities and villages throughout the industrialized Western

world, and often in the so-called developing nations.[43]

FOOTNOTES TO CHAPTER SIX

[1] Erwin Ackerknecht, A Short History of Medicine (New York: Ronald Press, 1968), p. 158.

[2] Ibid., p. 161.

[3] Ibid., p. 160.

[4] Ibid., p. 180.

[5] Ibid., p. 177.

[6] Ibid., p. 164.

[7] Ibid., p. 167.

[8] Ibid., p. 167.

[9] Stanley Reiser, Medicine and the Reign of Technology (Cambridge: Cambridge University, 1978), pp. 161-162.

[10] Ibid., p. 152.

[11] Magali Larson, The Rise of Professionalism (Berkeley: University of California, 1977), pp. 14-18.

[12] Ibid., p. 14.

[13] Ibid., p. 14.

[14] Ibid., p. 34.

[15] "Charlatanism and quackery are, in this sense, a creation of professionalism and not the cause of it...periods in which it is claimed that charlatanism is rife and needs to be stamped out are just those periods when an occupation is attempting to establish or struggling to maintain a monopolistic position." Terence Johnson, Professions and Power (London: Macmillan Press, 1972), p. 57.

[16] Magali Larson, Rise, p. 34.

[17] Ibid., p. 34.

[18] Ibid., p. 34.

[19] Thomas Kuhn, The Structure of Scientific Revolutions (Chicago: University of Chicago, 1970), p. 165.

[20] Ibid., p. 167.

[21]Ibid., p. 19.

[22]Elliott Krause, Power and Illness (New York: Elsevier North-Holland, 1977), p. 36.

[23]Ibid., p. 37.

[24]Phillip Elliott, The Sociology of the Professions (London: Macmillan, 1972), p. 51.

[25]Ibid., p. 52.

[26]Magali Larson, Rise, p. 14.

[27]Frederick Cartwright, A Social History of Medicine (London: Longman Group Ltd., 1977), p. 185.

[28]Ibid., p. 185.

[29]Eliot Friedson, Profession of Medicine (New York: Harper and Row, 1970), p. 21.

[30]Stanley Reiser, Reign, p. 163.

[31]Magali Larson, Rise, p. 15.

[32]"The diagnostic relationship is used as a control mechanism." Terence Johnson, Professions, p. 57.

[33]Magali Larson, p. 35.

[34]Thus, as Friedson points out, "the differences between the 'paramedical' and the 'quack' do not necessarily arise from what each does or how he does it but from the relations each has to the dominant profession." Refer to Eliot Friedson, Profession, p. 49.

[35]Of course, public purgings of quacks are a part of contemporary medical practices. Controversies surrounding the use of 'unorthodox' cancer treatments represent interesting examples of this phenomenon.

[36]Elliott Krause, Power, pp. 39-40.

[37]Terence Johnson, Professions, pp. 56-57.

[38]Frederick Cartwright, Social History, p. 173.

[39]Ibid., p. 171.

[40]Ibid., p. 186.

[41]Ibid., pp. 185-186.

[42]Ibid., p. 186.

[43]For an interesting account of how treatment is standardized throughout the Western world, refer to Lucien Israël, Conquering Cancer, translated by Joan Pinkham (New York: Random House, 1978).

PART THREE: CONCLUSION

As the steps toward medicine's modernization were discussed in the
preceding chapters, it became increasingly evident that modernization
is synonymous with monopolization.   In many respects, doctors assumed
their superordinate positions in modern health care systems in ways that
parallel the institutionalization of healing by favoured groups in other
empires throughout the history of Western civilization.   In short,
modern doctors monopolized resources that enabled them to create and
satisfy health related needs.

Printed forms of communication represent the first and, in my
opinion, most critical resources that nineteenth century European doctors
monopolized.   Scientific journals, associated with the Commonwealth of
Learning, medical textbooks, and written examinations were indispensable
tools that were used by medical reformers to produce official medical
knowledge.   Through these new forms of communication, reformers developed
a complex system of writing that distinguished 'true' knowledge from
pseudo-science, religion, and common knowledge.   In this sense, printed
journals, texts and examinations acquired functions that were analogous
to those performed by traditional sacred texts.   Whether information was
written mechanically on paper or by hand on tablets, papyrus, or
parchment, modern and traditional forms of written communication served
to shape the molds for medical knowledge while, simultaneously, serving
the interests of the knowledge potters.

The second cluster of crucial resources that modern doctors mono-
polized came via the hospital revolution.   Nineteenth century clinics

became, by the turn of the twentieth century, highly controlled environments in which patients participated in diagnostic and prescriptive rituals. By virtue of monopolizing the production of knowledge, doctors also acquired control over its distribution. Prescriptive and diagnostic powers enabled them to oversee medical laboratories, pharmacies, and a growing hierarchy of para-professional health specialists. Their centralized positions within clinical institutions enabled them to direct both the flow of patients, as well as the use of health technologies. Thus, doctors and hospitals became analogous to traditional priests and medieval cathedrals or ancient temples. The high priests of knowledge, be they scientists, diviner or âshipu-priests, or officials in the Imhotep diety, came to preside over hospital or temple-based rituals associated with divining the sources of illness and prescribing sanctioned sources of satisfaction.

Given that modern doctors monopolized medical resources in ways that parallel the institutionalization of healing in traditional empires, it is reasonable to expect that the nature of their authority would be analogous to that of traditional healers. And, to a certain extent, this is true. For example, both traditional and modern doctors derived their authority on the basis of demonstrated and imputed competence. The demonstrated component of authority rests on subjective evaluations and pragmatic actualization of superior medical knowledge. It is similar to the concrete nature of the Shaman's authority in pre-literate societies. Imputed authority, on the other hand, was conferred to institutional healers on the basis of objective knowledge -- information

that was divorced from subjective experience by virtue of complex writing systems.[1]

In terms of demonstrated authority, traditional healers employed dietetic and herbal therapies, quarantine measures, surgery, philosophical counsel, and other treatments that were proven to be effective in a pre-literate or pragmatic sense. Similarly, modern surgeons demonstrated superior skills when they began to apply Harvey's and Vesaluis' discoveries, while nineteenth century clinicians proved to be vastly superior to other physicians, after laboratory scientists isolated causes and cures for numerous diseases. The fact that traditional healers saw diseases to be symptoms of divine wrath while modern clinicians regarded diseases in light of microscopic organisms, is neither here nor there. In terms of demonstrated authority, the ultimate criterion for legitimation rested with subjective appraisals of therapeutic effectiveness.[2] Therefore, despite different theoretical orientations, traditional and modern healers demonstrated their competence in similar ways.

Traditional and modern practitioners also possessed knowledge that could not be demonstrated in a pragmatic fashion. Therefore, a component of their authority was derived from imputed wisdom. By virtus of monopolizing the production of written knowledge, favoured groups of healers acquired state or religious sanctions to control the distribution of medical resources. Imputed knowledge and power was based on signs of symbols that made sense within exclusive domains of literate healers and/ or individuals who had been elected as scientists. It did not necessarily make sense in subjective terms.

It was this imputed component of authority that created possibilities for, in Illich's words, manipulation, and, in Innis' terms, the rigidification of power. For example, Egyptian priests were absolved from responsibility when their treatments resulted in further impairment or death to a patient. This was the case so long as they had followed, faithfully, written codes of knowledge. This same principle applied to modern medical practice. The burden of proof in scientific medicine rests with the rules that govern the production of scientific knowledge. Written codes of knowledge became both the basis of treatment protocol as well as its legitimation. Thus, the written or imputed dimension of official medical authority has posed a persistent regulatory dilemma in both traditional and modern medical systems.

Thus far, finding analogies between the nature of traditional healers' authority and that of modern practitioners, has been a relatively simple task. Now, however, I have reached a point where parallels between traditional and modern medicine begin to diverge. This tangential point arises in further consideration of the imputed component of medical authority. Therefore, I shall embark on a new course, where I endeavour to show that the problematic nature of imputed authority is magnified in modern medicine because of the bias of printed communication.

A significant feature of traditional monopolies of knowledge in medicine is that, while official healers dominated medicine, their powers did not cancel the possibility that alternative ways of generating and satisfying health related needs could continue to thrive at some level of culture. For example, Babylonian, Egyptian, and Christian priesthoods were recognized as supreme sources of medical knowledge.

On the basis of complex systems of writing, these groups generated

belief systems that determined the way that health and illness was

thought about and dealt with. But, at the same time, asû practitioners,

surgeons, barbers, herbalists, rootcutters, and other types of unofficial

healers, not to mention a high degree of self and mutual care, represen-

ted alternative forms of medical knowledge. In other words, competition

was endemic to traditional systems of authority.

Modern medical systems, on the other hand, are part of industrial

empires that were born and grew as a result of scientific progress. In

this way, science and the notion of progress, became the dominant belief

system in modern Western nations. By way of clarifying what is meant

by the term 'dominant belief system', it is useful to include Morgen-

thau's description of the function that science serves in industrialized

cultures:

> ...science, by searching for and transmitting
> certain kinds of knowledge, conveys inevitably
> certain valuations about the meaning of the
> reality with which it is concerned. By dis-
> tinguishing not only truth from error but also
> the truth worth knowing from the one that is
> not, science provides man with certain stan-
> dards of orientation that guide him in his
> journey through the otherwise bewildering
> variety of experiences. Thus through the
> distinctions it must make, science conveys not
> only objective knowledge but also the image of
> a meaningful world worth knowing, selected
> from among the many available ones. (3)

A key idea, expressed in this passage, is that science is 'selected'

out of many ways of defining and solving problems. Similarly, tradi-

tional belief systems were 'selected' from a host of other possibilities.

However, these selection processes, in terms of the monopoly concept,

were not necessarily conscious choices. Rather, dominant belief systems were shpaed by the biases of communications media and the groups who controlled them.

It is this very point that distinguishes modern medicine from traditional healing programs. Scientific medicine was 'selected' through the bias of printing processes that lent a standardized character to knowledge: This was *not* a possibility in traditional empires. As was discussed in Chapter Six, the selection of science, as a model for medical practice, simultaneously eliminated competition: "A tendency to monopoly by *elimination* of competing 'products' was inherent in the process of standardization."[4] Because of this factor, competing or balancing ways of knowing about health and disease, are less likely to arise in industrialized cultures.

In conclusion, modern monopolies are more rigid and more firmly entrenched than comparable monopolies in traditional empires. Scientific doctors exercise a radical monopoly over healing in industrial societies because the bias of printed communication enables them to standardize the production and satisfaction of health care needs in a way that is unprecedented in the history of Western medicine. Because of this bias, the demonstrated component of their authority ceases to function as a check against manipulation, which is inherent to the imputed dimension of professional power. In other words, when professional service is experienced as a failure in a subjective sense, there are no convivial channels through which consumers can generate different needs and sources of satisfaction.[5] Short of seeking alternative sources of health care on

the margins of industrialized cultures, patients are left with the choices of submitting to official medical care or being abandoned altogether.

FOOTNOTES TO PART THREE: CONCLUSION

[1]Dennis Wrong defines competent authority as "a power relation in which the subject obeys the directives of the authority out of belief in the authority's superior competence to decide which actions will best serve the subject's interests and goals." Refer to Dennis Wrong, Sceptical Sociology (New York: Columbia University, 1976), p. 197. Friedson accepts this definition but stresses the point that a physician's competence is largely divorced from subjective evidence. Professional authority is "*imputed* rather than demonstrated." Refer to Eliot Friedson, "The Impurity of Professional Authority". In Institutions and the Person, edited by Howard Becker, Blanche Geer, David Riesman and Robert Weiss (Chicago: Aldine Pub., 1968), p. 30.

[2]Rothstein argues that, prior to modernization, the source of conflict, in medicine, stemmed from the demonstrated component of authority. That is, the impetus to change treatment protocol was based on the demonstration of a therapy's effectiveness or ineffectiveness. In modern medicine, however, conflict can usually be traced to treatments that contradict accepted scientific paradigms. Refer to William Rothstein, American Physicians in the Nineteenth Century (Baltimore: Johns Hopkins University, 1972).

[3]Hans Morgenthau, Science: Servant or Master? (New York: New American Library, 1972), p. 16.

[4]Magali Larson, The Rise of Professionalism (Berkeley: University of California, 1977), p. 14.

[5]The highly publicized case of Chad Green illustrates how difficult it is to receive unorthodox treatments in industrial societies. Chad Green's parents were tried on kidnapping charges when they removed their son from a Boston hospital where he was receiving chemotherapy treatments for leukemia. They wanted their son to receive metabolic therapy, an unorthodox and controversial vitamin treatment, but a Massachusetts Supreme Court ruled that chemotherapy is the *only* allowable therapy for Chad. Refer to Mike Culbert, "Court Denies Chad Green B_{17} Care, Family Flees to Mexico", The Choice, 5:1 (1979):1-5.

CONCLUSION TO THE THESIS:

ASSESSING THE UTILITY OF THE MONOPOLY CONCEPT

For the most part, this thesis owes its structure to Innis' approach to the problem of knowledge and authority in Western civilization. Relationships that he discovered between communication, knowledge and monopoly led me to examine the role that communications media played in traditional medical systems. Prior to broaching the subject with a communications perspective, I assumed that all traditional healing programs were the same, and that the healing arts were, somehow, untainted by problematic power dynamics that are featured in modern medicine. But, when I assembled selected snips of medical history and sociology under headings that matched Innis' historical epochs, I began to perceive that traditional healing programs were unique, and that each one was characterized by systems of authority that stemmed from the biases of communication.

In addition to lending a cohesive structure to a diverse selection of historical and sociological literature, Innis' ideas were useful in terms of revealing another dimension of understanding to the problem of authority in traditional medicine. Privileged groups, who controlled the instruments of communication, acquired the authority to determine how medical problems could be defined and solved. Furthermore, on the basis of written or imputed information, they derived legal and ideological powers to persuade others that their knowledge was superior, even when they failed to demonstrate competence in a subjective sense.

Given this understanding of the nature of traditional authority, I was encouraged to examine the growth of modern medicine in view of forms of communication that developed in relationship to early printing ventures. Here again, it was possible to trace the imputed component

of professional authority to the written word. I found that, through their key positions in early modern printing ventures, reformers came to determine the character of 'true' medical knowledge. The bias of print technology, which governed the production of learned journals, textbooks, and written examinations shaped the contours of knowledge, well in advance of nineteenth century demonstrations of the superiority of scientific medical practice.

Innis' ideas regarding the bias of communication also suggested why and how potentially convivial medical reforms were converted into manipulatory social arrangements. As was discussed in Chapter Two, Illich maintains that early applications of science to solving public health problems, were convivial. That is to say, preventive measures, such as water purification and innoculation programs, did not require strict professional control to be successful. By the same token, the popular press conveyed information in a fashion that made scientific discoveries intelligible to everyone. But, by the turn of the twentieth century, scientific knowledge and medical practice were institutionalized and sealed from public scrutiny.

This transformation appears to have stemmed from the bias of printed communication. First, in response to papal censorship, members of learned societies developed a complex written language that concealed revolutionary ideas from the uninitiated. Second, the mechanical bias of printing lent a standardized character to scientific knowledge that enabled doctors to educate themselves in a way that eliminated competing practitioners. And third, the progressive nature of scientific know-ledge captured the imaginations of government officials, entrepreneurs,

and the public. Modern doctors, in effect, capitalized on their affilia-
tion with science, which became the leading productive force in modern
Western nations. Thus, print technology, and related psychological,
social, political, and economic developments, can be seen to have trans-
posed potentially liberating medical reforms into rigid systems of power.

While Innis' ideas pointed to possible sources of medical authority,
Illich's writings were useful in terms of showing how this authority was
maintained and extended by the modern medical profession. His concept
of radical monopoly led me to examine the imputed component of doctors'
authority in light of reformed universities and hospitals. The socio-
logical literature was rich with material to support Illich's premise
that, when clinical care became an extension of university laboratories,
science became the master of modern medicine while alternative approaches
to healing were delegitimated. The modernization of universities and
hospitals, into highly centralized institutions for the production and
distribution of standardized knowledge, explains why the generation and
satisfaction of medical needs is subject to radical professional domina-
tion. Thus, I concluded that, even while the nature of traditional and
modern medical authority is analogous, modern doctors monopolized
healing in a way that was unprecedented in medical history.

While I found Illich's ideas helped me to adapt Innis' communica-
tions perspective to an examination of modern medical authority, I
suspect that I would have arrived at the same conclusion in the absence
of Illich's radical monopoly concept. In fact, if I were to undertake
this same study again, I would include Illich as a minor source only,
and I would develop Innis' knowledge monopoly concept more fully. In

particular, I would include more of Elizabeth Eisenstein's research which is, in my opinion, an invaluable complement to Innis' ideas regarding the bias of printed communication.

However, in all fairness to Illich, his radical monopoly concept would have been infinitely more useful if I had continued to discuss modern medicine with respect to twentieth century developments in air travel and electronic and satellite communications. For example, if one accepts the premise that monopolies in modern medicine were founded on the bias of printed communication, it would be interesting to know if more recent forms of communication have served to extend, or to check professional domination. Illich, I believe, would argue that, while centralized delivery systems have decentralized in location during the twentieth century, the fundamental nature of professional authority remains secure. Clearly, this is an area for further research.

Another area for future consideration came to mind while examining classical Greek medicine. It seems to me that medical reformers, who are currently designing and implementing alternative medical programs, would benefit by an in-depth analysis of the structure of classical medicine. In my opinion, alternative medicine in industrial societies, is alternative in name only. Because of rigid alignments between universities, clinics, private enterprise, and government funding and regulatory bodies, competing programs* are absorbed into the dominant system, thereby losing autonomy and the conditions that are required for them to flourish as 'truly' alternative sources of satisfaction.

---

*   Such as holistic medicine, women's health collectives, 'barefoot doctor' clinics, lay counselling services, and the like.

Finally, the monopoly concept, as drawn from the writings of Harold Innis and Ivan Illich, was a useful guide to understanding the nature of authority in modern medicine. By leading me to examine the birth of modern medicine, in light of developments in communication, it pointed to a plausible source of doctors' authority, as well as how their powers were maintained and extended. These findings added another dimension of understanding to material from medical histories and sociological analyses of professional authority.

The monopoly concept also enabled me to step outside of a morass of details, concerning medical practice, and to examine the nature of professional authority from further afield. It helped me to sidestep a current and fashionable tendency to blame 'self-seeking doctors' and/ or 'gullible patients' for problematic power dynamics that exist in medical practice. Instead, the concept suggests that *both* the producers and consumers of modern medicine are confined by the way that knowledge was monopolized during the nineteenth century.

BIBLIOGRAPHY

Ackerknecht, Erwin. A Short History of Medicine. New York: Ronald
        Press, 1968.

_____ . Medicine at the Paris Hospital, 1794-1848. Baltimore: Johns
        Hopkins, 1967.

Allentuck, Andrew. Who Speaks for the Patient? Don Mills, Ontario:
        Burns and MacEachern, 1978.

Bandler, Richard and John Grinder. Structure of Magic, 2 vols. Palo
        Alto, Calif.: Science and Behavior Books, 1975 and 1976.

Barnhart, Rick. "Getting a Fix: The U.S. Drug Monopoly", in Prognosis
        Negative, David Kotelchuck, ed., pp. 107-121. New York: Vintage
        Books, 1976.

Ben-David, Joseph. The Scientist's Role in Society. Englewood Cliffs,
        N.J.: Prentice-Hall, 1971.

Bloom, Samual and Robert Wilson. "Patient-Practitioner Relationships",
        in Handbook of Medical Sociology, Howard Freeman, Sol Levine and
        Leo Reeders, eds., pp. 315-339. Englewood Cliffs, N.J.: Prentice-
        Hall, 1972.

Bullough, Vern. The Development of Medicine as a Profession. New York:
        Hafner Publishing, 1966.

_____ and Bonnie Bullough. "A Brief History of Medical Practice", in
        Medical Men and Their Work, Eliot Friedson and Judith Lorber, eds.,
        pp. 86-102. Chicago: Aldine Atherton, 1972.

Cairns, John. Cancer, Science and Society. San Francisco: W.H.
        Freeman, 1978.

Carey, James. "Canadian Communication Theory: Extensions and Interpre-
        tations of Harold Innis", in Studies in Canadian Communications,
        Gertrude Robinson and Donald Theall, eds., pp. 27-59. Montreal:
        McGill University, 1975.

_____ . "Communication and Culture", Communication Research, 2:2 (1975):
        173-191.

Cartwright, Frederick. A Social History of Medicine. London: Longman
        Group Ltd., 1977.

Chubin, Daryl and Kenneth Struder. "The Politics of Cancer", Theory and
        Society, 6:1 (1978):55-74.

Creighton, Donald. "Harold Adams Innis -- An Appraisal", in Culture, Communication and Dependency, W.H. Melody, Liora Salter and Paul Heyer, eds., pp. 13-25. Norwood, N.J.: Ablex Publishing, 1981.

Culbert, Mike. "Court Denies Chad Green B_{17} Care, Family Flees to Mexico", The Choice, 5:1 (1979):1-5.

Current Biography, 13th ed. (1969-70), s.v. "Illich, Ivan", pp. 217-220.

Derry, T.K. and Trevor Williams. A Short History of Technology. Oxford: Oxford University, 1961.

Dolan, John and William Adams-Smith, Health and Society. New York: Seabury Press, 1978.

Eisenstein, Elizabeth. The Printing Press as an Agent of Change. Cambridge: Cambridge University, 1979.

Elliott, Phillip. The Sociology of the Professions. London: Macmillan, 1972.

Ellul, Jacques. The Technological Society. New York: Knopf, 1967.

Flexner, Abraham. Medical Education in Europe. New York: Carnegie Foundation, Bulletin No. 6, 1912.

Foucault, Michel. The Birth of the Clinic, A.M. Sheridan, translator. New York: Vintage Books, 1975.

_____. Madness and Civilization, Richard Howard, translator. New York: Vintage Books, 1973.

_____. Power/Knowledge, C. Gordon, L. Marshall, J. Mepham and K. Soper, translators. New York: Pantheon Books, 1977.

Friedson, Eliot. Profession of Medicine. New York: Harper and Row, 1970.

_____, ed. The Professions and Their Prospects. Beverly Hills: Sage Publications, 1971.

_____. "The Impurity of Professional Authority", in Institutions and the Person, Howard Becker, Blanche Geer, David Riesman and Robert Weiss, eds., pp. 25-34. Chicago: Aldine Pub., 1968.

_____. "Client Control and Medical Practice", Amer. Jour. Soc. 65 (1960):374-382.

Garrison, Fielding H. An Introduction to the History of Medicine. 4th ed., 1929 (Reprint, Philadelphia: Saunders, 1966).

Goode, William J. "Community within a Community: The Professions", Amer. Soc. Rev. 22 (1957):194-200.

_____. "Encroachment, Charlatanism and the Emerging Profession: Psychology, Sociology and Medicine", Amer. Soc. Rev. 25 (1960): 902-914.

Habermas, Jürgen. Toward a Rational Society, Jeremy Shapiro, translator. Boston: Beacon Press, 1970.

Hall, Oswald. "The Informal Organization of the Medical Profession", Canad. Jour. of Eco. and Polit. Sci. 12 (1946):30-44.

_____. "The Stages of a Medical Career", Amer. Jour. Soc. 53 (1948): 327-336.

Hall, Richard H. "Professionalization and Bureaucratization", Amer. Soc. Rev. 33 (1968):92-104.

Heyer, Paul. "Michel Foucault and the History of Communication". Unpublished manuscript, Department of Communication, Simon Fraser University, 1981.

Horrobin, David. Medical Hubris. Montreal: Eden Press, 1977.

Illich, Ivan. Celebration of Awareness. New York: Doubleday, 1970.

_____. Deschooling Society. New York: Harper and Row, 1971.

_____. Tools for Conviviality. New York: Harper and Row, 1973.

_____. Energy and Equity. New York: Harper and Row, 1974.

_____. Limits to Medicine. New York: Pelican Books, 1978.

_____. Toward a History of Needs. New York: Pantheon Books, 1977.

_____. "Disabling Professions", in Disabling Professions, Ivan Illich ed., pp. 6-40. London: Marion Boyars, 1977.

Innis, Harold A. A History of the Canadian Pacific Railway. London: King, 1923.

_____. The Fur Trade in Canada. London: Oxford University, 1930.

_____. Cod Fisheries: The History of an International Economy. New Haven, Ct.: Yale University, 1940.

_____. Essays in Canadian Economic History. Toronto: University of Toronto, 1956.

_____. Empire and Communications. Toronto: University of Toronto, 1972.

_____. The Bias of Communication. Toronto: University of Toronto, 1977.

_____. "Concept of Monopoly and Civilization", Explorations 3 (1954): 89-95.

Israël, Lucien. Conquering Cancer, Joan Pinkham, translator. New York: Random House, 1978.

Johnson, Terrence. Professions and Power. London: Macmillan Press, 1972.

King, Lester S. The Growth of Medical Thought. Chicago: University of Chicago, 1963.

Krause, Elliott. Power and Illness. New York: Elsevier North-Holland, 1977.

_____. The Sociology of Occupations. Boston: Little, Brown and Co., 1971.

Kuhn, Thomas. The Structure of Scientific Revolutions. Chicago: University of Chicago, 1970, revised ed.

Kuhns, William. The Post-Industrial Prophets: Interpretations of Technology. New York: Weybright and Talley, 1971.

Larson, Magali. The Rise of Professionalism. Berkeley: University of California, 1977.

Laski, H. "The Decline of the Professions", Harpers 11 (1935):656-657.

Leff, S. and Vera Leff. From Witchcraft to World Health. New York: Macmillan Co., 1958.

Leiss, William. The Limits to Satisfaction: An Essay on the Problem of Needs and Commodities. Toronto: University of Toronto, 1976.

Lieberman, Jethro. The Tyranny of the Experts. New York: Walker and Co., 1970.

Margotta, Roberto. The Story of Medicine. New York: Golden Press, 1968.

Mendelsohn, Robert S. Confessions of a Medical Heretic. Chicago: Warner Books, 1979.

Mitford, Jessica. The American Way of Death. New York: Simon and Schuster, 1978.

Moore, Wilbert E. The Professions: Roles and Rules. New York: Russel Sage Foundation, 1970.

Morgenthau, Hans. Science: Servant or Master? New York: New American Library, 1972.

O'Malley, C.D., ed. The History of Medical Education. Berkeley: University of California, 1970.

Paracelsus. Selected Writings, Norbert Guterman, ed., Bollingen Series XXVIII. Princeton: Princeton University, 1969.

Parker, Ian. "Innis, Marx, and the Economics of Communication: A Theoretical Aspect of Canadian Political Economy", in Culture, Communication and Dependency, W.H. Melody, Liora Salter and Paul Heyer, eds., pp. 127-143. Norwood, N.J.: Ablex Publishing, 1981.

Phillips, E.D. Greek Medicine. London: Thames and Hudson, 1973.

Pringle, Patrick. The Romance of Medical Science. London: George G. Harrop and Co., 1948.

Puschmann, Theordor. A History of Medical Education. New York: Hafner, 1966, facsimile of 1891 ed.

Radin, Paul. The World of Primitive Man. New York: E.P. Dutton and Co., 1971.

Reader, W.J. Professional Men. New York: Basic Books, 1966.

Reiser, Stanley. Medicine and the Reign of Technology. Cambridge: Cambridge University, 1978.

Rothstein, William. American Physicians in the Nineteenth Century. Baltimore: Johns Hopkins University, 1972.

Salter, Liora. "'Public' and Mass Media in Canada: Dialectics in Innis' Communications Analysis", in Culture, Communication and Dependency, W.H. Melody, Liora Salter and Paul Heyer, eds., pp. 193-207. Norwood, N.J.: Ablex Publishing, 1981.

Scarborough, John. Roman Medicine. Ithaca, N.Y.: Cornell University 1969.

Sheridan, A.M. Michel Foucault: The Will to Truth. London: Tavistock, 1980.

Shryock, Richard H. Medical Licensing in America, 1650-1965. Baltimore: Johns Hopkins, 1967.

_____. The Development of Modern Medicine. New York: Knopf, 1947.

_____. _Medicine in American History_. Baltimore: Johns Hopkins University, 1966.

Sigerist, Henry. _A History of Medicine_. London: Oxford University, 1961.

Singer, Charles and A.E. Underwood. _A Short History of Medicine_. London: Oxford University, 1962.

Somers, A. _Hospital Regulation: The Dilemma of Public Policy_. Princeton: Princeton University, 1969.

Sontag, Susan. _Illness as Metaphor_. New York: Vintage Books, 1979.

Stevens, Rosemary. _American Medicine in the Public Interest_. New Haven, Ct.: Yale University, 1971.

Vollmer, Howard M. and D.L. Mills. _Professionalization_. Englewood Cliffs, N.J.: Prentice-Hall, 1966.

Wilensky, Harold. "The Professionalization of Everyone", _Amer. Jour. Soc._ 70 (1964):137-158.

Williams, Guy. _The Age of Agony_. London: Constable and Co., 1975.

Wrong, Dennis. _Sceptical Sociology_. New York: Columbia University 1976.

Zola, Irving. "Healthism and Disabling Medicalization", in _Disabling Professions_, Ivan Illich, ed., pp. 41-68. London: Marion Boyars, 1977.