

The Proceedings  
of the  
9th Annual

# HISTORY OF MEDICINE DAYS

FACULTY OF MEDICINE  
THE UNIVERSITY OF CALGARY



ΑΝΙΣΤΑΤΕ ΤΑ ΑΡΧΑΙΑ  
ΙΝΑ ΣΗΒΗΑΗΤΕ ΤΑ ΚΑΙΝΑ

March 17<sup>th</sup> and 18<sup>th</sup>, 2000  
Health Sciences Centre  
Calgary, AB

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# Contents

<b>Participating Students and their Universities .....</b>	<b>iv</b>
<b>Preceptors and their Universities .....</b>	<b>vi</b>
<b>Preface and Acknowledgements .....</b>	<b>viii</b>
<b>Presentations:</b>	
History of Medicine at Canadian Medical Schools.....Ivan Diamond.....	1
Advanced Preventive Medicine in the Bible.....Tony Truong .....	8
Biblical and Talmudic Medicine: The Life and Times of a <i>Rophe</i> .....Jose Nazareno .....	14
Contraception in the Ancient Times.....Justyna R. Sarna.....	18
Death and Dying in Tibet .....	Bijon Das .....23
Evolution of the Western Attitude Towards Death: From the Middle Ages to the Present .....	Marilyn Zeman.....28
Couching for Cataract: Its Rise and Fall .....	Noel Corser .....35
A Rosebud by any other Name: The History of Cleft Lip and Palate Repair .....	Sharon Kim .....42
William Harvey (1578-1657): The Discovery of the Circulation of the Blood .....	Mohammad I. Zia.....59
The Barber-Surgeons of London 1540-1745.....	Jim Capstick.....64
Sir Isaac Newton: What he meant to Ophthalmology .....	Gurviner Dhatt .....81
"No-one can Diagnose Typhoid at First" (Sir William Jenner, 1877) .....	Gregory McLoughlin .....85
The Legacy of Gall's Organology on Modern Neuropsychiatric Inquiry in the 21st Century .....	Peter Giacobbe .....92
The Cold War is Over: A Time to put Soviet Psychiatry into Context .....	Benjamin Barankin .....100

EMDR: The Making of a Psychotherapy .....	Steve Cohen .....	109
The Case of the Body Snatchers.....	Anna M. Mayer.....	120
Masturbation: A Disease of the Past. Does the Physician Open Doors to all Concerns? .....	Francesco Mulé.....	127
Medicine in Ancient China: The Impact of Religion and Philosophy on Health Promotion.....	Desiree A. Teoh .....	131
Medical Westernization in China and the the Peking Union Medical College .....	Daniel Heng .....	137
Alcohol: Its Past and Present Role in the Health of Native Communities.....	Peter Montesano.....	142
Hurcules: A Metaphor for Illness .....	Michael Eng.....	148
Metaphors that Heal: Magic, Moon and Military Metaphors of Illness .....	Mony Singh.....	154
Birth Control and the Physician: The Physician's Position in the Bedrooms of the Nation .....	Kimberly Liu.....	160
The Ethics of Aids Research in the Developing World and the Transformation of Science in Modern Medicine.....	Raymund Yong .....	167
The War on Aids: A Justified Battle? .....	Sachin Pendharkar .....	180
How do Beliefs Shape Attitudes Towards .....	Bhavna Bali & Baharak Tabarsi .....	188
The Patient in the Poetry of Physicians of the 20th Century and the Value of Poetry to Medical Historians .....	Colleen O'Brien.....	193
From Dr. James Kildare to Dr. John Carter: The History of Medicine on Television over the Past 50 Years.....	Morgan Brown.....	201
The Cause: The Story of the Indomitable First Canadian Woman Doctor Emily Stowe (1831-1903) .....	Janice Yang.....	211
Virginia Apgar and the Apgar Scores .....	Danielle Huggard-Nelson .....	217
Cotton Mather: A Portrait of Religion and Medicine in 18th Century New England.....	Kevin Ramsey.....	223

The Human Cost of Building the Panama Canal .....	Sarah Wong.....	229
"No Destitute Child ever Refused Admittance" the story of Dr. Thomas John Barnardo .....	Georgina Barnardo.....	233
Health and Human Rights: A Necessary Connection .....	Monika Dutt.....	238
Norman Bethune: Beyond Blood .....	Rachel Alexandra Henry.....	244
Dr. John Rae, an Explorer Without Honour .....	Alana Skelton.....	253
One of Alberta's Best Kept Secrets: The Alberta Heritage Fund for Medical Research.....	Calvino Cheng .....	260

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## *Preface & Acknowledgements*

History of Medicine Days is an annual event which gathers medical students from across Canada to present brief papers on history of medicine at the University of Calgary. This year there were 38 papers on topics that covered three millennia, the surface of the globe, many disciplines of medicine and many historical themes. In their presentations the students shared their enthusiasm for history at social events, and communicated it to an audience of peers, faculty, and interested people in sessions running over two days. The invited lecture on *Pediatric Research - Canada 1978-1998* by Dr. Abbyann Lynch set a high standard and the students showed the abilities and intent that will make many of them leading physicians, teachers and administrators in the not too distant future.

The essays in this volume cannot capture the spirit of the event, the impression the students made with their presentations, or all of their passion about issues in the history of medicine, but they do convey the depth of their research, the range of their interest, and their skill at writing.

This volume owes its existence to the efforts of many people. Each of the students devoted many long hours, stolen from a very pressing medical school curriculum, to the research and writing of these papers, and to the preparation of their oral presentations or audio-visual material. Many of them were inspired or assisted by volunteer faculty members whose enthusiasm for the lessons to be learned from history can drag them too away from their day-to-day commitments. Dr. Keith Todd organized the events, which ran as smoothly as such events usually do only in textbooks of management. He had very effective help from students from the University of Calgary especially Daniel Heng, Tony Truong and Raymund Yong. Carolyn Taylor spent many hours and considerable effort of assembling the Proceedings itself.

The event and the publication of the Proceedings would not be possible without substantial financial support the Alberta Medical Foundation, the Hannah Institute, and the Faculty of Medicine at The University of Calgary to whom we are very grateful.

Dr. William A. Whitelaw  
Chairman  
History of Medicine Course  
University of Calgary  
April 2000

# HISTORY OF MEDICINE AT CANADIAN MEDICAL SCHOOLS.

By:

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Queens University

Preceptor: J. Duffin

## ABSTRACT

**In order to examine the extent to which the history of medicine is taught to Canadian medical students, surveys were mailed to the Deans of Undergraduate Medical Education at all 16 Canadian Medical Schools. Respondents were asked to describe the way history of medicine is taught at their school, including the number of hours (compulsory or optional), any elective opportunities, as well as reasons why history of medicine may not be included in their curriculum. The respondents were also asked to comment on the value of including history of medicine in the medical curriculum, as well whether they were satisfied with the degree of representation of history of medicine in their school's curriculum. Data was also collected regarding the availability of courses in the history of medicine to non-medical undergraduate students. Preliminary analyses suggest a wide range of methods and attitudes to teaching the history of medicine at Canadian medical schools.**

## Introduction

The first published investigation of the teaching of medical history at Canadian Medical schools was conducted by Dr. Henry Sigerist in 1940. Dr Sigerist was a professor of medical history at Johns Hopkins University and a founder of the Bulletin of the History of Medicine. Dr Sigerist surveyed the Deans of the 9 medical schools of the time and found that 67% included medical history in their undergraduate MD curriculum. He concluded that quality of education in medical history is "infinitely better than in Great Britain and the other dominions" (p307) and compared favourably with conditions in the United States. Dr Sigerist found that 6 of the schools offered regular instruction to medical students, and that the other three gave incidental lectures. Furthermore, he noted that the three schools not offering regular instruction had plans to do so. These plans were acted upon by 1952 when David Tucker published reports on behalf of the American Association for the History of Medicine that showed 100% of Canadian Medical schools offered medical history to their students<sup>2,3</sup>.

In 1969 Genevieve Miller published the results of a field study of all 95 American and 13 Canadian medical schools<sup>4,5,6</sup>. Among the Canadian schools, 3 had a full-time professor of the

History of Medicine and 4 required between 8 and 16 hours of instruction in the History of Medicine. When electives were taken into account, 2 more schools offered instruction. In summarizing her results, Miller concluded, that between 1954 when 100% of Canadian schools taught the history of medicine and 1969 when only 39% of schools did so, interest and respect for historical studies had declined substantially. Furthermore she pointed out that in 1969, 60% of instruction in the History of Medicine in North American Medical schools was given by faculty whose major activity was not medical history.

Since I was unable to find any published reports on the teaching of medical history at Canadian Medical Schools after 1969, I decided to conduct such a study. A number of changes have occurred in medical schools in the past 31 years : there has been a shift-away from lectures to more small groups and problem-based/active learning approaches; in-class time has been shortened to allow earlier and more extensive clinical exposure; and basic science content has decreased. The question remains as to how these changes have affected the teaching of medical history.

### **Method**

To address this issue questionnaires were sent to the Deans of undergraduate medical education at all 16 Canadian Medical Schools. The Deans were asked to list faculty involved in the History of Medicine and to describe (e.g.: # of hours, compulsory, elective) instruction in the History of Medicine at their school. The Dean's opinions on their level of satisfaction with the degree to which medical history is taught, as well as the value of such instruction was also obtained. Information was also collected as to the availability of courses in the History of Medicine to undergraduate (Arts and Science) students at the school. The questionnaire was initially sent by mail, but follow-up emails were sent approximately 1 month later to non-responders. In order to ensure completeness of the data, 13 questionnaires were also mailed to faculty known to have an interest in the History of Medicine at various medical schools.

### **Results**

The results of the survey are based on 22 responses. The overall response rate to questionnaires sent to Deans of Undergraduate Medical Education was 94% (9 Deans responded themselves and 6 designated faculty members), and 70% for faculty known to be involved in medical history. Responses were obtained from all schools..

The following paragraphs provide brief descriptions of the responses from each medical school. These descriptions closely parallel the format of Sigerist's paper, and include listings of the faculty involved in teaching medical history at each school. An analysis of the results follows the descriptions.

#### **MEMORIAL UNIVERSITY, ST JOHNS, NEWFOUNDLAND**

**Courses:** There are no lectures, or formal elective opportunities in the core-medical curriculum, although interested students can arrange electives. Some professors include historical facts in their courses. Courses in the History of medicine are offered to undergraduate students.

**Faculty:** Dr. John Crellin (F/T).

**DALHOUSIE UNIVERSITY, HALIFAX, NOVA SCOTIA.**

**Courses:** Aspects of the History of Medicine are integrated into the problem-based curriculum. There are also a number of elective and summer research opportunities. A course is offered to undergraduate students.

**Faculty:** Dr Jock Murray (F/T).  
Dr Ian Cameron (P/T).  
Dr Tom Baskett (VOL).  
Dr Allan Marble (VOL).  
Dr Ivan Mendez (VOL).

**UNIVERSITÉ LAVAL, QUEBEC CITY, QUEBEC.**

**Courses:** An optional course is offered each year. Medical students can also participate in a monthly forum organized by the Société D'Histoire de la Médecine de Québec. Courses in the History of medicine are offered to undergraduate students.

**Faculty:** Dr Jacques Bernier (P/T).  
Dr Camille Gosselin (VOL).

**UNIVERSITÉ DE SHERBROOKE, SHERBROOKE, QUEBEC.**

**Courses:** No courses or elective opportunities are offered to medical students. A course is available to undergraduate students.

**Faculty:** Dr Peter Southam (P/T).

**UNIVERSITÉ DE MONTRÉAL, MONTREAL, QUEBEC.**

**Courses:** Students receive 15 hours of lectures and workshops in 1<sup>st</sup> year. Electives can also be arranged. Courses are offered to undergraduate students.

**Faculty:** Dr O Keel (F/T).  
Dr Marcel Cadotte (VOL).

**MCGILL UNIVERSITY, MONTREAL, QUEBEC.**

**Courses:** Medical students receive 2-3 hours of lectures in the History of Medicine, followed by 24 hours of small group sessions. A formal small group elective on "Medicine in the Third Reich" is also available, as are optional electives. Courses in the History of medicine are also offered to undergraduate students.

**Faculty:** Dr. F. Wallis (F/T).  
Dr. D. Bates (F/T).  
Dr. A. Young (F/T).  
Dr. M. Locke (F/T).  
Dr. G. Weisz (F/T).

**UNIVERSITY OF OTTAWA, OTTAWA, ONTARIO.**

**Courses:** Students receive 10 hours of lectures on the History of Medicine that are incorporated into the various "system blocks". Courses are also offered to undergraduate students.

**Faculty:** Dr. T Gelfand (F/T).

**QUEEN'S UNIVERSITY, KINGSTON, ONTARIO.**

**Courses:** All students receive 14 hours of lectures on the History of Medicine that are integrated into the various system-based phases of the curriculum. The approach to medical history at Queen's has been described by Jacalyn Duffin, Hannah Chair in the History of Medicine at Queen's<sup>7</sup>. There is also an 8-hour optional seminar course for students in second year, a number of elective opportunities, a film group and an annual field trip. Courses are also offered to undergraduate students.

**Faculty:** Dr. Jacalyn Duffin (F/T).

**UNIVERSITY OF TORONTO, TORONTO, ONTARIO.**

**Courses:** At present there is no formal History of Medicine component in the core-curriculum, although the school intends to integrate aspects of the History of Medicine as it renews its PBL Cases. There is a formal research elective opportunity, and a series of 5 lectures is arranged by the first-year class president each year. A number of courses are offered to undergraduate students.

**Faculty:** Dr. Edward Shorter (F/T).  
Dr. Michael Bliss (F/T).

**MCMASTER UNIVERSITY, HAMILTON, ONTARIO.**

**Courses:** At present there is no formal History of Medicine component in the core-curriculum, although aspects of the History of Medicine will likely be included as part of a Medicine and Society Unit in year 3 of a revised curriculum. There are a number of elective opportunities and "open" lectures on selected topics are held. Courses are offered to undergraduate students.

**Faculty:** Dr. David Wright. (F/T).

**UNIVERSITY OF WESTERN ONTARIO, LONDON, ONTARIO.**

**Courses:** Students receive 12 hours of the History of Medicine. Courses are offered to undergraduate students.

**Faculty:** Dr. Paul Potter (F/T).

**UNIVERSITY OF MANITOBA, WINNIPEG, MANITOBA.**

**Courses:** Eight hours of lectures are given to first year medical students. The lectures cover general principles that are illustrated by examples of diseases. There are also summer research electives available. Courses are not offered to undergraduate students.

**Faculty:** Dr Peter Warren (P/T).  
Dr Joe Kaufert (P/T).  
Dr Vid Persaud (P/T).  
Dr Ian Carr (P/T)

**UNIVERSITY OF SASKATCHEWAN, SASKATOON, SASKATCHEWAN.**

**Courses:** 15 hours of lectures are provided to first-year medical students. Students are also encouraged to write essays for a prize. Courses are not offered to undergraduate students.

**Faculty:** Dr. L.J. Clein (VOL).

**UNIVERSITY OF ALBERTA, EDMONTON, ALBERTA.**

**Courses:** There are no lectures, or formal elective opportunities in the medical curriculum, although courses are offered to undergraduate students.

**Faculty:** Dr. Julian Martin (F/T).  
Dr. Susan Smith (F/T).

**UNIVERSITY OF CALGARY, CALGARY, ALBERTA.**

**Courses:** While there are no formal lectures, an optional course is available which is primarily attended by first year students. The course consists of a series of seminars presented by students under the direction of faculty preceptors. There are no courses for undergraduate students.

**Faculty:** Dr. W.A. Whitelaw. (P/T) and numerous others (VOL).

**UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, BRITISH COLUMBIA.**

**Courses:** 6 hours of lectures and 3 hours of small group sessions in medical history are included in the Doctor Patient and Society course that students take in their first two years. Electives in medical history are available to students in their 4<sup>th</sup> year, and courses are offered to undergraduate students.

**Faculty:** A number of faculty are involved in medical history, but the school did not specify the nature of their appointments.

Dr. Peter Ward  
Dr. Bill McKellin  
Dr. Andrew Seal  
Dr. Michael Macatee  
Dr. Sam Sheps  
Dr. Judl Segal.

**Analysis and Discussion**

Courses in the History of Medicine are offered to undergraduate (Arts and Science) students at 13 of the schools surveyed. There was no relation between undergraduate education and inclusion of the history of medicine in the medical school curriculum. However, having a faculty position (either full or part-time) was a prerequisite for undergraduate courses. Interestingly, the two schools that did not offer their medical students any opportunity to study medical history (University of Alberta, and Sherbrooke) offer undergraduate courses.

Nine schools include medical history in the core-curriculum of their MD programs, and a further 5 schools provide opportunities for electives in the History of Medicine. Elective opportunities also exist at 6 of the 9 schools with medical history in their core curriculum. Where medical history is included in the core-curriculum it is lecture-based at 7 of the schools with times ranging from 8 to 15 hours. McGill offers 3 hours of lectures and 24 hours of small group sessions. Dalhousie integrates medical history into their PBL cases. Electives in the History of Medicine range from research projects and small group sessions to optional lectures. Two schools offer no medical history at all.

Overall medical history is offered at 88% of Canadian medical schools, with 57% of schools including medical history in their core-programs. What is taught at each school varies considerably with some schools integrating medical history into various stages in their curricula (e.g.: History of Anatomy when students begin learning anatomy), and others using medical history to illustrate various concepts (such as constant evolution of therapeutics). Interestingly, and despite a two-fold increase in the teaching of medical history in the 31 years since Miller's survey, a majority of people responding to this survey (64% of Deans and 63% of medical historians), felt that time-constraints aside – there was too little medical history in their curricula.

Almost everyone surveyed felt that knowledge of medical history was beneficial to medical students. Two benefits were frequently cited to justify teaching medical history to medical students: first, the development of an appreciation for change and development; and second, many felt that a knowledge of medical history was crucial in the development of a sense of profession. Others felt that medical history puts the practise of medicine in a societal context, allows for the discovery of the concept of humanism and parallels the evidence-based approach to medical practise that is promoted today. The perceived benefits of including medical history in the curriculum paralleled those suggested by others<sup>8</sup>.

The proportion of faculty with full-time appointments in medical history has also increased since 1969. Currently 63% of schools have full-time faculty positions, and 20% have part-time positions. Volunteers promote and teach the History of Medicine at the other schools. Furthermore many schools have more than one faculty member, and in some cases more than one full-time faculty member involved in medical history. For the most part, full-time faculty members are medical-historians, part-time faculty members are historians with a side-interest in medicine and volunteers are physicians with a side-interest in history. Therefore one could say that up to 88% of education in medical history is provided by faculty whose primary area of focus is history, although not necessarily medical history. Again this is double the level found by Miller in 1969.

## **Conclusion**

Despite the numerous changes in medical school curricula, medical students have twice the opportunity to learn medical history than they did 31 years ago when teaching in this area was last surveyed. Furthermore, the number of faculty positions in medical history has doubled over the same time period. One reason for the change is the generosity of the AMS-Hannah Institute which began funding full and part-time positions in medical schools in 1974, and whose mandate expanded during the last decade. As medical education continues to evolve it will be interesting to see how the current level of instruction in medical history changes.

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# ADVANCED PREVENTIVE MEDICINE IN THE BIBLE

By:

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Preceptor: Dr. B. Corenblum

## ABSTRACT

**The Biblical laws recorded by Moses played a vital role in the prevention of disease. Although never regarded as a medical text, approximately 1/3 of the laws outlined in the Bible have some relevance to health and hygiene. The validity of the Bible has been firmly authenticated by numerous archaeological discoveries and remains one of the most circulated and well-known books in history. It is imperative to understand that the Laws given in the Bible were to be followed only for ritualistic and spiritual reasons, and not for their inherent advantages in preventing infections and diseases. However, a close study of these many rules and protocols reveal that strict adherence and compliance would have a direct positive effect on public health and community wellness.**

**The high priest, assuming a role analogous to the modern public health officer, would be responsible for ensuring the isolation of individuals carrying infectious diseases. An infected person was denied admittance into the healthy community until the cessation of their disease could be confirmed by physical ascertainment. This practice represents the origin of quarantine, as we know it today. A seemingly remarkable understanding of the germ theory is depicted in laws that require a cleansing 'ritual bath' after contact with dead animals or humans. Furthermore, the washing of hands prior to eating undoubtedly reduced the level of germs that could cause gastrointestinal infections. Other rules given in Leviticus address the safety of the food and water supply, recognizing that contact with 'unclean' items made a clean item also 'unclean'. The disposal of animal waste and human sewage, especially important during times of war, is also described, often with astounding explicitness. Since many of these religious laws required one to become physically clean, it is evident that a community level pursuit of spiritual purity would result in high dividends for public health.**

*Anything that an unclean person touches will become unclean,  
and anyone who touches it becomes unclean.*

Numbers 19:22

In Old Testament times, the spectrum of therapeutics available to the Hebrews was extremely limited. Although there is brief mentioning of physicians and surgical procedures in the Talmud (Lyons et al., 1978), biblical medicine places a strong emphasis on prevention through hygiene and infection control. The importance of prevention in the role of Old Testament health is in accord with the belief at the time regarding the etiology of disease. Since a causative agent could

not be identified, it was well accepted that disease was the consequence of violating God or breaking one of his commandments (Lyons et al., 1978). The reliance on the Lord as the only true healer explains the lack of therapeutic interventions. The situation is much different in Egypt. The *Ebers Papyrus* (Porter, 1997) records the use of different plants, oils and feces to cure infections. Needless to say, these cures would never pass our current evidence based approaches, as some of the cures were outright dangerous to the patient. Even though the Jews would have been exposed to these practices while under Egyptian rule, there is no mention of these practices in the Bible. Rather, the preventive measures employed by the Jews were primarily based on disinfection, proper waste disposal, washing and bathing rituals and quarantine.

The validity of the Bible has been firmly established as a historical text by various archaeological discoveries, and its accuracy over time established by findings such as the dead sea scrolls. Today, it remains one of the most circulated and well-known books in the world. The first five books of the modern Bible, known as the Pentateuch or Torah, contain the majority of the laws of the Old Testament given by God to the Israelites. It is well accepted that Moses completed recording the Torah before his death at around 1,500 BC. From sacrificial offerings (Lev. 1:1-7:21) to regulations on mildew (Lev. 13:47-59), the laws recorded in the Torah are numerous and explicitly detailed. They were further expounded in the accompanying oral Torah, or Talmud. Given to the people for ritualistic and spiritual reasons, the laws were not followed for their inherent advantages in preventing sickness and the spread of disease. However, it is clearly evident that compliance to the rules and protocols outlined in Leviticus and the other books played a vital role in the prevention of disease.

### **The Exodus**

After the 10<sup>th</sup> and final plague took the life of each Egyptian household's first-born son, Pharaoh, pushed to his limits, finally consented to the release of the Jews. The mass exodus of about 2 million people out of Egyptian bondage in the 15<sup>th</sup> century BC marked the beginning of forty long years spent wandering in the wilderness. The laws were enforced only after entering and settling in the Promised Land, a time during which common diseases included plague, dysentery, and venereal diseases, such as syphilis and gonorrhea (Rosner, 1977).

### **Sexual Relations**

The rapid spread of sexually transmitted diseases (STDs) along with other infectious entities, such as *shechin*, was undoubtedly suppressed due to strict compliance with the laws. Though the list of laws compiled by Moses is a staggering 613, over 1/3 or these (213 laws) have some relevance to hygiene and prophylaxis (Rosner, 1977). Described explicitly are laws that prohibit adultery (Lev. 20:10-12), laws against homosexuality (Lev. 20:13), laws against sexual relations with animals (Lev. 20:15-16), and laws against incest (Lev. 20:17, 19-20), possibly as an effective way of preventing familial genetic disorders. It is evident that the practices of the Jews were different from those of neighboring nations. Leviticus 20:23 reads, "You must not live according to the customs of the nations I am going to drive out before you".

## **Disinfection**

Disinfection was a well known practice commonly employed in ancient Israel. Items that could withstand heat were purified in fire, while those that could not were washed in water (Num. 31:22-23). It was recognized that the use of different materials had varying degrees of risk for disease. For cooking instruments, the law is clear that clay pots were to be broken after they were used to cook. Being porous materials, clay pots are an excellent source of microorganisms that live off the food in the pores. However, if a bronze pot is used for cooking, it must be “scoured and rinsed with water” (Exod. 6:28), before it can be used again.

## **Waste Handling**

The law also recognized that animals were a major reservoir for infectious agents. “The fat of an animal found dead or torn by wild animals may be used for any other purpose, but you must not eat it” (Lev. 7:24). Animal waste disposal was not a problem either. The Jews were instructed not only to take the carcass outside the camp, but then burn it in a wood fire (Lev. 4:11-12). This would obviously prevent wild animals from being attracted to carcass and spreading infection to other animals. Human waste was also dealt with effectively during times of war. Soldiers were instructed to designate a specific place where they could relieve themselves. In addition, they were given clear instructions to carry something to dig with, in order to “dig a hole and cover up your excrement” (Deut. 23:13).

## **Washing and Bathing Rituals**

For the Jews in the Old Testament, it was common practice to wash their hands before they ate, holding to the tradition of the elders (Matt 15:2; Mark 7:3-4; Luke 11:38; John 2:5). Hand washing is one of the most difficult tasks for today’s health care workers to remember, and yet it is one of the easiest to do. These simple practices can have a profound impact on the health of an individual, the health of an isolated community, such as a hospital, and even the health of the community at large. Until the late 1800’s, hand washing was believed to be of no value in preventing disease and was looked upon as a complete waste of time. The value of hand washing was first brought to light when the Hungarian physician Ignaz Semmelweis noticed that mothers whose babies were delivered by medical students had a 15-30% higher rate of puerperal fever than those whose babies were delivered by midwives. Realizing that the medical students spent time studying cadavers before doing their deliveries, he implemented a policy of hand washing in chlorinated lime that immediately saw a drastic reduction in the incidence of the disease (Porter, 1997). Despite all the evidence, Semmelweis continued to be ridiculed by the medical community and his practices were never adopted during his lifetime.

In Old Testament times, visiting the tabernacle was one of the most sacred events. In order to even come into the temple courtyard, people must be spiritually pure. For this purpose, one would partake in a ceremonially cleansing ritual bath (Preuss,1978). Other indications for taking a ritual bath included touching a dead animal or body, entering the house of a deceased person, after a seminal emission for men or after menses for women, and especially after recovering from an infectious disease (Num. 19:19-22). So important was the ritual bath that one was constructed beside every synagogue. The individual, in preparing to take the ritual bath must

remove all rings and jewelry; nothing was to come between the individual and the water (Preuss, 1978). The quality of the water was also very important. The Bible is very clear that the water to be used must be fresh water, such as that from a stream or from collecting rain (Lev. 15:13). The individual is to wash his clothes and bathe in the water before he will be clean. Once the person has taken the bath, the water was then considered unclean and is not to be used again. Clearly, this is one spiritually purifying ritual that was also physically cleansing.

### **Quarantine**

The Bible apparently recognized that germs could be transmitted, more than 3000 years before Louis Pasteur discovered that germs actually came from a source and weren't spontaneously generated, as was believed. In the Bible, it is stated that if an animal dies on something, that article is now considered to be unclean (Lev. 11:32). Whether or not a transferable infectious agent was illustrated in the Torah is entirely speculative. However, the people did act on this principle of transferability by implementing strict quarantine protocols. A commonly mentioned, highly contagious ulcerating skin disease known as *tzaraath* (Cule, 1987) or *shechin* (Hoenig, 1985) in the Hebrew bible was to be kept apart from the community by isolating infected individuals. "As long as he has the infection he remains unclean. He must live alone; he must live outside the camp" (Lev. 13:46). Once the person has recovered from the disease, the law states that the person must be cleansed by washing all his clothes, shaving off all his hair, and bathing in water. Only after having his sores inspected by the high priest and declared healed is the person allowed to return, but still he must remain outside his tent for seven days (Lev. 14:8). In fact, so stringent were these laws that refusal to purify oneself could result in banishment by the community (Num. 19:20)

Although the success of these practices in promoting public health is a difficult outcome to measure, there is a great example of its effectiveness in 14<sup>th</sup> century Italy. At that time, the Black Plague was rampant all across Europe. In attempt to control the spread of this voracious disease, the city leaders of Venice decided to adopt the 40-day segregation practices employed by the Jewish ghettos at the time (Gwilt, 1987). After having a profound effect in reducing the disease rates, the practice of segregating infected individuals was beginning to gain acceptance. Hence the term quarantine (quaranta meaning 40) was adopted to refer to the number of days to be spent in isolation.

### **Role of the High Priest**

Being declared 'unclean' was a serious designation and could only be made by the high priest. Aaron, Moses' older brother was appointed by God to be the first high priest, an office which was to be hereditary in his family. Assuming a role analogous to the modern public health officer, the high priest would be responsible for inspecting the sores of infected individuals and determining whether segregation would be necessary to prevent the disease from spreading (Gwilt, 1987). "The priest is to examine him, and if the swollen sore on his head is reddish-white like an infectious skin disease, the man is diseased and unclean. The priest shall pronounce him unclean because of the sore on his head" (Lev. 13:43-44). In addition, the High priest was also responsible for supervising food quality and dietary laws (Bloch, 1980), ensuring

a clean water supply (Preuss, 1978), the proper disposal of sewage, and upholding mental health by making sure the people rested from work on the Sabbath day (Bloch, 1980; Gwilt, 1987).

## **Conclusion**

The success of any medical intervention or preventive measure is dependent on its level of compliance. Preventive medicine was so successful for the Jewish people because personal health and hygiene was coupled to a strong motivating force: religion. Some people follow the laws purely out of desire to attain spiritual purity. Others may have obeyed only to avert subsequent punishment from God or condemnation from others within the community. At any rate, it is clear that adherence to such laws would be diminished if they were drafted solely by individual members of the community. The laws recorded in the Bible were intended to preserve a holy nation obedient to God. Through strict observance, the explicit laws in the Bible clearly provided a public health advantage to the Old Testament Jews by elevating the status of population health and reducing the level of sickness within the community.

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## **Biblical and Talmudic Medicine: The Life and Times of a *Rophe***

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### **ABSTRACT**

**The arena of Biblical and Talmudic medicine is the Near East. The time is 2000 years B.C.E. onward. The *rophe* is an “ordinary practicing physician” of the time. But he is ordinary only in terms of convention. In terms of expertise, definitely not. As an internist, he prescribes warm animal milk for a patient with consumption. As a neurologist, he examines a young man with lovesickness. As an ophthalmologist he also heals diseased eyes. He must also serve as a dentist, drilling the tooth of his slave and providing information as to why the teeth fell out. In his bag one might find scissors and a knife for surgery also falls into his sphere of activity. He also heals wounds and diseases with all types of herbs. So who is this *rophe*? Who is this "ordinary practicing physician" with extraordinary medical expertise? What was his life like? What specific treatments did he use? The first part of the essay will explore the life of a *rophe* - his position in society, his education, his fees and his responsibilities to his patients. The second part of the essay will focus on a specific area of his practice, exploring some of the healing herbs he uses to treat patients.**

Ancient Jewish literature begins with the Torah, to which is added the other books of the Bible in the form of chronicles or poetry. In addition to the Bible, which is the “Written Law”, there is also the Talmud, which is the “Oral Law”. The Talmud serves as an explanation to and supplement to the Bible. According to tradition, both the Bible and the Talmud were revealed to Moses by God at Mount Sinai. The Talmud, being the Oral Law, was passed from generation to generation by oral transmission until the second century of the Common Era when several Rabbis, Judah Ha Nan, Yochanan and Ashi, eventually put it into writing.

There does not exist a work from Jewish antiquity devoted exclusively to medicine. The Bible and the Talmud are primarily law books and medical matters are discussed only as they pertain to law. There is thus nowhere to be found a systematic treatment of ancient Jewish medicine.

There are, however, individual mostly coincidental remarks on medicine found scattered throughout the Bible and the Talmud. By piecing together these individual remarks, this essay attempts to reconstruct the ancient Jewish physician known as the *rophe* (derived from the root word “to ease”). The first part of the essay describes the emergence of the *rophe* (i.e. the ancient Jewish physician) and his characteristics, including his role in society, training, scope of practice,

fees and liability. The second part of the essay describes some of the treatments, mostly herbal remedies, which he used.

### **Emergence of the *Rophe***

The story of the Bible starts at about 2000 BCE and follows the Hebrews, a mostly nomadic people, throughout the Near East as they go from Babylon to Canaan to Egypt and then back to Canaan. In discussing the emergence of the *rophe* it is important to note that cultural contact occurred with both the Egyptians to the west and the Babylonians to the East. It is also important to keep in mind the pervading religious beliefs of the time.

During the time of Moses, around 1200 BCE, the current religious attitudes did not allow room for the *rophe*. It was not possible for a human to be a physician because that role was reserved exclusively for Yahweh, the Hebrew god. "I am the Lord your physician (Exod 15:26) ... I wound and I heal (Deut 32:34)", declared Yahweh. Yahweh is alone is to be credited with taking sickness away (Exod 23:35) and healing disease (Ps 103:3). So during this time the medical role was saved for Yahweh so that it left no room for any human to participate in, lest they detract from, Yahweh's medical prowess.

But several hundred years later, at about 900 BCE, the *rophe* started to emerge. This was made possible by a subtle shift in beliefs. Yahweh maintained his role as the ultimate healer but *rophe*s were now considered the human instruments through which he carried out his role. In 913 BCE the *rophe* is mentioned for the first time in the Bible. The current king, Asa, had been ill for 2 years and his feet were diseased. Instead of seeking treatment from Yahweh he went to a *rophe* instead (1 Kings 15-16). Although the king was not cured of his illness, his use of the *rophe* was indicative of the society's changing attitude.

Thereafter, the *rophe* slowly gains a foothold and by the 4<sup>th</sup> century BCE, he is well established (Job 13:4). By 30 CE, Christ declares outright that a sick man should consult a *rophe* (Matthew 9:12, Mark 2:17 and Luke 5:31).

### **Characteristics of the *Rophe***

**Training.** There were no formal medical schools nor was there any special medical education in university at that time. Even though medical matters were discussed in universities, they were not discussed as systematic courses but only as they pertained to the understanding and application of laws, especially sanitary legislation. The method of training occurred by the personal instruction of a student or a group of students by a practising *rophe*.

**Scope of Practise.** There were no specialists in Jewish medicine. The *rophe* practised all aspects of medicine. Several examples highlight this point. Practising internal medicine, a *rophe* treated a Persian king of his indigestion. As a neurologist, one *rophe* treated a young man of his lovesickness. As an ophthalmologist, one prescribed a salve for a diseased eye. Serving as a dentist, one drilled and extracted the teeth of his slave. As a surgeon, one carried out amputation on lepers. Other than public health matters and sanitary legislation, which were the domains of priests, the *rophe* did it all.

**Fees.** In those days of simple and straightforward thinking, it went without saying that the *rophe's* work called for payment. It is mentioned that “a *rophe* who heals for nothing is worth nothing” (Baba Kama 85a). The method of payment was fee-for-service and it was customary to pay the *rophe's* fee in advance.

**Liability.** Although the *rophe* is an instrument used by Yahweh to treat people, he still has the freedom to choose his actions. Therefore he has to bear responsibility for his conduct. Jewish liability law is complicated, but in general the *rophe* is in a privileged position. If he unintentionally injures someone, then he is held blameless. Only when the *rophe* is found to intentionally injure someone is there restitution for damages.

### **Treatment's used by the *Rophe***

The *rophe* was a practising physician who was also his own dispenser and his pharmacopoeia was fairly extensive. The essay now focuses on some of the treatments, which for the most part were herbal, which the *rophe* used.

Olive oil was in plentiful supply and was used as an emollient both in health and disease. It was used as a dressing for hair and skin and was applied to bruised or ulcerated areas (Luke 10:34, James 5:14). A sick Herod was bathed in warm oil (Josephus, Ant. XVII, 6:5, War 1, 33:5).

Several plants were thought to have medicinal properties, especially pomegranates (Num. 13:23, 20:5). It is a measure of their worth to observe that they are featured on temple decorations (1 Kings 7:20, Jer. 52:22). With numerous seeds, pomegranates symbolised fertility, and had a sanctity which made them, or those eating them, immune to demonic influences. In the Middle East infusions of pomegranate blossoms were used for flatulence in infants. In Egypt pomegranate rind was used as a fumigant and anthelmintic. The juice of the pulped fruit (Song of Sol. 8:2) made a refreshing drink in feverish conditions.

Wormwood (Deut. 29:18, Prov. 5:4, Jer. 23:15), a bitter substance related to absinthe, was used as an infusion for worms and fever. Cassia (Exod 30:24, Ezek. 27:19) also had general medicinal value.

The bitter and poisonous gall, or hemlock (Duet 29:18, 32:32, Job 20:16) is thought by some to refer to the bitter seeds of the poppy plant.

Another narcotic is the mandrake (Gen. 30:14, 7:13), related to the plant *Atropa belladonna*. The “baaras” plant mentioned by Josephus (War, VII, 6:3) is the mandrake which is employed by sick people to nullify demonic influences.

Several herbs were used for stomach disorders, as carminatives or for sweetening the breath (Song of Sol. 7:8). Cumin (Isa. 28:25,27), Matt. 23:23) was employed by the ancients as a carminative and condiment and is still used in making curry powder.

Anise (Matt 23:23) was the herb dill, a carminative and still listed in current pharmacopoeias. Its seeds were chewed to sweeten the breath.

Many aromatic resins were employed as deodorants, fumigants and perfumes. Myrrh (Ps. 48:8, Prov. 7:17, Esther 2:12) was used for perfuming the body, clothing and bedding, and was also employed as a salve for ulcers, as eye ointments, mouthwash and constituent of enemas.

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# Contraception in the Ancient Times

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## ABSTRACT

Contraception has played an important role in every culture as humans have always attempted to control the size of the family unit. There are physical, social, emotional and economic constraints that motivate the use of contraceptive methods. Two questions will be addressed in the following paper. First, what contraceptive methods were utilized by ancient societies? And, second, were any of these methods effective? Ancient Egyptians have primarily resorted to the use of chemical contraceptives that included crocodile feces, honey, saltpeter and acacia fruit. Many of the recipes, used as suppositories for the vagina, produced lactic acid which is used today in some spermicides by inducing changes in pH. The first oral contraceptive is believed to have evolved from Egypt around 1300 B.C. being composed of emmer seeds in the vagina and heating and drinking oil, celery and sweet beer for 4 mornings. This prescription was found to act as an abortifacient in animal experiments. Most contraceptive recommendations for the Ancient Greeks were described by the prominent writer of gynecological works, Soranus. The common ingredient in many of his suppository recipes included pomegranate peel. Animal studies have found that rats fed pomegranate had decreased pregnancy rates compared with controls. Other ingredients included rue, apopanax, myrtle and rocket. Ointments used following intercourse included olive oil, honey and cedar resin. Today some of these are known to have antiseptic (spermicidal) effects. The Greeks also employed some mechanical methods. Women were advised to leap, squat, sneeze, wipe the vagina or drink something cold after intercourse. Men could engage in some preventative measures before intercourse which included squatting over hot coals, taking hot baths or placing juniper berries on the penis. In summary, a variety of contraceptive techniques existed in ancient times and many have been found to be effective in recent animal experiments. Furthermore, the use of contraception appears to have been largely the responsibility of the woman.

## Introduction

Throughout recorded history the human race has implemented strategies to control the rate of its own growth. Techniques could be used by both men and women and varied across societies. Contraception, abortion, and infanticide produced the same result but with different consequences. This essay will concentrate on methods of contraception used by ancient

civilizations, the associated social, economic, and emotional constraints and the results of their use.

### **Constraints to Contraception**

The need to control population size has been recognized by all civilizations. This has given societies the power to manipulate the structure of their family units. A large number of offspring may be valued by a society that requires a large workforce. In antiquity most civilizations required great quantities of manual labor. As a result, families with many children were desired. By the middle- ages, with the introduction of christianity, celibacy became popular in society. It was actually prestigious not to produce offspring, to ignore instinct, and devote one's life to some greater perception.

All mammals provide nourishment for their offspring. This occurs for some required amount of time after birth, in which development occurs, and continues until independence is reached. The number of children in a group can be limited by the ability of the care giver (s) to provide basic sustenance. The economic reality of the society in which children are raised may affect population growth. The growth rate may depend on whether the society values a child raised at a higher standard of living (more investment per child) or basic sustenance.

Throughout history contraception has taken many forms. In ancient times women were married and expected to have children at a young age (on average 14 years) (Riddle, 1994a). This extra time during child- bearing years yielded greater opportunity to have more children. The average age of marriage for women increased by the middle- ages, but life expectancy also increased (Preus, 1975). In societies where marriage was not a requirement of child- bearing, males were free to have as many children as they were capable as long as they were not financially responsible. If males were obliged to care for the children, the sooner they appeared the better (Thompson, 1987). Males also would have coitus with slaves to avoid any responsibility for the child. If no child was to be born into slavery, contraception and abortion were not regarded in the same way for slaves as for normal citizens.

### **Mechanical Methods of Contraception**

One of the forms of contraception described in antiquity was "coitus interruptus". This method in which the male withdraws his penis from the vagina before ejaculation was first mentioned in the old- testament and is still common in some cultures where other forms of contraception are inaccessible (London, 1999). "And Onan knew that the seed should not be his; and it came to pass, when he went in unto his brothers wife, that he spilled it on the ground, lest that he should give seed to his brother" (old- testament: genesis 38:9). This method, however old, is flawed because small quantities of semen are prematurely released before orgasm and because it relies upon male co-operativity. Coitus interruptus has been recorded in Africa, Australasia, the Middle East, and Europe (London, 1999). Both Judaism and Roman Catholic religions forbade its practice, but it remained a very popular form of contraception. Societies in which males had no responsibility for children would not have practiced this method as they would have had no responsibility for their action.

Ancient Sanskrit texts describe a method of coitus obstructus which required the male to press the anterior portion of the testicle, which was thought to cause blockage of the urethra, making passage of sperm impossible (Keswani, 1976).

Condoms have been used since ancient times as a mechanical barrier. The first claimed inventor of the modern condom was the Italian anatomist; Fallopius (Stopes, 1999). Unlike current condoms, the Fallopian condom fit over the head of the penis and was held in place by the foreskin. However, the intention of Fallopius's condom was to prevent syphilis rather than pregnancy. King Charles II's doctor introduced a cloth version and hence Dr. Condom was the first to be recognized publicly. Previously, condoms had been made from a variety of animal membranes. In ancient Egypt, men wore sheaths made of animal intestine. In Japan, men have worn 'kabutogata' (hard helmets) which were sheaths made of tortoise shell leather. Alternatively, women in Africa have used seed-pods as female condoms (Stopes, 1999). Condoms were originally not advocated as contraceptives but as tools in the campaign to stop venereal disease. Condoms were used during World War I to prevent syphilis and other venereal diseases (London, 1999). Condoms also evolved a third 'pleasure inducing' purpose which would account for the variety in shape, colour and design of today's condoms.

Intra-uterine devices (IUDs) have also been used since ancient times as mechanical contraceptives. Ancient Arabs would insert stones into the uterus of a camel to prevent pregnancy on the long trip to market (London, 1999). IUD's act by scraping the walls of the uterus and preventing the ovum from implanting. Because IUD's can cause heavy bleeding, cramping, and possibly irreversible scarring, physicians do not recommend IUD's to women who have not had children or women who might want to in the future.

### **Chemical Methods of Contraception**

A very popular ancient contraceptive was the vaginal suppository. These inserts could have two modes of action, a mechanical barrier and a spermicide.

In Africa, women used chopped grass or cloth to impede the passage of sperm across the cervix (London, 1999). Japanese prostitutes used tissue paper made of bamboo, Islamic and Greek women used wool (Prioreshi, 1995), and Slavic women used linen rags. Ancient Jews used sea sponges soaked in lemon juice. This was aided by wrapping the sponge in silk and affixing a string for easy removal (London, 1999). All of these devices acted as barriers impeding the crossing of sperm, like the present day diaphragm. They worked well, especially the sponge with lemon juice as a natural spermicide. The application of spermicides by douching after coitus has also been described in Ancient times. Greek physicians have described the use of vinegar douches (London, 1999). The efficacy of douching has not been noted. In Greece, Aristotle wrote of a procedure in which oil of cedar was applied to the vagina (Stopes, 1999).

In addition to mechanical barriers, pessaries of material inserted into the vagina were used as a spermicide or to block implantation. The oldest recorded document of birth control described pessaries in the Kahun Papyrus which dates back to 1850 B. C. in Egypt (London, 1999). Elephant (Arabic) and crocodile (Egypt) dung, acacia, and other ingredients have been used as vaginal inserts that apparently altered the pH creating a spermicide (London, 1999). Their

addition might have also caused an infection that would alter the environment in which sperm would travel. They may have also repelled the male.

The most effective form of contraception today, the birth control pill, had ancient beginnings. Women in China drank mercury over 4000 years ago to prevent pregnancy (Lal, 1966). North American natives in New Brunswick made a tea from dried beaver testicle (Petrick, 1995). In ancient Greece, Hippocrates wrote of a copper ore drink “misy” which would prevent pregnancy for up to one month (Zatuchni, (1989). The current theory is that increased prostaglandin production from the copper would create inflammation of the endometrium and prevent implantation. However, it may have simply worked as a toxin. Myrrh, Queen Anne’s Lace, and Pennyroyal have also been used in Greece as contraceptives (Riddle et al., 1994). Kolata (1994) describes the now-extinct Silphium plant (giant fennel) which was used throughout ancient times as both a contraceptive and to induce abortions.

Of 10 plants mentioned by Soranus in “On the Nature of the Child”, 8 have been proven to have a contraceptive effect by conducting animal research (Riddle, 1994b; Riddle, 1994a). In ancient Greece, pomegranate peel was used as a suppository. Rats fed pomegranate had only 72% of the pregnancies that a control group had. Mice fed Queen Anne’s Lace had reduced implantation by 100% in lab mice by the 6th day of pregnancy. Silphium contained ferujol which is close to 100% effective in preventing pregnancy in rats (Kalota, 1994). These studies are not surprising as all pharmaceuticals have primitive origins. However, the side effects these contraceptives may have had on their user’s health and quality of life must also be considered.

Males have fewer varieties of contraception. Other than condoms, societies have not produced chemical contraceptives for males as they have for women. In Judaism, any hormone altering substance was prohibited (Schenker and Rabenou, 1993). Other than surgical castration, the only recorded male contraceptive was the practice of squatting over hot coals before coitus.

Many other substances and techniques have been used throughout recorded history but have had little recognition as effective. In ancient Greece Soranus advocated shaking the semen from the vagina through bodily movements (Schenker and Rabenou, 1993). Apparently this would help to expel semen.

### **Other Methods of Contraception**

The rhythm method in which an understanding of the female menstrual cycle decreased the chance of conception was first mentioned in ancient Greece. However, the actual time of ovulation was misunderstood until the 1920’s (London., 1999). Before people believed ovulation was near or after the menstrual period. They were misled to believe that ovulation was completed at this time because of observations of other mammals.

A less obvious form of contraception is non- fertile intercourse. This includes oral, anal, and homosexual sex. Obviously any sexual act that would not place semen in the presence of a potentially fertile egg, is a contraceptive act.

## Conclusion

For thousands of years people have made attempts to control their fertility in hopes of creating an ideal living situation. Many things affect their image of an appropriate amount of children including social, economic, and emotional constraints. Humans, being creative animals, have endeavored to produce various ways to cheat the normal reproductive cycle of its regularity. Mechanical barriers, spermicides, and hormone- altering substances have been used as contraceptives. However, primitive societies were not aware of risks associated with such methods and may not have correlated the side- effects of their treatments. Regardless, people will continue to develop new and improved methods to solve an old problem.

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# DEATH AND DYING IN TIBET

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## ABSTRACT

The Tibetan Book of the Dead (Bardo Thodol) is a manuscript that was used by the Tibetan people to live life, prepare for death and as a detailed source for passage to another existence. Tibetan Buddhists used this book and passed its contents on from generation to generation. From it and other teachings, new modern sources relating to death and dying have been written by such contemporary greats as Sogyal Rinpoche, Chokyi Nyima Rinpoche and his holiness the Dalai Lama.

By gaining an understanding of the four Bardos (stages of life and death), Tibetan Buddhists aim to die in peace without regret because their human potential was filled in their lifetime. The teachings view the cycle of life and death as four Bardos: 1) The Bardo of this life- the period from which one is born to the moment when one takes one's last breath 2) The Bardo of dying- The period from the onset of dying through three stages until death 3) The Bardo of innate nature- The period from dying to the separation of the mental from the physical self 4) The Bardo of becoming- The period of emergence from a mental body to the conception of a new life. The beliefs in the Bardos, karma and reincarnation allow Tibetans to strive for the accumulation of positive activities in their lives to cultivate a level of compassion towards others. By learning and practising these views a healthy rebirth is ensured.

Through these teachings Tibetan people have an understanding of death that is viewed as a part of life and have a form of preparation that allows these people to embrace death as they do life. By developing an awareness of death in times of youth, when the time comes Tibetans are not afraid or fearful, but eager to accept what lies ahead. The Tibetan Book of the Dead laid the foundation for Tibetans acceptance of death and dying and have modern applications for not only Tibet but the Western world as well.

## Introduction

Although even a brief review of buddhist thought is a lengthy and difficult task, there are a few central teachings worth mentioning as illustrative examples. Buddhism is an exploration into what the mind is and how we can control it. The understanding of the positive and negative aspects of thinking is of central importance. Through meditation and practice the goal is to conquer negative ways of thinking and uplift positive ones. Understanding these views in theory

is the first step. The essence is to put into practice what has been learned through readings, teachings, and meditation (1).

Tibetan Buddhists view death as a natural part of life, the destiny of all living things. Some persons choose to ignore death, others to confront the prospect and in doing so decrease the amount of suffering that it can bring. The Tibetan Book of the Dead (Bardo Thodol) is a manuscript originally written in the eighth century AD that was used by the Tibetan people to live life and prepare for death.

From the time of entering this world to the time of departure, people are constantly under the influence of negative thoughts and fixations on a material world (1). It is the ambition of most to die a peaceful death. According to the historical teaching of Buddha, lives full of violent thoughts and emotions, perpetuated by feelings of attachment, anger and fear make a peaceful passage unobtainable. The objective is to cultivate peace in this lifetime in order to achieve a peaceful death. The teachings also imply that it is not enough to achieve peace near the end of ones life. We do not have to wait for the shock of a terminal illness to look at our lives in a more critical way. His teachings emphasize the use of the entire present life to prepare for death.

If people build their lives only on academic degrees, home and personal possessions, when these are removed they have nothing and are not aware of who they truly are. Without these crutches to stabilize their fragile existence they are left with only themselves, and without a true understanding of who they are, fear and anxiety is all that remains. Most persons live their lives in this way: education during youth, finding an occupation, partner, house and having children in the middle years, retirement in old age. Lives tend to be monotonous and repetitive because people are not aware of different pursuits (2). Buddhist philosophy does not say that we should live our lives in isolation. People need the basic necessities in life (food, shelter, clothing) and also the social support from those around. Human being's inherent happiness is dependent on other living things. Buddha taught that people must not take a self-centered view on life but rather take care of those around us because they have so much to do with how we feel ourselves.

Buddhism's view is that life and death are contained in the mind. The mind controls happiness and suffering, and the demarcation of life and death. By generating and nurturing a state of compassion towards all living things a state of true happiness can be obtained. From birth there exist many sufferings such as sickness, growing old, and situations of hardship. During these stages in life if feelings of desire, ignorance and hatred are dominant the experience will be unsatisfactory. The goal is to investigate the root behind these temporary obscurations, and by understanding them alter this course that leads only to suffering. Without recognizing faults and not paying attention to present acts, improvement is impossible. This preparation cannot be left until just before death, but rather these virtuous qualities can be cultivated now, so that suffering will be eased not only now but at the time of death (3).

Tibetan Buddhists meditate on the process of death often daily and thus when the time comes to pass they are perhaps better prepared (4). By developing an awareness of death it is also possible to make life more meaningful. Meditation on death should not only include what it is like to die and the possibility of death sometime in the future, but also the unpredictability of death (5).

This is reinforced by an old Tibetan saying which states “Tomorrow or the next life, you never know which will come first”. One can die at any time no matter strong or weak, wealthy or poor, young or old (3).

The mind is the source of our being reborn in the cycle of existence. The mind is also the main factor that allows freedom from this cycle of birth and death. When one talks of Buddha most everyone thinks of the enlightened Indian prince Gautama Siddhartha. In reality however Buddha means any person who has fully awakened from ignorance and opened themselves to full wisdom (6).

During this lifetime the Dharma of Buddhism stresses the practice of ten virtuous actions (speaking truthfully, speaking harmoniously, speaking kindly, speaking sensibly, generosity, helpful intent, right view, sustaining life, maintaining sexual ethics, and giving gifts). By practicing an empathic attitude towards others a higher rebirth can be obtained. The way a person feels when the time comes to die is very dependent on the way that person has lived (7).

### **The Four Bardos**

Bardo is a Tibetan word that means transition from one event to another. Buddhist teaching explains how existence can be divided into four realms. 1) Life, 2) Dying and Death, 3) After-death, and 4) Rebirth. These four realms correspond to four bardos: 1) The bardo of this life, 2) The bardo of dying, 3) The bardo of dharmata (innate nature), 4) The bardo of becoming.

### **The Natural Bardo of this Life**

The natural bardo of this life consists of the period between birth and death. One would feel that this is the longest length of time spent in any one of the four bardos but since buddhists believe in existence through reincarnation this lifetime is rather short. It is during this life that the preparation is done, through practice of obtained knowledge, for death (2).

Buddhist teaching argues that most people are concerned with only a few select things within their lifetime. Attachments are formed to objects, praise and pleasure, and a dislike for the opposite. Time is spent worrying about losing what has been obtained or getting upset not achieving material gain. From a Tibetan Buddhist standpoint, this is a waste of the bardo of this life. The true aim is to minimize material pursuits and adopt a selfless compassionate outlook on life. To do this one must not only obtain knowledge from readings and teachings but put what has been learned into practice (1).

During this lifetime people can become distracted by six disturbing emotions. These disturbing emotions include attachment, pride, envy, ignorance, stinginess and aversion (or hatred). These disturbing emotions obscure the inherent nature of the mind which should be clear and cognizant. When a person is angry they cannot see that they are in the wrong, inflicting harm on others. They only see anger. Only afterwards may they regret their actions. It is easy to identify what is meant by disturbing emotions but difficult to abandon them. By recognizing and decreasing the disturbing emotions the truth about the bardo of this life can be obtained. Meditation is used as an adjunct to teachings and readings to remove delusions and gain clarity

of the mind. All misfortune stems from within the mind that is encompassed by disturbing emotions. A liberated state of mind has no disturbing emotions (8).

By overcoming disturbing emotions and practicing a selfless, compassionate attitude towards others good karma is obtained during the bardo of this lifetime. The analogy to the western teaching “ you reap what you sow “ is obvious. One must accept that everything in the world is of an impermanent nature; and how this relates directly to death and dying. Tibetan Buddhists believe that what is born must die and having been born you have previously died. During this lifetime the goal is to generate good karma which will follow through to the next existence.

### **The Painful Bardo of Dying**

The bardo of dying lasts from the process of dying to one’s last breath. At this point the mind emerges from the body. This stage is said to be painful because no matter if the length of dying is long or short, some amount of suffering is expected. To accept the process of dying and ultimately death we must see the impermanence of all living things. Having prepared for death during the bardo of this lifetime at the time of death the Tibetan Buddhist practitioner is not preoccupied by attachment to person or object. The practitioner has given away all possessions to poor people, friends or relatives. However, the buddhist concept of attachment extends far beyond material goods. The practitioner must also be comfortable in the closure of social relations with friends and relatives and must not worry about seeing a person “one final time”. Ridding oneself of attachments at the time of death allows the practitioner to be alone with meditation to guide the mind into the next realm (9).

### **The Luminous Bardo of Dharmata**

The bardo of innate nature is also referred to as the luminous bardo of dharmata. It envelopes the after death experience where the nature of the human mind is exposed and what remains is a clear light. One’s senses and faculties give way to the naked mind. It is at this time that the deceased experiences bright vivid visions and that the mind has an omniscient view over the past lifetime. It is at this time that the mind is unified by a summation of karmic actions during this last lifetime. Through past accumulation of karma, the next rebirth is formed. This is a transition state between death and reincarnation to another existence (1).

### **The Karmic Bardo of Becoming**

The bardo of becoming is the period from which the mental body emerges and a new birth is attained. This stage is thought to last for only a short period of time. It is like a dream whereby you awaken into another life. The mind takes a central role and is empowered with extreme clarity guided by past karma. The Tibetan Book of the Dead encourages people to give up attachments of people and possessions, to cultivate compassion rather than negative emotions. Therefore it is during this lifetime which contributes to subsequent bardos as well as rebirth.

### **Death and Dying in the Western World**

People in the west often tend to deny death. They feel that dying and ultimately death represents destruction and ultimate loss. Thus a sense of fear develops because death is held in such a negative light. Anxiety develops when discussing death as it is not viewed as a part of this life but rather a separate morbid identity. People view this lifetime as their only one (10). Even if one does not believe in reincarnation, life does continue in the form of future generations of people. Yet people continue to use and misuse the environment for their own gain. This is the belief that success of a human being is measured in terms of amassing material wealth. The Tibetan Buddhist theory is that a belief in a life after this one changes the present outlook on life. In the west old people are often felt to be of less use than a healthy, fit young person. By placing such strong importance on youth a true fear of growing old and dying exists. It is Buddhist philosophy that teaches us to appreciate life through all of its stages including death, so that when the time comes we are prepared for passage.

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# EVOLUTION OF THE WESTERN ATTITUDE TOWARDS DEATH: FROM THE MIDDLE AGES TO THE PRESENT

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## ABSTRACT

**“Men have been talking of death from time immemorial- sometimes sublimely in prose and poetry, in painting and sculpture and in music- till silence seemed to fall in the recent past” (Boyd, 1977)**

**Before the 15<sup>th</sup> Century, death was seen as an occasion for the renewal of life and Christians were urged to be constantly aware of their approaching deaths. Since then, Western attitude towards dying, as well as the representation or figure of death, has evolved through several distinct phases. This constantly changing attitude, in turn, has had a profound influence on the prevailing concept of health. As society began to question the Church and people began to take a more active role in their lives death was transformed from a “natural event” to a violent, irrational end to life. Concurrently, the image of death evolved from an autonomous to an independent figure, which had to be battled. As society’s attitude towards dying changed, so did the role of the physician. It was only beginning in the 18<sup>th</sup> Century that physicians were employed to interfere in the dying process and that medical literature on the signs of death began to appear. Contemporary society is now seen as being unable to cope with death and it is therefore felt that we must be protected from it.**

**By reviewing some of the important changes which have occurred in Western society over the past five or so centuries, I plan to give some reasons as to why death has evolved from an event that used to be celebrated to one that is feared.**

***“Men having been talking of death from time immemorial- sometimes sublimely in prose and poetry, in painting and sculpture and in music- till silence seemed to fall in the recent past.” (Boyd, 1977)***

Prior to the Middle Ages, death was seen as an integral part of life. Since then, the Western attitude towards dying has been steadily evolving. Today, this event that used to be celebrated, is now feared. A natural death, one that occurs in old age following years of good health is in reality a very recent ideal (O’Gorman, 1998). In accordance with the evolution of society’s perspective on dying, the image or figure of death has also changed over time and has come to represent each era’s prevailing concept of health (Illich, 1976). In the past, this concept was

shaped by a number of factors, including the important institutional structures of the time, any deep-seated myths which were believed, and the social characters which predominated (Illich, 1976). Therefore, the image of death and society's attitude towards dying are both culturally conditioned. Many authors have described this evolution in several distinct phases (Illich, 1976; Ariès 1976). Each stage can be substantiated by the artistic representations of the figure of death and the deathbed scene, as well as the work of various writers (O'Gorman, 1998). This paper will explore some of the historical developments that have occurred in Western society as well as describe how the representation of death was evolved in an effort to explain why today the word death has virtually disappeared from the English language.

### **Middle Ages to the 15<sup>th</sup> Century**

“Either death is a state of nothingness and utter unconsciousness, or, as men say, there is a change and migration of the soul from this world to another... Now if death be of such a nature, I say that to die is to gain; for eternity is then only a single night.” (Plato, taken from Bryant, 1986)

Before the 15<sup>th</sup> Century, death was an occasion for the renewal of life (Illich, 1976). Physical death was seen as an access to eternal life and Christians were therefore urged to be constantly aware of their approaching graves (Illich, 1976). This feeling can be summarized by the Latin phrase “*Media vita in morte sumus*” (Balbulus Notker, 10<sup>th</sup> Century, taken from Ariès, 1976) which translated into English means, “In the midst of life, we are in death” (Ariès, 1976). Death was something that occurred at home, surrounded by friends, family and children. An essentially common place event, it was accepted calmly (Ariès, 1976). In fact, popular folklore believed that at night the dead emerged from their graves and danced in the cemeteries (Illich, 1976). Because of this, there existed the pagan tradition in which crowds would dance on tombs in the churchyard. This event was believed to awaken the deceased and was seen as a means of celebrating the joy of being alive (Illich, 1976).

### **15<sup>th</sup> Century**

By the end of the 14<sup>th</sup> Century, however, there was a radical transformation in how death was perceived. People began to take a more active role in their lives and tried to adopt a more optimistic view of time and aging (Illich, 1976). With this, death became an introspective and autonomous experience- a consequence that was regarded as a personal intervention by God rather than the decision of a foreign agent (Illich, 1976). Death, therefore, was seen as an intrinsic part of life and a “natural event” (Illich, 1976). Dying suddenly without warning or without having a chance to prepare was considered to be a punishment by God (Illich, 1976).

As greater emphasis was placed on the significant moment of death, people naturally wanted to master it. “How a person lived became secondary to how one died” (O'Gorman, 1998). One of the most popular books of the time was entitled *Ars Moriendi*. This book was a picture guide teaching people the proper way of accepting death with dignity. Several woodcuts are illustrated which represent angels and demons struggling over the soul of the dying. This do-it-yourself guide urges readers to refuse the temptations of the devil and to repent their sins and thereby

allow their souls to be carried up to Heaven (Noyes, 1971). No figure of “a” death is present and it is very much up to the dying individual to decide whether his soul will ascend to Heaven or be forced down to Hell (Noyes, 1971).

## 16<sup>th</sup> and 17<sup>th</sup> Century

“Death is the enemy...Against you I will fling myself,  
unvanquished and unyielding, O Death” (written by Virginia  
Woolf in *The Waves*, 1931, taken from Bryant, 1986)

In the beginning of the 16<sup>th</sup> Century, there was again a radical shift in society’s attitude towards dying. This was mostly due to the fact that people became more dependent upon themselves rather than on the Church (Tuchman, 1978).

In 1543, Copernicus published *The Revolution of the Heavenly Bodies*. There, Copernicus stated for the first time that the Solar System did not revolve around the Earth as believed but that it in fact revolved around the Sun (Tenkin, 1975). This was in direct contrast to what the Church preached. Subsequently, as people began to feel that they could no longer trust what the Church was telling them, the idea of dying became quite frightening (O’Gorman, 1998). Death was no longer seen as a transition into the next world. Similarly, the image of death was no longer seen as autonomous but as an independent figure who called on people (Holbein, 1971). Dying became a violent and irrational end; a “force of nature” which attacked society randomly, irrespective of class, and therefore something that needed to be battled (O’Gorman, 1998). There was a new fear of being “in the grip of death” and of being attacked suddenly (Boyd, 1977). Artistically, this attitude was represented by depicting death as a decomposing figure or as a naked skeleton, carrying both a sword and either an hourglass or striking the tower clock (Illich, 1976).

With this newfound fear of dying, a new curiosity in the afterlife emerged. Medical folk-practices became quite common, and were intended to help people meet their death with dignity (O’Connor, 1966). Similarly, superstitions were developed to help recognize whether somebody’s sickness required acceptance of an approaching death or some kind of treatment (Illich, 1976). For example, if a flower thrown into the fountain of the sanctuary drowned, death was imminent and it was considered useless to spend money on cures (Illich, 1976). As people began to fear not only death but also the act of dying, there was also the invention of remedies, which were designed to alleviate the pain associated with this process (Illich, 1976).

Up until the 16<sup>th</sup> Century, the corpse was still treated like a living person. In fact, law even recognized its standing in society and criminal proceedings against the dead were quite common. Somebody could be hanged for being a thief and then could still have his/her head cut off for being a traitor (Illich, 1976). The new 16<sup>th</sup> Century image of death, however, reduced the human body to just an object, which consequently reduced resistance to cadaver dissection. Advances in pathological anatomy subsequently increased by the beginning of the 18<sup>th</sup> Century (Alexander, 1980).

## 18<sup>th</sup> Century

“For Americans, death is un-American and an affront to every citizen’s inalienable right to life, liberty, and the pursuit of happiness.” (Toynbee, taken from Bryant, 1986)

A significant change in society’s attitude towards death occurred in the 18<sup>th</sup> Century with the beginning of the Industrial Revolution. The enlarged bourgeoisie and society was beginning to want good health into old age (Illich, 1976). With this, equality in death came to an end and those that could afford it began to pay to keep death away (O’Gorman, 1998). People could stay on the job longer and therefore aging became a way to capitalize on life (O’Gorman, 1998). Prior to this time any attempt to increase life expectancy was considered blasphemous (Illich, 1976), however, with the 18<sup>th</sup> Century, there came a new role for the physician- that of the prolongation of life (Illich, 1976).

The state now allowed doctors to become the new social and political reformers (O’Gorman, 1998). Physicians began to be employed to interfere with the process of dying and therefore the middle class would now pay physicians to tell death when to occur (O’Gorman, 1998). This forced doctors to take responsibility of informing the dying individual that death was approaching; a role that used to be that of the family (Ariès, 1976). Artistic representations of the deathbed scene depicted the physician physically fighting death away (O’Gorman, 1998). Being now able to see the body as just a machine helped physicians believe that they could actually interfere in the dying process (Alexander, 1980). Subsequently, medical literature of the signs of death first started to appear (Alexander, 1980). Disagreement, however, as to what these signs actually were led to wide spread public fear of premature burial (Alexander, 1980). With this, in the 1760’s, the Humane Society was created to resuscitate the apparently dead (Alexander, 1980). Society, on the other hand, used the notion of vampires to explain both the unknown and the causes of many common deadly infectious diseases, such as rabies and tuberculosis (Hampl and Hampl, 1997).

## **19<sup>th</sup> Century**

With the new emergence of the scientific doctor in the 18<sup>th</sup> Century, death was changed once again in the 19<sup>th</sup> Century to be the outcome of specific illnesses (O’Gorman, 1998). There was no longer one metaphorical death figure but many personified diseases which roamed the earth (Illich, 1976). Being dead now had to be certified by physicians, and in 1803, the Civil Code was enacted which required that an officer be present to verify death (Alexander, 1980). It is this new power given to medical doctors, which may have helped contribute to the myth that physicians actually have power over death (O’Gorman, 1998). Various safeguards were therefore proposed to prevent against premature burial and premature cessation of medical intervention (Alexander, 1980). These safeguards included new laws, mechanical devices (such as alarms attached to the body) and burial rituals (Alexander, 1980). For example, in some European countries law required that there be a twenty-four hour delay between pronouncing death and burial. During this time, the body was observed around the clock until the last possible moment to ensure that the individual did not just wake up from a deep sleep (Alexander, 1980). Similarly, washing the body prior to burial and wailing during the funeral ceremony were efforts employed to revive the apparently dead (Alexander, 1980).

## **20<sup>th</sup> Century**

“For the dying, the fear of death has at least two facets. One is the universal fear of personal extinction. The other is related to the particular process of death; the diseased person fears the manner in which death will occur rather than death itself. For the physician, on the other hand, the fear of death may reflect a sense of impotence, a defeat as a physician.” (Seravalli, 1988)

By the 20<sup>th</sup> Century, health was seen as a civil right and a commodity (Illich, 1976). This enabled people to challenge death and dying (O’Gorman, 1998). Contemporary society is now seen as unable to cope with death and therefore it was felt that we have to be protected from it (Sweeting and Gilhooley, 1992). Illich (1976) describes death as becoming “medicalized” in the 20<sup>th</sup> Century. Families hand over the responsibility of the dying individual to the hospital, where death takes place under sedation, surrounded by the medical profession and without the patient ever realizing what is happening (Ariès, 1976). Because physicians still cannot agree as to what actually constitutes death, it has been redefined (Sweeting and Gilhooley, 1992). Unlike the 17<sup>th</sup> Century, when death was seen as a single moment, time of death in the 20<sup>th</sup> Century has been lengthened and subdivided to suit the doctor (Ariès, 1976). There is no longer just death, but now there is brain death, biological death, cellular death, etc. (Alexander, 1980). Similarly, whereas in the 15<sup>th</sup> Century, an ideal death occurred slowly and was expected, in the 20<sup>th</sup> Century and now into the 21<sup>st</sup> Century, the ideal death is one that occurs quickly and without warning (Ariès, 1976).

## **21<sup>st</sup> Century**

Today, the word death has virtually disappeared from the English language and its use has become taboo. Funeral directors are employed to prepare the body, such that the corpse ends up looking as natural as possible (May, 1973). Recently, with the descriptions of near death experiences, there has become this new hope that perhaps life does not end with death and that may be an afterlife that should not be feared (Ring, 1985). Today, people are beginning to challenge the medical profession and there is a return to holistic concepts. A recent Mid America Heart Institute study conducted in Kansas City determined that heart patients did 11% better when a volunteer outside the hospital prayed daily for a “speedy recovery with no complications”. This 11% suffered fewer infections, heart attacks and treatment failure compared to the unprayed-for patients and fared significantly better by thirty-five medical measurements, including the amount of medications needed and the type of treatment used (Harris et al., 1999).

## **Summary**

Throughout history, several changes in society have transformed the experience of dying. These have included a loss of spirituality, which was first seen in the late 16<sup>th</sup> Century and the beginning of capitalism and an increase in technology that began with the Industrial Revolution of the 18<sup>th</sup> Century. Both this increased fear of dying and this increased desire for capital have lead to an increased desire for immortality. In addition, there has also been an increase in life

expectancy due in part to improved education and legislation on the importance of proper health care practices (Boyd, 1977). These have contributed to the current view of death as being both unnatural and unhealthy. It will be interesting to see how society's attitudes change in the near future with all of the political restructuring that is presently occurring and affecting public access to health care in Canada.

### **Acknowledgements**

I would like to acknowledge the help of Dr. Ken Lukowiak, University of Calgary, for his support and ideas, as well as Dr. William Whitelaw, University of Calgary, for his enthusiasm and guidance.

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# COUCHING FOR CATARACT: IT'S RISE AND FALL

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## ABSTRACT

**The technique of couching as a means of treating cataract has existed in the medical literature since 1000 B.C., and only gave way to current practices of extraction in the mid-19th century. Couching (from the French, coucher, to put to bed) consists of displacing the opaque lens downwards from its natural location behind the pupil, so that light can freely enter the eye. It has been suggested that couching for cataract was discovered by accident, with later refinements to the procedure and the instruments used. The technique, still practiced today in parts of Asia and Africa, has changed little during its three thousand year history. Historical evidence suggests that couching arose on the Indian sub-continent. From India, it appears to have passed to the Greeks and Romans, thence to Arabic medicine in the Middle Ages, to emerge finally as a well-established European practice. The persistence of the technique probably lies in its simplicity, the sensational results possible when the operation is successful, and various factors that make couching particularly appealing to "traveling healers". The introduction of cataract extraction signaled the demise of couching as the standard of care for cataract, though the transition from couching to extraction was by no means smooth. Couching remains a favorite among many traditional healers the world over, and a look at its history provides an intriguing glimpse into the life of a medical procedure that truly stood the test of time.**

Gazing back down the corridors of time from our present vantage point, one is usually astounded by the changes which have occurred in the lives of persons and nations, in the appearance of the earth, and in the workings of technology and society. The ever-changing face of medicine is but one example. From the fear and mysticism of pre-Hippocratic times, through all the twistings and windings of Greek and Roman medicine, the arts of the Arabic scholars, and arriving finally by gigantic leaps and bounds of the past two centuries to the Western medicine of the present day, we are awed by the ceaseless and changing activity of the ages on this our work. This endless history of change serves all the more to contrast those few things in medicine which have survived the ages constant and unaltered.

One such is couching. Since its first recorded appearance three millenia ago, couching has remained virtually unchanged as the only means of clearing cataractous eyes until the advent of modern cataract extraction. This paper deals briefly with the couching procedure itself, the rise of the technique, its historical spread, and finally its supplantation by cataract extraction – in the

hope that the reader will alike come to share an appreciation for the long and rich history of this truly time-honored procedure.

We begin by describing the couching procedure itself. Stedman's Medical Dictionary (26<sup>th</sup> ed.) defines couching as follows:

“**couching** (kowch'ing). An obsolete operation for cataract, consisting of displacement of the lens into the vitreous cavity out of the line of vision. [Fr. *coucher*, to lay down, to put to bed]”<sup>i</sup>

For the benefit of those readers unfamiliar with the anatomy described above, the lens of the eye is positioned directly behind the pupil, and is held in place by zonules. These zonules are thin fibers projecting from the ciliary body which rings the eye behind the iris and is responsible for focusing the lens. The lens is accessible from the exterior by puncturing either the cornea (above the level of the iris) or the sclera (below the level of the iris), and both routes have been described to couch the lens. In the more common anterior approach, a needle is inserted until it reaches the lens followed by disruption of the zonular attachments, and the lens is pushed back and down into the vitreous cavity. One interesting point to be made is that the procedure works best on mature cataracts, the most common type, because the zonules are most degenerated in these eyes. In cases where the lens does not remain in the vitreous, but rebounds into its original location, most sources recommend trying again:

“...keep it there with the point of your needle, the space of three minutes of an hour, and then remove your needle easily from it, and if it happen to rise again, bring it back the second time...”<sup>ii</sup>

or as Celsus writes,

“If it sticks there the cure is accomplished; if it returns to some extent, it is to be cut up with the same needle and separated into several pieces, which can be the more easily stowed away singly, and form smaller obstacles to vision.”<sup>1</sup>

There are many and varying recommendations about what type of instrument should be used to couch. The earliest sources describe an operation using a sharp knife to make the initial incision, followed by a needle to couch the lens. Celsus, in contrast, used a single sharp needle to both puncture the sclera and couch the lens. In general, the Arabic sources revert to the two-instrument method<sup>iii</sup>, and couching operators in Europe draw variably on both methods.

As to the make and model of the couching needle itself, sources are variable and sometimes contradictory. Susruta describes the couching needle thus

“The Śaláká (rod) should be made to measure eight fingers in length, its middle part being covered with strings of thread and resembling the upper

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<sup>1</sup> “Si haesit, curatio expleta est: si subinde redit, eadem acu concidenda et in plures partes dissipanda est, quae singulae et facilius conduntur et minus late officiant.” Celsus. *De Medicina*. Vol. 3.; 350.

section of the thumb in circumference and its ends terminating in the form of a bud. The rod (Śalākā) should be prepared of copper, iron or gold.”<sup>iv</sup>

Benevenuto Grassus of Jerusalem writes in 1474 that

“The needle should be made of gold or silver. I am opposed to the use of steel, which has at least three disadvantages: First, it is much harder than silver and on that account injures every part it touches...a steel instrument is also very heavy...take note, also, that a gold instrument especially clarifies objects with which it comes in contact because of its inherent power over cold and dampness.”<sup>v</sup>

However, Ambroise Pare, a century later, writes that

“It must be made of iron or steel, and not of gold or silver, it must also be flattened on the sides, and sharp pointed, that so it may better pierce the eye, and wholly couch the cataract once taken hold of; and lest it should slip in the surgeon’s hand, and be less steady, it shall be put into a handle...”<sup>vi</sup>

Almost all records of the couching procedure also mention the care the patient should receive before and after the operation. Drawing on common stand-bys of his medical armamentarium, Susruta prescribes sprinkling with breast milk and clarified butter following surgery, bandaging with linen, and bed-rest.<sup>vii</sup> Celsus writes that

"Before treatment the patient should eat in moderation and for three days beforehand drink water, for the day before abstain from everything...

"After [the operation] the needle is drawn straight out; and soft wool soaked in white of egg is to be put on, and above this something to check inflammation; and then bandages. Subsequently the patient must have rest, abstinence, and inunction with soothing medicaments; the day following will be soon enough for food, which at first should be liquid to avoid the use of the jaws; then, when the inflammation is over, such as has been prescribed for wounds, and in addition to these directions it is necessary that water should for some time be the only drink.”<sup>viii</sup>

These instructions were for the purpose of preventing infection. It would be of interest to know the degree to which breast milk, clarified butter, and egg white<sup>2</sup> accomplished this purpose!

Several modern-day studies have addressed the complications attendant on couching as it is currently practiced in India and Africa. Details from the largest study<sup>ix</sup>, done in Pondicherry,

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<sup>2</sup> The application of egg-white following couching is mentioned by numerous sources more contemporary than Celsus: Guillemeau – *Traité des Maladies de l’Oeil* (1585), 166; Baily – *Two Treatises Concerning the Preservation of Eye-Sight* (1616), 53; Read – *Diseases Incident to the Eye* (1710), 137; Kennedy – *A Treatise of the Eye* (1731), 89; and others.

India, by Sood and Ratnaraj, are given below. 115 patients (139 eyes) presenting to the General Hospital and Jipmer Hospital in Pondicherry with eye complaints over a two-year period, and found to have been previously couched, were included in the review. Overall, the authors estimated that approximately one in 260 patients seen for eye complaints had been previously couched - a not inconsiderable number! As can be seen from Table 1, couching is not without the risk of serious complications.

**Table 1:** Complications seen post-couching

Complications	# of cases	% of
Secondary glaucoma	47	51.6
Iritis	24	26.4
Phthisis bulbi	7	7.7
Aftercataract	4	4.4
Detachment of retina	3	3.3
Aphakic corneal dystrophy	3	3.3
Staphyloma	3	3.3
Panophthalmitis	2	2.2
Injury to iris	2	2.2

Even more to the purpose, because the lens remains in the eye following couching, every eye couched will eventually develop a reactive inflammation to the degenerating lens and become permanently blind as a result. Couching is, at best, a short-term cure.

Turning now from a discussion of the nature and practice of couching, let us seek the historical roots of this enduring practice. The earliest surviving record of the couching operation comes to us from the writings of the great Indian physician and surgeon, Susruta. While there is some debate concerning the time at which Susruta lived and penned these works, most historians believe 1000 B.C. to be a reasonable estimate<sup>x,xixii</sup>. Considering that Susruta's account of couching portrays a well-developed and accepted technique, we can assume that the origins of couching reach back at least three millennia.

Interestingly, while mention of various ophthalmological diseases and treatments can be found in the writings of many other ancient civilizations<sup>xiii</sup>, there is no mention of surgical treatment of any kind for cataracts outside of the Indian texts. It is not until the writings of Celsus in the early years of the first millennium that couching appears outside the bounds of the Indian subcontinent.

Though the origins of couching are relatively well known with regards to time and location, there is no evidence, and very few hypotheses<sup>3</sup>, as to *how* it was discovered. Perhaps, as with most discoveries, serendipity was responsible. It is not beyond the realm of possibility that someone may have observed that sight was improved following trauma to a cataractous eye in which the lens was displaced, and followed up on that discovery by attempting the same effect using a needle to dislodge the lens. While, as with most discoveries, we may never know the true origin of couching, it is yet rather intriguing to cast the eye of the imagination back on that postulated

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<sup>3</sup> for an interesting discussion of one such hypotheses, read H.T.Swan's "An ancient record of 'couching' for cataract" in *Journal of the Royal Society of Medicine* 1995; **88**: 208-211.

first event and consider the thoughts proceeding through the minds of that first coucher and his patient as they make the grand attempt!

One of the more interesting aspects of the history of couching is how the procedure leaped the bounds of the Indian subcontinent, where it originated, to become a common practice in Roman, Arabic, and finally Western European medicine of the eighteenth century. To remind the reader, there is no mention of couching in Greek medicine prior to the works of Celsus in A.D. 37, where it re-appears as a well-documented and established technique.<sup>xiv</sup> The most reasonable proposal for this leap is that couching was transported to the Greek school at Alexandria around the time of Alexander the Great's campaign to India, and from thence was disseminated, along with Greek medical tradition, to Rome. The theory that Celsus inherited his knowledge of couching from Alexandria is also substantiated by references he makes to Herophilos and Philoxenes, physicians of the Alexandrian school.<sup>xv</sup>

Couching is mentioned by several Roman writers, the most notable being Celsus (25 B.C. – 50 A.D.) and Galen (131 – 201 A.D.). Interestingly, the technique is largely identical to that practiced by Susruta, except that a single instrument is used, and egg-white is substituted for clarified butter as a post-operation salve, as mentioned previously. While European couching traces its origins in large part directly from Roman roots, it drew also on the simultaneous developments in Arabic medicine during the middle ages. Apart from reverting to the safer two-instrument method, where an initial incision of the cornea was made prior to insertion of the couching needle, the Arabs are also responsible for a number of innovations. The Arabic surgeon Rhazes wrote an account of a couching procedure in which the lens capsule was pierced by the needle and the cataractous lens core suctioned out by means of a hollow glass rod.<sup>xvi</sup> Ammar, another Arabic writer, records cataract treatment by insertion of a hollow needle and direct suctioning of the cataract.<sup>xvii</sup> Sir Stewart Duke-Elder however, in his *System of Ophthalmology*, notes that Avenzoar, towards the end of the classic Arabic period, sums up the Arabic position by stating that “the treatment of cataract by extraction is impossible and reclination only is permissible.”<sup>xviii</sup>

Moving into the later medieval period in Europe, the number of sources dealing with couching increases dramatically. Rather than attempting to provide a review of these works, several of which are available<sup>xix</sup>, this paper will simply highlight some of the more important details. Michel Pierre Brisseau's demonstration to the Academie Royale des Sciences in 1705 that a cataract was actually an opacity of the lens was a major breakthrough in the knowledge and treatment of cataract in general. Prior to this, the medieval world believed that the opacity termed “cataract”, or waterfall, was an opaque humor which fell down in front of the lens, obscuring the vision. In 1707, Charles Saint-Yves, the great French ophthalmologist, removed a cataractous lens through a corneal incision after it had been displaced anteriorly during a couching attempt. Several other surgeons removed lens by various means in the following decades, mostly because of couching misadventures, but it was not until Jacques Daviel's 1753 paper to the Royal Academy of Surgery that the stage was set for one of the greatest revolutions in ophthalmological history – the transition from couching to cataract extraction. In this paper, Daviel reported 115 extractions with 100 successes (far better than most couchers) and suggested that couching should be abandoned in favor of the new method. The next century witnessed a lengthy and bitter debate between advocates of the time-honored couching method and the new

and more technically difficult extraction method. Eventually, as we know, extraction won the field and is now universally accepted by ophthalmologists in the Western medical tradition.<sup>4</sup>

Couching, however, is not dead. It survives, primarily in Asia and Africa, where access to modern ophthalmological services is limited and where traditional couchers may still ply their trade in relative freedom. While estimates of its prevalence vary,<sup>9,xx,xxi</sup> couched eyes are nevertheless a recurrent finding in many parts of the world. The reasons for this persistence – indeed for the persistence of couching over the ages – are in fact rather simple. When accomplished without short-term complications, couching transforms a man or woman who has severely limited vision (unable to see their own hand in front of their face) into a person who is independently mobile, can accomplish all the activities of their daily lives, and is no longer a burden on the family or community. In successful cases, the transformation is immediate – one second the patient is blind and the next, with a twist of the needle, they can see. Furthermore, because the traditional coucher plies a nomadic trade, in the eventuality that complications do develop, the surgeon can be out of reach of repercussions by the time this is discovered. Couching is in many respects the ideal quack cure. What must be remembered, however, are the reasons couching is now viewed as quackery – the dismal rate of complications, and the fact that every couched eye will eventually succumb to permanent blindness because of the retained lens.

In conclusion, an historical look at the couching operation reveals a technique whose origins are masked in the dawn of medical history, yet has survived essentially unchanged through the ages even to the present day. It reveals a surgical therapy for one of the most common and debilitating ailments known to mankind, which won and held acceptance because of its simplicity and sometimes brilliant successes, but with an accompanying dismal rate of complications and the promise of eventual blindness without recourse. And it provides the student of medical history with a worthy and intriguing subject of study, earning this right by passing history's most rigorous challenge – the test of time.

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# **A ROSEBUD BY ANY OTHER NAME: THE HISTORY OF CLEFT LIP AND PALATE REPAIR**

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## **ABSTRACT**

**The development of the repair of cleft lip and cleft palate has spanned many nations and centuries. This progression did not occur in a forward fashion due to the many barriers that were faced by these pioneering surgeons.**

**The first record of surgical repair for cleft lip can be found in the Chin Annals (390 AD). The Leech Book of Bald (920 AD) contains a short chapter on the surgical treatment of cleft lip. The Flemish surgeon Jehan Yperman (1295-1351) gave the first exact description of unilateral and bilateral cleft lip surgery between 1305 and 1310 AD. Pierre Franco first described congenital cleft palate in 1556. Ambroise Paré (1510-1590) introduced the use of an obturator for cleft palate. Von Graefe (1816) and Roux (1819) independently performed the first closure of congenital cleft soft palate. Dieffenbach (1828) achieved the first closure of the hard palate. Malgaigne (1843) and Mirault (1844) were the first to successfully use local flaps in closing cleft lip.**

**There were many barriers to the development of cleft lip and cleft palate repair. The principles for surgical repair of these deformities originated from China, pre-Norman Britain, Flanders, France, Italy, America, to name a few. It was not until the nineteenth century that surgeons from different countries publicized their techniques and tools. The Church decreed that physicians could not invade body cavities or draw blood. Most surgeons believed that defects of the palate resulted from syphilis, and avoided operating for fear that they would contract the infection through direct contact with the patient. Without anaesthesia, these operations were extremely painful and difficult. Surgeons did not employ anaesthesia for cleft palate procedures until the 1860s because they believed that they needed the co-operation of the patient during the operation.**

T'u ch'ueh, colobomata, curta, sceard, sarte monde, ligocheilos, bec-de-lièvre, hasencharte, labis laporino, harelip, hairlip. A defect that transcends race and gender, cleft lip and palate has afflicted many over the course of millennia. The management of cleft lip and palate, more specifically, the surgical management, has had a long and tortuous history. The many obstacles to its development can be followed as it parallels the humble history of surgery.

The first reference to the term "harelip" and the first record of cleft lip surgery comes from ancient China and can be found in the *Chin Shu*.<sup>1</sup> The Chin Annals were compiled from

firsthand government archives under the supervision of Emperor Tang Tai-Tsung (627-650 AD) and covers the period between 317 to 420 AD. It includes a biography relating the life of Wei Yang-Chi, who came from a poor family of farmers but ultimately, through his diligence and determination, became the governor-general of six provinces and was conferred an ancient order. Wei Yang-Chi was born with a *t'u ch'ueh* [translation: defect appearing in the hare]. When he was 18 years old, he sought out and impressed a governor, who allowed his personal surgeon to examine Wei Yang-Chi, after which the surgeon said:

I can cure your condition by cutting [translation: to cut with a knife] and stitching the edges together [translation: to stitch up as in patching garments with needle and thread]. However, after the operation it will be necessary for you to rest the affected part for 100 days. During this time, you can ingest only thin gruel and you cannot smile or talk.

Wei Yang-Chi replied:

What is 100 days to me when for relief of my condition I would remain silent for half my lifetime?

Wei Yang-Chi was treated and was able to follow the doctor's post-operative orders. Based on the events described, this operation can be dated circa 390 AD.

The *Leech Book* was written by Cyril Bald in Winchester, the capital of Anglo-Saxon Wessex, circa 920 AD.<sup>2</sup> "Leeches" was the name given to the Anglo-Saxon and medieval physicians in pre-Norman Britain. Among the varying descriptions of old medications and ointments, there is a small chapter on unilateral and bilateral cleft lip surgery [translation: notched lip]:

The preparation of the red ointment which will be used on the wound after surgery.  
The excision of the edges of the cleft.  
The suturing with silk.  
The application of the ointment.  
The timely removal of the stitches before they are rejected.

This is the first record of the surgical treatment of a cleft lip in a medical manuscript.

Jehan Yperman, born in Ypres (circa 1260–1331 AD), was the first Flemish authority on surgery and wrote the surgical text *De Cyrurgia*.<sup>3</sup> He devoted an entire chapter on congenital cleft lip surgery (translation: notched or cleft mouth).

Cut, with scissors, as little as possible of the edges of the loss of continuity, so as to remove the epidermis and freshen the edges.

One shall then approximate the freshened edges and suture them with a triangular needle, threaded with a waxed suture, in the manner previously described.

It is essential that these edges are joining each other exactly after the suture, as well at the inside as at the outside; and then, one should insert a long needle across the two approximated parts of the lip, at a reasonable distance from the edges of the wound; apply then a wraparound (figure-of-eight) thread around this needle and put on it red powder or powder of lime and above this powder apply an “emplaster” soaked in white of eggs mixed with oil of roses.

Some surgeons do not suture the cleft mouth, but treat them by bringing the edges together only with transfixing needles.

A 13<sup>th</sup> century German text *Frauendienst* describes a cleft lip operation on a 55 year old troubadour.<sup>4</sup> The operation was postponed until Spring because it was associated with successful regeneration and re-growth. A scissor-like knife with overlapping blades was used and the operation was carried out without anaesthesia. The patient lay in bed for at least 5 weeks, during which time a bright green ointment, which “stank like a dead dog” was smeared around the wound. The patient survived for another 20 years, dying in 1275.

Heinrich von Pfolssprundt, a Bavarian army surgeon, described cleft lip closure in his book *Buch der Bundth-Ertznei* (1460), considered the first work of early German surgery.<sup>5</sup> A razor or scissors were used to freshen the edges so that the apex was higher than the cleft itself and interrupted sutures were placed through the entire thickness of the lip.<sup>6</sup> A plaster was then applied, containing a red healing salve, and changed twice a day until the wound healed in 3 weeks.

Jacques Houllier (? – 1562) was the first to propose suture of palate perforations caused by syphilis.<sup>7</sup>

The body should be purged, bled, and a gargle of guaiac and milk decoction prescribed, with local applications of *aqua alchymistarum*. It is then advisable to take a very long needle, curved at its end and perforated at its sharp point, by means of which a thread of waxed silk can be brought to the place requiring stitching.

The primary repair was not always successful, and obturators made of wax or sponge would then be employed.

One of the greatest 16<sup>th</sup> century French surgeons, whose name is overshadowed by Ambroise Paré but whose contributions to surgery are not, is Pierre Franco. Franco was born in Provence, France circa 1505 but fled to Switzerland due to his Protestant beliefs (Huguenot).<sup>8</sup> He published two books, both of which contained the first discussions of congenital cleft lip and palates. In his first book, *Petit Traité* (1556), Franco describes congenital and acquired cleft lip and palate, and the resulting disabilities.

The entire skin of the margins which are to be joined must be cut with a razor or scissors, or with the cautery. Then put on dressings to ease the

pain, and leave them for one or two days. And if the cautery is used, after the dressings are put on, the eschar will have to be loosened with fresh butter or something similar before proceeding further. For otherwise it would generally be a waste of effort and hurt the patient needlessly, especially when the margins are far apart. After this is accomplished, the margins must be brought together so that there is no portion of one which does not touch the other. This can be done in two ways, one with needles, as I shall show later, and the other with pieces of cloth triangular in shape and suitable in size for the patient. The latter [method] is preferable as causing the least pain and the least scarring. This is very desirable in these areas, especially when [the patient] is a girl.

Franco continues by giving a recipe for an ointment to be applied to dressings that will adhere to the face. These cloths were applied to the cheeks in order to avoid further scarring by applying the sutures to the cloth. The other method described uses two or three needles with figure-of-eight twisted sutures around the needle holding the wound margins together. Franco used bandages on the cheeks that were sewed to a cap to relieve the wound tension and hold the margins tightly together. Franco also describes bilateral cleft lip and palate (commonly called “hare’s tooth”).

As for the method of treatment, it is like the one that has been outlined above, except that when these teeth or mandibles are so large that they cannot be covered, there is no danger in cutting of the excess with cutting forceps or with a small saw, leaving the flesh over them [prolabium] on each side.

The famous French surgeon, Ambroise Paré, the child of a cabinet-maker, was born in 1510 AD near Laval, France and went on to become surgeon to several kings before his death in 1590.<sup>9</sup> He wrote many medical textbooks. *Oeuvres*, published in 1575, is the last edition of his complete works published during his lifetime. His writings included the following:

Five things are proper to the duty of a surgeon:

- To take away what is superfluous.
- To restore to their places things which are displaced.
- To separate those things which are joined together.
- To join those which are separated.
- To supply the defects of nature.

Paré included harelips in examples of uniting things that are separated. Also, “filling the hollowness of the palate, eaten by the Pox, with a thin plate of gold or silver” is found under examples of supplying defects of nature. Paré designed several types of obturators for use in defects due to syphilis or trauma.

Gasparo Tagliacozzi of Bologna, Italy (1546–1599) treated harelips by excoriating the edges and suturing them together.<sup>10</sup> This was described in his text *De curtorum chirurgia* (1597). Larger

defects of the lips used the same procedure for making a new nose: a flap from the arm was sutured to excoriated skin, the immobilized arm was bandaged against the head, using egg whites on the bandages. The flaps were severed from the arm after two weeks.

Around the year 1600, Hieronymus Fabricius ab Aquapendente of Padua (1537-1619), a teacher of Harvey, recommended the use of buccal mucosa and tissue from the alveolus in closing clefts of the lip.<sup>5,6</sup> For a wide cleft, he used agglutinative bandage to bring the edges of the cleft together before freshening the margins and inserting needles, the ends of which he bent over after having passed them through.

Henrik van Roonhuyze of Amsterdam wrote about “hare mouths” (bilateral cleft lip and cleft palate with projection of the premaxilla) in 1661.<sup>10</sup> He cut away the projecting bone so as to permit suture of the lip. This Dutch surgeon was the first to recommend operating on a cleft lip when the baby was three to four months old (1674).<sup>11</sup>

Some 200 years later, Georges de la Faye wrote a paper describing the correction of bilateral cleft lips.<sup>12</sup> De la Faye was born in 1699 in France. He wrote the *Principes de Chirurgie* in 1739, which was reprinted several times and translated into German, Italian, Spanish and Swedish. He was highly renowned as a surgeon and received many honours before his death in 1781. The paper, written in 1743, describes the cases of a 4 year old child and a 15 year old boy. De la Faye excised the premaxilla and brought the two edges of the lip together with pins, which was wound around with silk. To lessen the tension on the pins, de la Faye would use bandages and plaster of Andrew of the Cross, wrap them around the head and neck and attach them to a bonnet or cap. The pins were removed after 10 days. On the fifth post-operative day, the 15 year old boy’s father dropped some tobacco on his bed which caused him to sneeze violently several times. The pins were disrupted, so de la Faye “fastened two points with interrupted sutures which held the lateral parts of the lip to the round piece of flesh (prolabium)”, which was also reinforced with bandages attached to a cap. The lip was healed in 20 days.

In 1764, Le Monnier, a dentist from Rouen, successfully operated on a child with a complete congenital palatal cleft, extending from the velum to the incisors.<sup>7</sup> He placed a few sutures along the edges of the cleft to approximate them and then freshened them with cautery. The resulting inflammation and suppuration was followed by the union of the two edges. Le Monnier also filled palatal defects by stimulating inflammation by means of irritations. The fissure gradually closed by application of successive layers of “mucous” to the area.

A minister and physician from Pennsylvania who practiced in Delaware, Matthew Wilson (1734-1790) wrote a compendium of medicine called the *Therapeutic Alphabet* (1756-1787).<sup>6</sup> Under the headings “Labium Leporinum, Lagocheilos, Lagostoma”, Wilson described cleft lip surgery as cutting straight margins of the cleft with scissors and using three figure-of-eight pins to achieve closure.

In 1790, Pierre Joseph Desault described a case of a 5 year old girl with a severe bilateral cleft who was admitted to the Hôtel-Dieu, Paris.<sup>13</sup> After premaxillary compression using a bandage, Desault advocated closure of both clefts simultaneously, using the prolabium for the central portion of the lip. Desault’s classic cloth compression bandage was applied before and after

surgery. Once compression had retracted the premaxilla sufficiently, he pared the cleft edges and approximated the lip elements with through-and-through needles wrapped with wax thread in figure-of-eight fashion. The compression bandage was reapplied over the suturing until healing by the tenth day.

Carl Ferdinand von Graefe (1787-1840), devised the first operation for the successful closure of a soft palatal cleft in 1816.<sup>14</sup> Born in Warsaw, his education was typical of that for a German surgeon. In the beginning of the 19<sup>th</sup> century, most of the surgery professors taught that “hare-lips were left without cure”. The “founder” of modern German plastic surgery alluded to a simple straight-line closure for cleft lip, where curved incisions were designed to give a lengthened straight-line closure.<sup>15</sup> In 1816, von Graefe first attempted to close a congenital soft palatal cleft along the same lines as a hare-lip. He cauterized the edges of the cleft velum with a tincture of cantharides to “freshen” them, and then sutured them with interrupted twine threads. He modified this technique and successfully closed the cleft in 1820 by paring the cleft defect with a “uranotome” knife. A second suggestion for separating the epidermis from the cleft edge is by using chemical cautery. Four to five sutures, attached through ligature screws which could be tightened, were inserted. The free ends of the suture were held to the cheeks with adhesive plasters, which would eventually slough off. Von Graefe stimulated the healing process by increasing inflammation by applying hydrochloric acid or other “tincturae” to the suture line.

There was considerable controversy over which surgeon historically achieved the first closure of the soft palate. John Stephenson was born in Montreal with a cleft of the soft palate.<sup>16</sup> Overcoming difficulties with feeding and speech, Stephenson studied medicine at the University of Edinburgh. While pursuing his studies, he decided to visit a famous surgeon in Paris, Philbert Roux. Roux took note of Stephenson’s speech and was both surprised and intrigued to find that this defect, involving only the soft palate, was congenital and not caused by syphilis. He expressed interest in repairing the defect. In 1819, Roux closed the cleft by using three interrupted sutures and by freshening the edges of the cleft.<sup>17</sup> The sutures were removed after three days. He was then able to speak and eat solid food. Stephenson used his experience as the topic of his graduation thesis, and subsequently became a leading surgeon in Montreal and a co-founder of the Montreal Medical Institution, from which developed the Medical Faculty at McGill University.

Roux published this operation and stated that this operation was never performed before. Von Graefe responded in 1820 by saying that: “This remark could hardly come from this physician, who is well read in the medical literature.”<sup>18</sup> Von Graefe then proceeded to give a precise history of the date of the procedure, where it occurred, who it was presented to and where it had been published. He concluded by stating that: “Its existence could not have remained unknown to Herr Roux.” Finally, Roux himself acknowledged that von Graefe had preceded him, and excused himself by reason of his ignorance of the German language and literature.<sup>19</sup> Despite the clarification of this error, it was Roux’s publication which brought this procedure into current surgical use.<sup>13</sup>

Furthering the work of von Graefe and Roux, Johann Friedrich Dieffenbach (1794-1847) published a method for the repair of clefts of the hard palate in 1826.<sup>20</sup> This German surgeon’s palatoplasty involved dissection of the mucosa, division, and immediate or gradual

approximation of the bone by twisting silver or lead sutures passed through holes in the bone by needles of his design.<sup>21</sup>

Up to this point, cleft lips were corrected using a straight-line closure. Finally in 1844, the French surgeon Joseph-François Malgaigne (1806-1865) perceived that a slight notch was the almost inevitable sequel to a straight-line closure, due to the linear contracture of a straight scar and proposed a different method to avoid this.<sup>22</sup> The classical operation had involved freshening the borders of the cleft, which increases the loss of tissue. Malgaigne proposed preserving as much tissue as possible:

by borrowing as needed from the neighboring parts. And if this extra tissue could be taken from the part that the paring requires to be discarded, the benefit would be gained without risk... As to the method of execution, nothing is more simple. Instead of cutting from below upward, one cuts from above downward – and one saves, near the labial border on each side, a little flap turned down by the paring to be used in the repair according to need.

The closure was achieved by employing pins, interrupted sutures and figure-of-eight ligatures, which were removed by the sixth day. A fellow French-man, Germanicus Mirault (1796-1879) responded to Malgaigne's proposition by making several improvements.<sup>23</sup>

Having attained the point from which cleft lip and palate surgery was catapulted to what it has become, the pioneering surgeons of the 19<sup>th</sup> century were not able to perceive the explosion of development in this area that would occur in the following century. James Syme (1799-1870), a student and professor of the University of Edinburgh, was referred to as the “Napoleon of Surgery” and “never wasted a word, a drop of ink, or a drop of blood.”<sup>24</sup> In 1854, the great Syme wrote:

Split palate does not admit of any remedy for the division of the hard palate except the closure of the communication between the nose and the mouth by a piece of silver, enamel, or other substance, so fitted as to retain it without shifting. Fissure of the soft palate may be united in favourable cases by an operation similar to that for hare-lip, but which is uncertain of execution owing to the situation of the parts, their mobility, and the involuntary efforts of the patient...<sup>25</sup>

After examining its history, it is not surprising to see that cleft lip surgery developed before the development of cleft palate surgery. First, there was greater motivation for repair of cleft lip because it affects the facial lip, whereas cleft palate, aesthetically speaking, is easier to ignore.<sup>26</sup> The lip is surgically more easily accessible. The patient's welfare was in more jeopardy treating cleft palate than cleft lip. Finally, prior to the 20<sup>th</sup> century, children born with a cleft palate faced many challenges to surviving past infancy. It was not uncommon to “expose” infants born with a defect. Also, many neonates with a palatal cleft died as a result of an inability to nurse. If the baby was able to overcome the obstacle in receiving enough sustenance to grow, the child was

faced with the handicap of altered speech production due to the cleft palate. As the child grew older, they were extremely disadvantaged and faced discrimination.

Throughout history, there were many false beliefs surrounding the origin of cleft lip and palate. Documentary evidence of cleft lip from 1568 described, complete with an illustration, a “monstrous child” born to an unmarried mother from Maidstone, England, who died within 24 hrs.<sup>4</sup> From the description given, in addition to a facial cleft, this child was also born with spina bifida aperta, myelomeningocele and a talipes deformity. The cleft lip was described as “the mouth slitted on the right side, like a Libardes [lizard’s] mouth, terrible to beholde”. It was evident that the author attributed the congenital defects to the iniquity that conceived the child. He closed his description of the event with the warning:

Which may be a terrour astwell to all such workers of filthyenes and intquity, as to those ungodly livers, who (if in them any feare of God be) may moove them to repentance and amendement of lyfe, which God for Christes sake graunt both to them and us. Amen.

In *De Cyurgia* (1305-1310), Yperman devoted a chapter to congenital defects.<sup>3</sup>

It happens that children are born with defects which are the result of the imagination of the mother during sexual intercourse; that is true with cleft lip, although others state that cleft lip is due to the fact that the mother has eaten either hare or red mullet during pregnancy. This is a false assertion because there are many children with cleft lips of whom the mothers have not eaten hare during pregnancy or have never seen a red mullet.

Despite what Yperman wrote about the lack of association between hares and cleft lips, Olaus Magnus (1490-1558), Archbishop of Uppsala, wrote in 1555 that pregnant women who ate a hare’s head or merely stepped over it brought forth children with “hare mouth”, their lips being permanently parted between mouth and nostrils, unless they immediately sew on a piece of the breast of a very tender chicken, newly killed and bleeding.<sup>8</sup>

In 1693, James Cooke of Warwick’s textbook of surgery attributed cleft lips to “some Frights and strong Fancies, which are usually the cause of monstrous Births.”<sup>27</sup> In the graduating thesis describing his personal experience as Dr. Roux’s first cleft palate repair, Stephenson (1797-1842) related what his father was told when he was an infant:<sup>17</sup>

A doctor summoned by my father made a cursory examination of the fauces and said the trouble was a fissure, the result of inflammation and ulceration caused by the intensely cold weather.

In 1859, Dr. Henry H. Smith delivered a clinical lecture on “hare lip” at the University of Pennsylvania medical school.<sup>28</sup>

In studying the pathological conditions noted in hare-lip, a proper appreciation of the ordinary course of development of the two sides of the

body would be necessary – it being well known that the right side was usually that most developed – the right eye, arm, leg, etc. possessing usually the most power while the left and weak side was most subject to defects of various kinds.

For reasons discussed earlier, congenital cleft palates were not observed commonly. Instead, most of the cleft palates presented were acquired. This happened either through wounds received in war, from arrows or gun shot, or secondarily through disease. The Chin Annals described surgical techniques employed for repair of battlefield cleft lip cases.<sup>26</sup> The majority of the surgeons who participated in the development of cleft lip and palate surgery spent a significant portion of their careers in the military, treating and learning from battlefield wounds.

The development of cleft palate surgery was held back for many centuries because physicians and surgeons believed that most palate defects were the direct result of syphilitic infection and were afraid of contracting the disease by direct contact with the patient.<sup>7</sup> Prior to the Middle Ages, this obscure disease smoldered in various districts of Europe, Asia Minor, Asia, but it broke out in epidemic form at the end of the 15<sup>th</sup> century. In Europe, recognition of the venereal origin did not occur until long after it had ravaged thousands of victims in most of the European countries.

The syphilis seen in the 15<sup>th</sup> century was very acute. Its final tertiary, and often terminal stage, made its appearance remarkably early. In 1498, Leonicensus (1428-1524) described the great pandemic of syphilis and observed that in many syphilitics, the mouth became covered with ulcers called *aptha*.<sup>7</sup> Soon after, Jacob of Catania spoke of buccopharyngeal ulcers, which at times perforated the palate and appeared concurrently with the dissemination of skin eruptions. Fracastorius (1483-1553) gave the name “syphilis”, in 1530, in his poem referring to pharyngeal syphilides. Syphilis reached epidemic proportions during the Middle Ages and the Renaissance, and concern for its treatment overshadowed consideration of congenital cleft palate.<sup>26</sup>

Jacques Houllier was apparently not afraid of syphilitic infection when he recommended suturing for syphilitic palates, as his surgical predecessors probably were. Paré referred only to cleft palate resulting from gunshot trauma or caused by “Lues Venerea”. The fear of syphilitic cleft palate was perpetuated to as recently as the 1800s. Stephenson described that “[my voice] resembled that of a venereal patient who has suffered the partial or complete loss of his palate.”<sup>17</sup> He thought that the reason why his teachers, the British surgeons, did not approach Stephenson on this topic was that “all my medical friends suspected that my trouble was syphilitic.” Stephenson traveled to France to further his medical studies and met Dr. Roux.

[Dr. Roux] suddenly took notice of the harshness of my voice and, rightly dropping his politeness, enquired if I had ever had a syphilitic ulceration of the palate, for there were no external signs of the disease; whereupon I showed him the lesion and explained it all.

When he discovered that Stephenson was born with the defect, Dr. Roux was extremely intrigued. As eloquently stated by Rogers:

With little fanfare and no inkling of the change it would make in the daily miserable lives of thousands of cleft palate victims, within a 3 year period von Graefe and Roux undid the harmful and indifferent effects of 4300 previous years of unintentional ignorance, superstition, surgical timidity and “the venereal taint” by introducing, each in his own manner, a simple closure of the congenitally cleft soft palate.<sup>7</sup>

To a lesser extent, before 1816, cleft palate was also caused by other suppurating and/or destructive disorders such as scurvy, tuberculosis, severe dental and alveolar abscesses or decay. John Banester (1533-1610) implicated dental decay as causing or associated with “corruption” of the palatal bones and “rarity of the flesh” [palatal and alveolar ulcers].<sup>7</sup>

In 1718, Lorenz Heister first mentioned scurvy as a cause of palatal ulcers “which not only destroy the adjacent fleshy Parts, but also erode and extend themselves into the Bones of the Nose.” In Roger's treatment of the topic of surgical indifference, he stated that:

One can certainly sympathize with these early surgeons who probably preferred not to operate on the palate or even in the depths of the oral cavity for fear of the complications which might result from such conditions as syphilis, dental decay, scurvy, scrofula, tuberculosis which would result in an unsuccessful closure of any palatal defect, no matter how small.<sup>7</sup>

Religion also played a role in the hindrance of the growth of cleft palate surgery, and to surgery in general. In ancient China, Confucian teaching forbade dissection, or any drawing of blood.<sup>8</sup> In Anglo-Saxon Britain, in the time of the Leeches, science and medicine rested on the authority of the Church and on empirical knowledge, paganism, magic, and sorcery.<sup>2</sup> This resulted in stagnation and the complete lack of an inquiring spirit over many centuries. References to surgery were scarce and it is surprising to find an entire chapter in the *Leech Book* devoted to cleft lip surgery.

In 1215, the practice of surgery by clerics was forbidden, who continued to serve as physicians.<sup>8</sup> As a result, the practice of surgery fell to the laity, who had always served as surgical assistants. The Church encouraged study of the body only and surgery was not included in medical curricula until the 16<sup>th</sup> century.<sup>26</sup> It was not until the 16<sup>th</sup> century that the centre of attention shifted from a religious to a material world, and man (or God in man) became the centre of the universe. This growing secularisation meant that universities and their medical schools, originally under clerical control and with clerical teachers, came increasingly under lay domination and orientation.

Franco was a devout Huguenot, for which he was persecuted and driven from France. He wrote in 1556: “I have repaired a number (of clefts) with the help of our Lord” and he held that the surgeon should pick up his instrument only “after praying to God to bless the work, and guide the hand of the surgeon.”<sup>8</sup> He wrote, in 1556, that “some people are of the opinion that since God has given this birth defect, they cannot be repaired. This is not only more than harsh, it is heretical, as Guy de Chauliac says.” In 1561 he wrote “... for we often see that if someone is born with 6 fingers, it does not follow that, if the superfluous one is removed, he must die.”

Despite Franco's disapproval of the belief that defects should not be tampered with because it was created by God, this notion persisted for several more centuries.

When Tagliacozzi published his famous work on rhinoplasty, he was soundly criticized by Paré and Fallopius.<sup>29</sup> The ecclesiastics pronounced such operations as meddling with and an insult to the handiworks of God. Because of the Church's decree that physicians could not invade body cavities or draw blood, Tagliacozzi's body was dug up and removed from its consecrated burial space, and transferred to an unknown place as punishment for his defiance of ecclesiastical law.<sup>26</sup> Likewise, plastic surgery fell into disrepute and was almost abandoned for the next 150 years.

After the long sleep engendered by the church's condemnation of Tagliacozzi and (by implication) all plastic surgical procedures, plastic surgery began to awaken by the time of de la Faye (1733).<sup>12</sup> The edict began to relax and the final decision to operate required consultation with both the doctor and the priest, then the administration of Holy Communion. In 1794, a letter was published in "Gentleman's Magazine" describing old Hindoo rhinoplasty.<sup>30</sup> This evoked widespread interest in rhinoplasty and in plastic surgery throughout the Western world and was the beginning of the renaissance of plastic surgery. English surgeons had very little interest in plastic surgery, but in 1816, Carpue introduced rhinoplasty to England. In 1818, von Graefe did similar work in Germany. Von Graefe and Dieffenbach's writing put Germany in the forefront of plastic surgery. Robert Liston's generation in Europe practically established plastic surgery; the French pioneers included Delpech, Roux, Dupuytren, and in the United States, Jonathan Mason. According to some, the term "plastic surgery" was coined by Zeis in 1836. Gibon believes that von Graefe was probably the first to introduce the word "plastic" for the specialty.<sup>14</sup> Some consider von Graefe the founder or pioneer of modern plastic surgery because of the scope of his early contributions to this field (palatoplasty, rhinoplasty, blepharoplasty, etc).

The history of cleft lip and palate surgery parallels the history of surgery. Surgery was fairly advanced in ancient China and was taught by the apprenticeship system.<sup>1</sup> In pre-Norman Britain, the Anglo-Saxon Leeches were medieval physicians.<sup>2</sup> Surgery was considered a purely manual, practical skill that might be handed down from one generation to another by apprenticeship and tradition, without any aid from books. The barber-surgeons were next in the line of surgeons, which was still a humble profession. Those desiring to become barber-surgeons were examined and given licenses to practise. John of Arderne (1307-1380), who revived the art of surgery in England, condescendingly looked down upon the barbers who practised surgery during the 14<sup>th</sup> century, while he himself placed reliance upon spells and charms.<sup>6</sup> The barber-surgeons were possibly the one group who passed on from generation to generation the skill for repairing cleft lip.

Surgery was considered manual work and physicians did not humble themselves by getting their hands dirty. In the university setting, didactic surgery was not a part of the medical curriculum. In 1350, medical students in Paris had to promise not to perform "manual surgery".<sup>8</sup> By the 16<sup>th</sup> century, faculty opinion persisted that only physicians needed theoretical education and all that the surgeon needed was manual skill. Paris introduced teaching of surgery for barbers around 1493, but not for medical students until 1634. Anatomy demonstrations, which were extremely rare, were performed by barbers. City confraternities or guilds of barber-surgeons existed outside

of the domain of the university. It is interesting to note that when lowly barber rose to the status of maître (degree), he refused to perform “manual operations”, not unlike the university surgeon.

The 16<sup>th</sup> century saw the renaissance of surgery. This new surgery was grounded on clinical practice. Anatomy and physiology were born. The new anatomy was founded on the study of man, replacing the anatomy of Galen, which was based on the ape, pig and ox.<sup>8</sup> Gone was the old, where only the physician was doctor (*doctus*, learned man, professional) while the surgeon was at best a maître (master of a craft). The practising surgeon began to gain some measure of influence and respect. Also instrumental to the rise of surgery was the invention of letterpress printing and engraving. This made possible wide distribution of texts and images. Also, the use of the vernacular made books comprehensible to those who did not know Latin, making knowledge more accessible. The ordinary practitioner, who knew no Latin, could now consult the old literature and actual clinical works of practitioners like himself. Thus, he was stimulated to forge ahead on his own.

The forefathers of modern surgery were the barber-surgeons of the city, opérateurs (inciseurs de pierre) in the countryside, apprentice-clerks in city hospitals and army surgeons, none of whom were university educated.<sup>8</sup> Despite their humble status, great surgeons were produced from the lowliest professions. Paré was only a barber-surgeon trained in hospital and field, while Franco came from the even lower rank of provincial opérateurs. Franco’s real teachers were observation and experience, and he trained himself on cadavers and animals, trained himself to be ambidextrous for greater skill, invented or improved instruments, and operated. Yet, surgeons were still itinerant practitioners and few attained sufficient status so that they might settle down. Many were charlatans, quacks or bunglers. Franco was well aware of this group,

Who are responsible for this part of surgery being so despised, who being ignorant and knowing it, nevertheless without any fear of God or of men undertake to treat all sorts of curable and incurable ailments, as long as they can attract the money of poor simple people: who seduce and enchant by their lies and good words, to the great harm of poor patients who often are brought to death by such swindlers.

Franco was keenly aware that a surgeon was no better than a murderer or executioner if his patient died, while the physician and apothecary were scarcely accountable. Malgaigne observed that

The name of surgeon has fascinated; no one wanted to see surgery except in the little Confraternity of Paris, and they have totally neglected those two other great classes of practitioners, the barbers and the inciseurs. But, if we have shown that for the periods before the sixteenth century the highest of those three classes had no greater merit than the others to the science and, consequently, to the history, we can even add that for the period which would follow, the barbers and the inciseurs would really be the renovators of French surgery; it was from their midst that would come those two great surgical celebrities of the sixteenth century, Franco and A. Paré.

By the 18<sup>th</sup> century, three classes of practitioners existed in England.<sup>11</sup> The elite among medical men were “physicians” who were internists, gentlemen and scholars who did not work with their hands. The apothecaries engaged in the merchandising and selling of drugs. Finally came the surgeons. 18<sup>th</sup> and 19<sup>th</sup> century surgeons had an aversion to the use of suture material, as it was considered to be a source of constant irritation and unwanted suppuration. Thus, harelip pins were used until the middle of 19<sup>th</sup> century.

Surgery had overcome many obstacles by the 19<sup>th</sup> century, yet the disdain that internists held for surgeons still remained. This is apparent in an 1834 article which appeared in the *Lancet* summarizing von Graefe’s contributions to medicine and surgery.<sup>14</sup>

“Graefe is one of the best operators in Europe. In mechanical contrivance, presence of mind, and manual dexterity, he is unsurpassed... Yet the knife can but cut and destroy; the mechanical part forms the rudest and least of that series of phenomena which bring healing and restoration. The living organization, in which innumerable processes are constantly going on, is united by continuity of substance, by nerves and blood, so that the whole is concerned in each particular act, and the regulation of all its processes, of its relations to the external world, to light, heat, air, and food, with the administrations of specific agents, has more influence on the cure of disease than any simple manual performance. Hence, Graefe has evidently depended as much on the medical treatment of his cases, as on dexterous manipulation.”

The dawn of modern surgery can be identified as occurring in 1846, with Morton's introduction of ether anaesthesia and Lister's concept of asepsis in 1867. Before anaesthesia, surgeons were afraid of operating because of the unavoidable severe pain and copious bleeding involved.

Various descriptions can be found of how surgeons worked around this problem. Cooke's method was to

put the Child in the Lap of a discreet person, and let one stand behind to hold the Head, the Child’s Hands being ty’d down, and if possible keep it from Sleep for ten or twelve hours before the Operation, that it may be disposed to sleep presently after. For it have ready a glass of Wine or Cordial, in case of fainting upon the loss of Blood.<sup>11</sup>

Before beginning an operation for cleft lip, Robert Liston of Scotland (1794-1847), who trained at the University of Edinburgh and worked and competed with James Syme, had “the child wrapped and pinned up in a large cloth – so that the hands and feet may be perfectly confined and all struggling prevented.”<sup>30,31</sup> In 1530, Hieronymus Brunschwig, an Alsatian army surgeon from Strasbourg, had the cleft lip patient strapped to a table with a towel.<sup>5</sup> Von Graefe's “patient is seated on a chair in a bright light and leans his head against the chest of an orderly, who grasps firmly the temporal regions of the patient and the forehead.”<sup>16</sup> He advised “to let the patient rest and relax between the insertion of each suture.” Bernhard Rudolf van Langenbeck (1810–1887),

who was the first to actually reconstruct the hard palate (uranoplasty), used ice to produce local numbing of the palate.<sup>19,32</sup>

Although the pre-anaesthetic era played a role in hindering the development of cleft lip and palate surgery, the use of anaesthesia was not welcomed with open arms. Liston, in 1846, was the first surgeon in London to perform a major operation under ether anaesthesia and did not survive to reap the benefits of anaesthesia.<sup>31</sup> Cleft lip operations (paring edges, holding raw surfaced together with pins or sutures) took only a minute and general anaesthesia was used for these short cases after it was available in 1846.<sup>32</sup>

In 1850, a report appeared in the *Lancet* of Mr. Gay closing a bilateral cleft of lip and hard palate in a boy aged 7 years using chloroform. But the majority of surgeons were against using general anaesthesia for these cases. In 1852, Sir William Fergusson (1808– 1877) of London, who improved Roux's method by dividing the levator palati and palato-pharyngeus muscles before bringing together the edges of the soft palate, declared that repair of the soft palate was one of the few operations where chloroform could not be used. He considered it "absolutely requisite to have the patient conscious, so that he may facilitate the steps in a variety of ways."<sup>33</sup> John Snow wrote in 1858: "I assisted the late Mr. Avery, by giving chloroform in two operations for cleft palate ... the surgeon, however, much prefers to have the patient awake during this operation, when he can get his assent." The American plastic surgeon, J. Mason Warren, wrote that

[repair of cleft palate] is one of the very few operations in which the use of anaesthetics is inadmissible. Under very peculiar circumstances, I suppose ether might be administered, but not without some risk to the patient, and much embarrassment to the surgeon, from the constant flow of blood down the throat.

This attitude began to change in the 1860s due to the work of Collis (Dublin) and Sir Thomas Smith (London).<sup>32</sup> In 1868, Smith presented a paper to the Royal Medical and Chirurgical Society:

The author's object in presenting this paper was to communicate to the Society a plan of operating on clefts of the palate, applicable to all who suffer from the deformity, but especially to children, to those deficient in physical courage and in the power of enduring pain... The chief novelty in this proceeding was that chloroform could be employed. A painless and speedy operation could therefore be performed, and that with more precision and a greater prospect of success than when the operator was dependent upon the self-control of the patient; while the painless nature of the operation, the cure of cleft palate could be effected in children, to whom formerly the benefits of staphylorrhaphy were virtually denied.

That same month, Collis wrote a letter to the *British Medical Journal* to announce that he had preceded Smith's use of chloroform in palate operations.

Throughout its development, from century to century, nation to nation, cleft lip and palate surgery has enjoyed a serpiginous course. Many of these obstacles can be illuminated by

observing the humble beginnings of the history of surgery. These include the timidity to perform surgery in the pre-anaesthesia era, common misconceptions surrounding the origins of cleft lip and palate, the fear of venereal disease, the role of the church in the development of science and medicine, and the disdain which the “true” surgeons had to overcome. Millard, in his text *Cleft Craft*, has tried to capture the spirit of the development of surgery of cleft lip and palate:

The progress of cleft lip surgery has not proceeded in a precise chronological order. Rather it has been a haphazard chain reaction, sparking here and there, with one idea setting off another but not always in a forward direction. A more primitive approach was being modified while more advanced methods had been in use for years. To understand what has occurred, it is necessary to follow each fundamental principle from its conception to its perfection. When its highest potential still fell short of the ideal normal, it was time to discard it and usually this is what happened. The motivation that forces the discarding of familiar inferior methods is the frustrating dissatisfaction suffered by the surgeon with the result of his or others’ methods. This is the stimulus that is constantly firing the search for a better way.<sup>5</sup>

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# **WILLIAM HARVEY (1578-1657): THE DISCOVERY OF THE CIRCULATION OF BLOOD**

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## **ABSTRACT**

**When William Harvey published the results of over 12 years of observation and experimentation in 1628, he produced what was arguably the greatest single discovery in the history of the medical sciences. Brilliant case studies in therapeutics and local anatomy had been performed in antiquity, and the discoveries of natural selection, cellular pathology, and DNA have been made in the last 150 years; but without a precise knowledge of how the heart, blood, and circulatory processes operate, a systematic understanding of how living things work would not have been possible.**

**William Harvey was born in 1578 in Folkstone, England. After attending medical school at Padua, Harvey became a Fellow of the College of Physicians of London as well as a physician at St. Bartholomew's Hospital. He was also well known in court circles as one of the physicians to both King James I and King Charles I. His discovery of the circulation of the blood was announced in his Lumleian Lectures to the College of Physicians and later published in his book, *De Motu Cordis*. Harvey was distinguished in various fields of medicine including embryology and is widely regarded as the founder of modern physiology.**

**Although his experiments and conclusions were brilliant, it is actually Harvey's approach that sets him apart from his predecessors. Harvey was in fact a Galenic physician and an Aristotelian anatomist. As a physician, Harvey accepted most Galenic views of the time, however, as a researcher he tried to determine the role of the heart in the life of the "animal" and not just "man". This led him to perform dissections on cats, birds, frogs, fish and eels, as well as the occasional human body. This Aristotelian approach, along with careful experimentation and observation is what allowed William Harvey to make one of the most important medical discoveries of all time.**

William Harvey was born on April 1<sup>st</sup>, 1578 at Folkstone, England, in the county of Kent. He was the eldest child of Thomas Harvey, a prosperous merchant. After attending the King's School in Canterbury, Harvey matriculated at Caius College, Cambridge - a prescient choice.

There he earned his B.A. degree and moved onto attend medical school at the University of Padua in Italy. The medical school at Padua was renowned to be the best in the world at that time. At Padua, he was elected counsellor for the English students, and he presumably helped to mediate some of their disputes. This was, perhaps, his first professional honour, and it may have helped him to develop his long-lasting concern with professional courtesy and harmony (Power, 1897).

With this background, William Harvey embarked on a journey through medicine where he established himself as the founder of one of the greatest discoveries in the history of medical sciences.

Upon his return to England, Harvey began his career as a physician. In 1609, he was appointed as a doctor in St. Bartholomew's Hospital where his role was both medical and administrative. Eventually, Harvey was elected to be "Physician Extraordinary" to the King of England and became well known as one of the physicians to both James I and Charles I (Keynes, 1978).

In 1613, Harvey was elected one of the four censors of the College of Physicians. Only three years later, he was invited to become a Lumleian Lecturer which involved the demonstration of anatomical applications to medicine. Harvey held this honorable position for an incredible twenty-eight years and was eventually made the Treasurer. In addition to all these responsibilities, Harvey was engaged in scientific research for over fifty years without any institutional support (Keynes, 1978).

In order to fully appreciate Harvey's contribution to the discovery of the circulation of blood, it is necessary to examine the work of his predecessors as the validity of any new theory relies on the truths and errors of previous scientists.

One of the most influential physicians before Harvey's time was Claudius Galen (130 - 200 AD). For fourteen hundred years, the world bowed to his views on medicine, anatomy, and physiology. Galen declared blood was the vehicle for air, spirits, heat, and nutriment, and described a heart of two ventricles separated by a porous septum that expanded in active motion and was the organ of respiration and heat. Galen claimed chyle was brought to the liver from the intestine by the portal vein, converted into blood, absorbed a "natural" spirit, and was distributed to the tissues in a constant flow and ebb. Part of the blood and impurities in the liver were transmitted via the vena cava into the right ventricle to the lungs in order to nourish the lungs and exhale the impurities. Air, carried by a vein from lungs to the left ventricle, cooled the heart and combined with blood (which had seeped through the imaginative pores) and a "vital" spirit to nourish the body via arteries. Impurities in the heart were believed to be carried back to the lungs by a two-way flow in the pulmonary vein and exhaled. Thus, the lungs provided air to the left ventricle and exhaled impurities from the liver and heart. Blood was carried to the brain from the left ventricle via arteries, added an "animal" spirit, and was distributed by hollow nerves. It is interesting to note that Galen's views on the heart were widely accepted at the time that Harvey made his famous discovery (Wear, 1990).

So now the question arises as to how Harvey discovered the circulatory system and what was unique about his approach as compared to his predecessors. Harvey was actually a Galenic

physician and an Aristotelian anatomist. This means that while a regular physician of the early 1600s took it for granted that the blood in the human body moves, Harvey believed that it moves in two different forms, in two kinds of blood vessels, and for two different purposes. All of this had been investigated and worked out in order to understand the functioning of the body of man, for this is what Galen the physician had been concerned with. As long as anatomical investigations are limited to the body of man or have the primary aim of describing the functioning of the body of man, then nothing seems wrong with this Galenic account. But if you are going to investigate the detailed operations of the heart and its vessels in a creature other than man, then things may seem different (Wear, 1990).

This is exactly what Harvey did. He investigated not “man” but “the animal”. In this process he dissected cats, birds, frogs, fish, eels and any human that he could legally cut. Hence, the account he was trying to give of what the heart is for and what role it plays in the life of “the animal” had to be true of all hearts in all animals. It had to be true of hearts which have fewer chambers than the human heart; it had to be true of the hearts of animals with cold blood as well as those with warm. Most important of all it had to be true of the hearts of animals without a lung as well as those with. However as Harvey discovered while doing his research, “whatever earlier people have said about systole and diastole - about the [alternating] motion of the heart and arteries - all these things they have related while eyeing the lung.” So Harvey looked at the heart without considering the lung, which made his approach Aristotelian (Pagel, 1967).

Another question that arises is what was Harvey’s motivation to study the circulatory system. This is an area of mystery and controversy. Since there were no missing links in the Galenic account of circulation, then what is it that caused Harvey to be interested in this area in the first place. What was he looking for initially and what made him think of it? What was his motivation to look at the function of the heart in animals? These are all unanswered questions and there is no consensus on Harvey’s motivations. It is actually possible that Harvey arrived at his conclusions about the circulatory system by accident along with, of course, careful observation and experimentation.

So we do not know what motivated Harvey but we do know that he relied on obvious facts that came from personal experiences, observation and both qualitative and quantitative experimentation. And this is a testament of Harvey’s determination which is well portrayed in the following quote (Porter, 1987):

“No dogma can suppress the obvious facts and no old tradition stifle the work of nature.”

It is actually documented that Harvey discovered the circulation of blood in 1615, but waited thirteen years to publish his theories in 1628. His famous book was entitled *Excercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus* (On the Movement of the Heart and Blood in Animals) and was initially published in Latin.

So what did Harvey know prior to his experiments. He was certainly aware of the presence of venous valves discovered by his medical school teacher at Padua, Fabricius. He knew about the way venous blood was “vitalized” in the lungs. He also knew that there was actually no

evidence for the presence of a porous septum between the ventricles of the heart as described by Galen. It was entirely theoretical (Porter, 1987).

At this point it is important to go through Harvey's experiments one at a time as each one represents a piece of a puzzle even though this may not be the actual sequence in which Harvey performed his experiments.

Harvey reported that if the heart was held, it became firmer during its action. Harvey related the firmness to that of a contracting muscle and thus, considered the heart a kind of muscle. This led him to conclude that "systole" must be the active part of the cardiac cycle and "diastole", its passive component.

Another observation he made was that when the ventricles contract they become lighter in colour, whereas when they expand they become darker in colour. Harvey concluded that the blood must be forced out of the heart during systole, which is in contrast to what Galen had described earlier (Pagel, 1967).

One of Harvey's most important observations was that contraction of the heart coincides with the dilation of arteries. The next logical question for Harvey was whether this contraction is the cause of the arterial dilation? In order to investigate this, Harvey cut open an artery in a live animal and saw that blood spurted out of the artery only during ventricular contraction and not during diastole. Keeping this observation in mind, he reported that diastole of the arteries corresponds with the time of the heart's systole and that the arteries are filled and distended by the blood forced into them by the contraction of the ventricles (O'Malley et al., 1961).

Harvey's experiments also included the atria and their functions. He compared the relationship between the atria and ventricles to that between the ventricles and the arteries. In other words atrial contraction supplies blood to the ventricles. He also noted that contraction of the ventricles follows that of atria. So this means that the blood transferred from the atrium into the ventricle must be the same blood that goes from the ventricles into the arteries (Frank, 1980).

Harvey also did some work on the pulmonary circulation using comparative anatomy and physiology. Through his study of fetuses, Harvey found that the four vessels belonging to the heart were connected differently in a fetus as compared to an adult. He attributed this difference to the fact that the lungs of a fetus do not move and therefore do not function. Harvey also realized that the passage of blood through the lungs is not for the purpose of nutrition since it does not make sense that the lungs would require such a large volume of blood compared to other parts of the body. In sum, Harvey managed to give an accurate outline of the pulmonary circuit (Frank, 1980).

Harvey's greatest challenge was determining the direction of blood flow. Harvey hypothesized that blood flow is unidirectional in the arteries and so the function of heart valves is to prevent reflux of arterial blood. Harvey supported his argument by making his first quantitative observation. He showed that in half an hour approximately three and half pounds of blood passes through the heart of a sheep; however when all the blood was taken from a sheep, it weighed no greater than four pounds. This led Harvey to believe that the human heart must propel a certain

amount of blood with each contraction. Assuming that this value is one ounce and if there is a heart beat of 1000 beats per half an hour, then this translates into an unreasonable 83 pounds and 5 ounces of total blood transmitted through the heart. The following quote summarizes Harvey's thoughts on this observation:

“More blood passes through the heart in consequence of its action, than can either be supplied by whole of the ingesta or ... contained in the veins at the same moment. [This is] a vastly greater amount ... than could by any possibility be supplied by the food consumed. It could be furnished in no other way than by making a circuit and returning.”

This was Harvey's greatest discovery that the motion of blood is circular with the arteries taking blood away from the heart and veins bringing the blood back.

Harvey was able to further confirm his theory by experimenting on snakes. He found that by compressing the vena cava with forceps, the segment between the forceps and the heart emptied immediately and the heart became smaller and paler (Wear, 1990).

One of the few things left for Harvey to solve was the flow of blood in the venous system. Galen had believed the venous blood flow to be bi-directional in nature. But for Harvey to be consistent with his theory, he had to show that blood flows in one direction in the veins. He proved this by obstructing individual veins to make them swell peripheral to obstruction. Harvey found that blood could be pushed with a finger towards the heart but not back past the valve, indicating that venous valves prevent the reflux of blood (Porter, 1987).

In conclusion, Harvey successfully hypothesized and proved that the heart, arteries and veins make up a circulatory system in the human body.

There were some missing links in Harvey's theory such as the existence of capillary beds. An interesting comparison can be drawn between Harvey and Galen: Harvey envisioned capillary beds but never actually saw them, just like Galen envisioned a porous septum between the ventricles of the heart without any physical evidence (Pagel, 1967).

Today, William Harvey is world renowned for changing the views on physiology and medicine as well as inspiring a new and innovative approach towards scientific research.

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# THE BARBER-SURGEONS OF LONDON 1540-1745

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## ABSTRACT

In England, from the early part of the 14<sup>th</sup> Century onwards, surgery was practiced by two distinct occupational groups. Barber-Surgeons were apprenticed tradesmen who, in addition to shaving and hair cutting, extracted teeth, engaged in bloodletting, performed minor surgeries, and treated wounds. Surgeons were university educated, and formally trained in the classics as well as anatomy. The surgeons were few in number, treating mainly the upper classes, while barber-surgeons were much more numerous and treated commoners. Each group was organized as a Guild as was the custom at that time. This situation, with two independent Guilds each exercising control over the same trade lead to frequent jurisdictional conflicts and hostilities between the two groups. These conflicts prevented any advancement in the practice of surgery for a considerable period.

In 1540, Henry VIII passed legislation uniting the Fellowship of Surgeons and the Company of Barber-Surgeons forming the *Masters of Governors of the Mystery and Communalty of the Barbers and Surgeons of London*. This union of Barbers and Surgeons persisted for more than 200 years. During this time, the combined Company made many valuable contributions to the field of surgery in England among them: improvements in education and the regulation of the profession; publication of the first anatomy texts written in English; and the initiation of a series of regular anatomy lectures and demonstrations. These advances occurred in spite of continuing tensions between barbers and surgeons; and, between surgeons and physicians. Ultimately, these tensions lead to the division of the Barbers and Surgeons in 1745. This period provides fascinating historical insights into the teaching of surgery and anatomy, and the regulation of the surgical profession.

## Introduction

In England, from the early part of the 14<sup>th</sup> Century, surgery was practiced by two distinct occupational groups. Barber-Surgeons were apprenticed tradesmen who, in addition to shaving and hair cutting, extracted teeth, engaged in bloodletting, performed minor surgeries, and treated wounds. Surgeons were university educated, and formally trained in the classics as well as anatomy. The surgeons were few in number, treating mainly the nobility and upper classes,

while barber-surgeons were much more numerous and treated commoners. The Barbers and Barber-Surgeons were organized as a Guild as was the custom at that time. The surgeons, being far fewer in number, were more loosely organized as a Fellowship. This situation, with two independent governing bodies each exercising control over the same trade led to frequent jurisdictional conflicts and hostilities between the two groups. These conflicts prevented any advancement in the practice of surgery for a considerable period.

In 1540, Henry VIII passed legislation uniting the Fellowship of Surgeons and the Company of Barber-Surgeons forming the “*Maisters and Governours of the Mystery and Comminalte of Barbouris and Surgeons of London*”. This union of Barbers and Surgeons persisted for more than 200 years. During this time, the combined company made many valuable contributions to the practice of surgery in England among them: improvements in education and the regulation of the profession; publication of the first anatomy texts written in English; and the initiation of a series of regular anatomy lectures and demonstrations. These advances occurred despite continuing tensions between barbers and surgeons. Ultimately, these tensions led to the division of the Barbers and Surgeons in 1745 followed by the establishment of the Royal College of Surgeons in 1800.

This paper will examine the various social and economic factors that led to the union between the barbers and surgeons. Specifically, it will be argued that the union of the barbers and surgeons was necessitated by several factors. First, poor educational standards coupled with limited regulation of the practice of surgery, and constant quarrels between practitioners continually diminished surgery’s reputation as a healing art. Second, legislative changes increased the power of physicians and the clergy to regulate the practice of medicine, posing a direct threat to the continued practice and advancement of surgery. Third, educated surgeons were an extremely small occupational group, with limited power in an economy tightly regulated by larger trade Guilds and Companies. As such, they had a limited ability to protect their economic and professional interests. Conversely barbers and barber-surgeons were a large, established occupational group with significant resources, keen to further enhance the status of their Company through the addition of educated professionals to their ranks. Finally, it will be demonstrated that both groups prospered from this arrangement, and that ultimately, the state of surgery in England was significantly advanced by this union.

### **History of Barbering**

The history of barbering goes back thousands of years. Barber-Surgeons existed as an occupational group in ancient Babylon. The Hammurabic Code dating from 1900 B.C. mentions the “Gallabu”, barber-surgeons who performed minor surgery, dentistry, and the branding of slaves. (McCord 1970)( Bishop 1960) The Old Testament specifically mentions the tools of the barber: “And thou, son of man take thee a barber’s razor...” (Ezekiel 5:1). In Roman times freemen were clean-shaven while slaves were required to wear beards. Barbers were thus a prosperous group within the Roman Empire.

Over the years, barbers and barber-surgeons in different societies came to be responsible for hair-cutting, shaving, bloodletting, leeching, tooth extraction, cauterization, lancing of abscesses, cupping, and the operation of public bathhouses. (McCord 1970). Many barbers were also

involved in brewing, and the operation of common houses. (Pelling 1981) On the whole, barbers and barber-surgeons were an enterprising lot, providing a variety of services to the common people.

### **Origins of the Distinction between Physicians and Surgeons**

The distinction between physicians and surgeons has a long-standing history. In prehistory and early civilizations, medical practitioners or healers provided both medical and surgical treatments to their patients. There was no distinction between surgery and medicine. As far back as Hippocrates however, there began to arise a distinction between surgeons and physicians.

The Hippocratic oath, implores physicians to leave the cutting of stone to those qualified to do so: *“I will not use the knife, not even on sufferers from stone, but will withdraw in favour of such men as are engaged in this work.”* (Mappes and DeGrazia ed. 1996) The great Arabic physician, Avicenna wrote in his definitive text, The Canon of Medicine, that *“Surgery is an inferior, separate branch of medicine.”* (Garrison 1967) This statement began the longstanding notion among physicians that medicine was a superior discipline to surgery.

Surgery was a dangerous occupation in these early days. Mortality rates were exceedingly high, and penalties for harming or killing a patient were often severe. The Hammurabic Code states:

*“If a physician [surgeon] shall make a severe wound with an operating knife and kill him, or shall open an abscess with an operating knife and destroy the eye, his hands shall be cut off.”* (Bishop 1960)

Similar penalties, though not quite as extreme, existed during the Middle Ages in England and other societies. Physicians and surgeons were expected to enter into a contract with their patients for the provision of a successful treatment. The Visigothic code reads:

*“If a physician injures a freeman by bleeding, let him pay 10 solidi; but if the patient dies, let him be handed over to his relatives to treat as they please.”* (Bishop 1960)

One can infer that with such harsh consequences few would be willing to become surgeons.

### **The Rise of Ecclesiastic Medicine Further Divides Physicians and Surgeons**

During the Middle Ages, Europe witnessed significant social regressions and a general retrenchment towards a more primitive feudalistic way of life. This was true both in England and continental Europe. Nowhere were these changes more apparent than in the fields of science and medicine.

Medical practice in England during the Middle Ages fell into two broad categories: lay practitioners, and clergy. Lay practitioners known as “leeches”, the Anglo-Saxon word for healer, were the general practitioners of the day. Leeches passed their skills down from generation to generation by word of mouth. Many came from families or clans of healers,

passing their knowledge from father to son. (Meade 1968) Their cures consisted mainly of herbal remedies though many were also skilled at managing flesh wounds and fractures. (MacDonald 1967)

“Skilled” medical practice was largely the domain of the clergy. The church was the last bastion of knowledge and higher learning in an otherwise disintegrating society. Clergy were educated in the classics and able to read and write Latin. As such, they were the only persons able to read medical texts passed down from earlier ages. (Garrison 1967) At this time, books were hand-printed, making them both rare and expensive. The only significant libraries were those held by the church.

The monastic orders created the first hospitals and infirmaries and tended to the sick and poor. The practice of monastic medicine was largely based around faith in God and the act of prayer. There was little emphasis on saving the mortal body, when it was the salvation of the immortal soul that really mattered. Cassiodorus counseled his monks: “Learn to know the properties of herbs and the blending of drugs, but set all your hope upon the Lord, who preserves life without end.” (MacDonald 1967)

While the ecclesiastics were well educated in the classics and theology, their preparation for medicine was far more questionable. At that time, the attainment of priesthood was presumably sufficient to allow the practice of medicine without further education. Faith in God, and belief in supernatural powers came to be more revered than the art of medicine, particularly in the wake of the devastating plagues which swept through Europe. Treatments were largely based on astrological theories, uroscopy, magic, and attaining balance of the four bodily humors. In the late Middle Ages, much of “skilled” medical practice was still based directly on the writings of Galen from the 2<sup>nd</sup> century AD (Garrison 1967). For more than 900 years there had been very little advancement in clinical thinking.

Many monks began to practice medicine full time, preferring to collect lucrative medical fees in preference to performing their clerical duties. As more and more of the clergy began practicing medicine, the higher authorities of the church became concerned about the effects this was having on the religious orders, and the resulting shortage of skilled clergy available for church duties. Furthermore, the physical examination of patients and the possibility of causing a patient’s death were viewed as being in direct conflict with the holy vows of piety and modesty. (Garrison 1967) These concerns eventually led to a series of papal edicts and decrees aimed at removing monks from the practice of medicine. The most important of these was the edict of the Council of Tours in 1163 which stated “*Ecclesia abhorret a sanguine*”, or “The Church abhors bloodshed.” This edict was intended to prohibit the clergy from participating in bloodletting or any form of surgery. (McCord 1970) Despite these decrees, many monks continued to practice medicine; they simply dropped their practice of surgery. While this edict may not have had the desired effect on the clergy, the Council of Tours had far reaching societal implications doing much to further the notion that surgery was an inferior discipline to medicine. (Garrison 1967)

The openings created by the papal decrees created a natural avenue for barbers to begin the practising surgery. Since the Papal Decree of 1092 requiring that monks be beardless, barbers had worked in the monasteries. Barbers shaved and groomed the clergy and performed minor

surgical procedures, under the supervision of the monks. (McCord 1970) With the Council of Tours, forcing monks to abandon the practice of surgery, it was natural for the barbers to begin practising both barbering and surgery (Meade 1968) and thus they began to call themselves “Barber-Surgeons”. (Robinson 1984)

### **Medical Practitioners in England During the Late Middle Ages**

To provide a context for the remainder of this discussion it is helpful to examine the state of medicine as the Middle Ages drew to a close. At this time, medical treatments were performed by persons with a wide variety of different training and experience. Historical evidence shows there were at least eight different groups of practitioners providing medical treatment to the public. These were: physicians, apothecaries, master surgeons, barber-surgeons, itinerant cutters, leeches, midwives, and quacks or charlatans. While the practices of these groups overlapped substantially, some generalizations can be made.

Physicians, the most elite occupational group, were university educated, fluent in Latin, and many held a Doctorus Medicine degree, while others held a B.A. or M.A. degree. (MacDonald 1967) Many were ecclesiastics with an education in the classics. They generally lived in cities and larger towns and restricted their practice to the nobility and clergy. Their approaches to the treatment of disease were generally based on historical teachings and tradition rather than empiric observation. They relied heavily on the technique of uroscopy, a detailed analysis of the urine, assessment of the pulse, and balance of the four Galenic humors. The physician would prescribe a remedy and send the patient to an apothecary for completion of their treatment.

Apothecaries were the pharmacists of the day, dispensing medications and treatment under the order of a physician. Due to laxity in the regulations many apothecaries chose to try their hand at general practice, dispensing medications to patients on a trial and error basis without consultation with a physician. This activity annoyed the physicians leading to numerous conflicts in the courts. (Garrison 1967)

Surgeons, or “Magister chirurgorum”, were those who restricted their practice to surgery alone. Surgeons were academically trained, could read and write Latin and had a university degree, usually, though not always, in medicine. Master surgeons were also known as surgeons of the “long robe”, referring to their right to wear academic gowns like the physicians. Most surgeons received some training in anatomy through reading the classic texts by Hippocrates, Galen and others. However, the state of anatomical knowledge was generally poor given that anatomical dissections were forbidden and Galen’s works were entirely based on the dissection of animals. Surgeons were a very small occupational group numbering only eight in London in 1491. (Dobson, 1974) Their practice was largely restricted to the upper classes and nobility. (Bishop 1960)

Barber-Surgeons were laymen who received practical, hands on training through a 7 year apprenticeship with a master of the craft. The emphasis in their training was on acquiring practical skills through observation and practice under supervision. There was very little focus on abstract theory. In England, Barber-surgery was an established trade from the early 1300’s with careful regulation of both the admission and training of apprentices. Most barber-surgeons

practised from their homes or shops, providing services to the common people in both the cities and the countryside. Because they were so readily available to the ordinary people, barber-surgeons were in a position to provide good continuity of care to their clientele.

*“As crude, illiterate and superstitious as most of these medieval barber-surgeons might have been, the majority of them were probably far more useful than the pretentious book doctors.”* (Ackerknecht 1984)

Barber-surgeons were a practical lot. They learned empirically what worked. While the physicians often harmed their patients through toxic prescriptions, the lethal effects of their treatments were usually delayed. Death could be ascribed to a natural deterioration in the patient’s condition. For the barber-surgeon, however, an error in surgery or blood letting, had immediate and often lethal consequences.

*“The physicians and surgeons, even the apothecaries, can defend themselves when they are unfortunate, but if we have a mishap we must run for our lives.”*

Pierre Franco, French Surgeon, 1556 (Bishop 1960)

The practice of delivering babies fell to the midwives, clergy physicians being unable to participate in childbirth because of their holy vows of modesty. Midwives were laywomen whose knowledge was passed down generation to generation. Perinatal mortality was very high in these times due to the non-existence of aseptic technique, and a very limited ability to intervene in complications of childbirth. A woman’s chances of surviving childbirth were 50% if she had a normal labour and did not succumb to eclampsia or fever. Chances of survival dropped to practically to nothing if there were any serious complications. (Garrison 1967)

Itinerant cutters travelled the countryside moving from town to town, performing various surgeries as they went. Some were very good, however most had dubious qualifications and were often very bad at their trade. Unfortunately many rural people had little choice in who was to serve them in a time of need. Itinerant cutters had very high mortality rates and would usually pack up and leave town before their patients died. Because of their transient nature there was virtually no continuity of care for their patients. The reputation of most itinerant cutters was built around their supposed “expertise” at particular procedure. Probably the most famous example of an itinerant cutter was Jacques Beaulieu, the legendary Frère Jacques of children’s nursery rhyme. Over the course of his career he crossed Europe from Holland to Italy performing over 4,500 lithotomies and 2,000 hernia operations. (Hæger 1988)

Leeches, as discussed earlier, were traditional healers who practiced mainly herbal medicine. Skills were passed from father to son within families or clans. Leeches were highly trusted members of most communities who provided services to the common people.

Quackery was rampant in the early renaissance period in England. Many persons of dubious qualification travelled the country markets selling spurious concoctions and performing highly theatrical surgeries on an unsuspecting public. In the words of William Clowes, a surgeon of the time medicine and surgery were being practiced by:

“tinkers, tooth-drawers, peddlers, ostlers, carters, porters, horse-gelders, horse-leeches, idiots, apple-squires, broom-men, bawds, witches, conjurers, soothsayers, and sow-gelders, rogues, rat-catchers, runagates, and the proctors of spittle-houses.” (Garrison 1967)

### **State of Surgery in England During the Late Middle Ages**

During the late Middle Ages the practice of surgery was divided into three main occupational groups: master surgeons, barber-surgeons, and itinerants. Knowledge of human anatomy at this time was very limited for several reasons. First, the dissection of human cadavers was illegal, and considered sacrilegious. (Garrison 1967) As a consequence, it was very difficult for the student of anatomy to obtain a cadaver for dissection without resorting to grave robbing. It was not until the early days of the Renaissance when Pope Sixtus IV (1471-84) allowed the dissection of human subjects. This edict was later re-affirmed by Pope Clement VII (1523-24). (Buckland-Wright 1985)

Study of anatomy during this time was further complicated by the difficulty in keeping the cadaveric specimen intact. With no fixative agents, and no way of refrigerating the specimens putrefaction set in quickly. This posed two problems. First it made the specimens very unpleasant, and dangerous to work with. Dissectors would frequently come down with fatal infections if they cut themselves while performing an anatomy. For this reason most physicians giving an anatomy lesson would not touch the cadaver. Instead they would be seated in a podium above the body and give direction to a subordinate dissector. Second, putrefaction would quickly obscure the soft viscera of the abdominal cavity, making it difficult to discern the finer structures. For these reasons, anatomic dissections were performed quickly, often outdoors, and in a very particular order. Abdominal organs were dissected first, followed by the thorax. The head and neck and peripheral limbs were left for last because the muscle tissue was the longest lasting.

Knowledge of aseptic technique and the causes of infection were extremely limited. With the passage of the plague and other epidemic diseases, there was some understanding of the notion of person to person transmission of disease. (MacDonald 1967) However, hand washing was only performed for the benefit of the operator, and instruments were not routinely cleaned between surgeries. As a consequence, post-surgical complications due to infection were almost universal at this time.

Anesthesia was rarely used. While some herbal and opium derived preparations and other “potions of oblivion” had been created, dosages were not standardized and patients often died from the anesthetic and not the procedure. (MacDonald 1967) As a consequence, the majority of patients preferred to take their chances without anesthetic. During most surgeries, the patient was either tied down, or held down by two strong surgeon’s assistants. Two main complications arose from the need to operate on conscious patients. First, many patients often succumbed to shock caused by the pain of the procedure. Second, procedures had to be performed extremely quickly, lest the patient thrash free or harm themselves during the operation. A quick and competent surgeon was a great surgeon indeed. Perhaps the fastest surgeon of them all, was

William Cheselden, who could routinely complete a lateral perineal lithotomy from first incision to wound closure in forty-five seconds. (Hæger 1988)

### **Rivalry Between Surgeons and Physicians**

Following the separation of surgery and medicine initiated by the Papal edicts in the 12<sup>th</sup> century, there arose a strong sense of competitive rivalry between the fields of surgery and internal medicine. Naturally, given their academic training, physicians felt themselves superior to the barber-surgeons. However, eventually a new class of educated surgeon arose. These were the university educated practitioners from medical schools on the continent, and eventually Oxford and Cambridge. These new surgeons of the “long robe” were well read in Hippocrates, Aristotle and Galen’s anatomy. Practitioners of internal medicine recognized that this new breed of surgeon posed a threat to their livelihood. For the next few centuries, the master surgeons struggled to establish themselves as a legitimate medical profession, distinct from barber-surgeons, and on equal footing with the physicians. This would prove an elusive goal, ultimately taking several centuries to achieve.

Between the 14<sup>th</sup> and 16<sup>th</sup> centuries there were many conflicts between surgeons and physicians over which group would control the practice of medicine. In 1369 a small number of surgeons banded together to form the fledgling Fellowship of Surgeons. This was not a full livery company, but it did allow the surgeons some control over the practice of surgery, and the self-regulation of their members.

In 1421 an Act of Parliament was passed with the aim of more closely regulating the practice of Medicine in England. Only those persons licensed by a university could practice medicine, while surgeons had to be examined by masters of their own art. (Dobson 1979) This legislation, while leaving the surgeons as a distinct group, significantly enhanced the power of the physicians to regulate the practice of other areas of medicine. Furthermore, by relegating surgery to the status of an art, this legislation implicitly declared the practice of surgery was inferior to that of medicine.

In 1423 the Fellowship of Surgeons and College of Physicians established the College of Physicians and Surgeons. This new body included a Conjoint Board of Examiners which would examine both physicians and surgeons. The aim of the new college was to raise the standards of education and practice in both surgery and medicine. Furthermore, the new college served to elevate the status of master surgeons to the a level more closely approximating that of the physicians. It also provided a unique mechanism for consultation between members without fee. For some unknown reason, this merger failed after one year and nothing more was heard of the college after 1424. There is some speculation that the Barber’s Guild may have had a hand in the College’s premature demise as it would have interfered with their control over surgery in the city. (Dobson 1979) (Robinson 1984)

In 1462 the Fellowship of Surgeons received a royal charter and was officially organized as a guild within the city of London. While this served to organize the Fellowship of Surgeons, at the same time, the Barber’s Company was granted a Charter of Incorporation whose articles gave

them exclusive rights to regulate the practice of surgery within the city of London. (McCord 1970)

The Act of 1511 (3. Henry VIII cap. iii) decreed that no one should practice medicine or surgery in London or seven miles around and about it, without first being examined and approved and admitted by four doctors of physic, or expert surgeons acting under the Bishop of London or the Dean of St. Paul's. Beyond the seven mile limit, practitioners had to be licensed by similar bodies under the Bishop of the diocese. This act effectively placed the licensing of surgeons under the control of the Church, and was a cause of great concern to both the Fellowship of Surgeons and the Company of Barbers. Following this, in 1518 the Royal College of Physicians of London was founded, giving physicians right to practice medicine within city of London and 7 miles surrounding it.

At this time the Fellowship of Surgeons was a very small company with only 12 members recorded in 1514. (Erlor 1985) With these significant changes taking place, they were simply too small to have an effective political voice.

### **Rivalry Between Surgeons and Barbers**

In the period from the early 14<sup>th</sup> to the mid 16<sup>th</sup> century there was an ongoing rivalry between the barber-surgeons and surgeons of the "long robe". In London, two competing groups, the Fellowship of Surgeons, and the Guild of Barbers each regulated the practice of surgery. Both groups were vying for control over the training, licensing, and ongoing inspection and regulation of those persons practicing surgery. These disputes took the form of repeated appeals to the legislative authorities, with each faction appealing for control over the other. A brief history follows.

In 1308 the Barbers Guild of London was formed with Richard le Barbour appointed as first Master. As Master, he had responsibility for making regular inspections on all those persons practicing barbering and surgery within the city. He was to bring any irregularities to the attention of the Lord Mayor and Aldermen. The Fellowship of Surgeons was not formed until some sixty years later in 1369. At this time, three surgeons of the new Fellowship were sworn in by Mayor and Aldermen of London to "Report any faults of other surgeons and to be ready at all times when they would be warned to attend the maimed and wounded" (Dobson 1979)

In 1376 the Barbers complained about "unskilled practitioners of surgery" and obtained an Ordinance of Inspection. Two Masters of the Barbers company were appointed and given rights to examine the both the equipment and the skills of practitioners. In 1390 the Fellowship of Surgeons countered by appointing four Master Surgeons to scrutinize all persons practicing the "art of surgery", including the barber-surgeons.

In 1410, the ordinances of the Barber's company were confirmed with the new provision that barbers should enjoy privileges

*"without scrutiny of any persons of any other craft of trade, under any other name whatsoever other than the trade or craft of the said Barbers,*

*either as to shaving, making incision, blood letting, or any other matters pertaining to the art of Barbery or of Surgery, in the craft of the Barbers now practiced, or to be practiced hereafter.” (Dobson 1979)*

These ordinances gave barbers free reign to practice and regulate themselves without legal interference by the Fellowship of Surgeons or any other medical body. They were now effectively a self-regulating profession.

In 1415 the Fellowship of Surgeons made a complaint to the Mayor and Aldermen about ‘unskilled barbers practicing surgery’. The Lord Mayor appointed two additional masters to oversee the practice of surgery. (Dobson 1979) Once again, in 1416 a complaint was made by “certain trustworthy and discreet surgeons” that:

“inexperienced barbers were taking charge of sick and wounded persons, whereby the sick were often worse off at their departure than at their incoming, and on account of the unskillfulness of these barbers were often times maimed to the scandal of the skilled and the manifest harm of the people of our lord the King.”  
(Dobson 1979)

The Company of Barbers revised its ordinances requiring a barber to present any sick person in peril of death or maiming to the Masters. Failure to do so would result in a fine.

Over the next 40 years there was little recorded conflict between the barbers and surgeons. In 1451 the Barber’s Guild was granted a coat of arms consisting of a field sable, a chevron between three fleams argent. A fleam was a bloodletting knife, symbolic of the barber-surgeon’s role as both blood letters and surgeons. In 1462 the Company of Barbers was granted a Charter of Incorporation by Edward IV. The charter document dealt almost entirely with the practice of surgery and gave the Company of Barbers the exclusive right to supervise and regulate the craft of surgery within the city of London. (Dobson 1979) For another 30 years following the issuance of the Incorporation document there was virtually no recorded conflict between the Company of Barbers and the Fellowship of surgeons. Presumably, the loosely organized Fellowship of Surgeons was no longer strong enough to compete with the much larger, and empowered Barber’s Company.

In 1492 Henry VII granted the Fellowship of Surgeons a badge of cognisance in recognition of the faithful services of surgeons in wars during the 15<sup>th</sup> century. This was followed in 1493 by an agreement between Fellowship of Surgeons and Company of Barbers regarding joint supervision of surgeons and barber-surgeons. This agreement set the stage for much closer collaboration between the Company of Barbers and the Fellowship of Surgeons, ultimately leading to their union in 1540.

#### Factors Behind Merger of the Surgeons and Barber-Surgeons 1540

There were three main factors leading the Fellowship of Surgeons to seek union with the Company of Barbers. First, widely varying standards of education coupled with inconsistent regulation of surgical practice was damaging the reputation of the surgical profession. (Bishop 1960) At the time, most of the surgery in England was performed by barber-surgeons. While it

is debatable whether barber-surgeons had mortality rates any higher than those of master surgeons, it was certainly the case that most surgery was being performed by lay practitioners with only a rudimentary knowledge of human anatomy, and little or no formal training. While barber-surgeons had other sources of income in addition to surgery, such as hair cutting, shaving, and tooth-drawing, surgery was the master surgeon's sole source of income. Poor practices in surgery negatively affected the reputation of their profession, and thus directly affected their ability to earn an income.

Second, legislative changes were progressively eroding the power of the Fellowship of Surgeons, while augmenting the power of the physicians and barber-surgeons. Specifically, The Charter of Incorporation granted to the Company of Barbers in 1462 granted their company the exclusive right to regulate the craft of surgery within London. The Act of 1511 and the formation of the Royal College of Physicians in 1518 gave physicians virtually exclusive control over the practice of medicine throughout England. In contrast, the Fellowship of Surgeons had very little control over the practice of surgery.

Finally, the Fellowship of Surgeons was a very small occupational group. The Fellowship lacked both the political and economic clout to defend itself against the combined onslaughts of the physicians, and the barber-surgeons. In the end, the surgeons found themselves fighting a war on two fronts. In order to preserve themselves as a profession, the surgeons would be forced to ally themselves with one side or the other. In the end, union with the Company of Barbers was the natural solution. The Barbers were a large and prosperous Guild, engaged in the same craft as that of the surgeons. Union with the Company of Barbers was attractive to the Fellowship of Surgeons because it provided them with economic protection, and increased political power. The Company of Barbers was also keen to enhance its status by adding educated, professional master surgeons to its membership. The benefits of the association were reciprocal. (Dobson 1979) Ultimately, the two organizations were united as the "*Maisters and Governours of the Mystery and Comminalte of Barbouris and Surgeons of London*" by an Act of Parliament on July 25, 1540. (Erlor 1985)

### **Key Figures in the Merger**

Several individuals played critical roles in the formation of the new combined company. King Henry VIII (1491-1547) set the stage long before 1540. In 1529 he founded the Church of England and began disbanding the monastic orders. This action promoted the rise of non-clerical physicians and surgeons. By uniting the Barbers and Surgeons 1540, and through the passage of the Anatomy Act, a related piece of legislation, Henry the VIII made significant contributions to the advancement surgery and anatomy during and after his reign.

Another key player in the formation of the united Barber-Surgeons Company was Thomas Vicary (1495-1561) a prominent surgeon of the period. Vicary was trained as a surgeon and licensed in 1514. In 1527, Henry VIII appointed Vicary as Surgeon to the King after he cured him of a "sorre legge". (MacDonald 1967) He went on to become Serjeant Surgeon to the King in 1536. Vicary was the lead architect of the union of the Fellowship of Surgeons and the Company of Barbers. He was Master of the Company five times between 1530 and 1557. Vicary, with the support of the monarch, was able to broker a deal between the two sides leading

to the union in 1540. His key role in the union is depicted in the painting by Hans Holbein, in which Henry VIII is shown handing the articles of the combined company to Vicary. (Robinson 1984) Under Vicary's leadership, the Barber-Surgeon's Company initiated a formal system of training and examinations. Furthermore, Vicary established a regular series of anatomy demonstrations for all members of the company. Finally, in 1548 came the publication of Vicary's book *A Profitable Treatise on the Partes of a Manne's Bodie*, the first English translation of Galen. (Buckland-Wright 1985)

### **Workings of the Combined Company**

The new company provided a framework for resolving the long-standing conflicts between the surgeons and barber-surgeons. Specifically, the Articles of the new company provided for an equitable division of labour between barbers and surgeons, established a formal system of apprenticeship training for surgeons, and established a governing structure for closely regulating the activities of members.

Under the articles of the new company, barbers were granted exclusive rights to perform hair cutting and shaving. Barbers were specifically prohibited from performing any surgery, except for tooth extractions. Surgeons, and barber-surgeons, were given exclusive rights to blood letting, surgery, and wound treatment and were prohibited from cutting hair or shaving. (Dobson 1979) The new combined company brought all surgeons under the regulation of a single governing body (Erler 1985) and effectively ended the in fighting which had persisted for so long.

The company was run by one Master and three Wardens. Collectively, the Master and Wardens were to consist of two barbers and two surgeons, with the position of Master changing from barber to surgeon in alternate years. (Dobson 1979) There was also a Court of Assistants consisting of twenty-four members. The Master, Wardens, and Court of Assistants would meet on a monthly basis to handle matters pertaining to the company, and to resolve disputes between members. (Dobson 1979)

Each member of the company paid an annual fee, and membership in the company was a prerequisite to the practice of either barbering or surgery. Unlicensed practitioners within the city of London and an area of one mile around would be fined five pounds, a significant amount of money for that time. (Dobson 1979) Members of the company could also be fined for failure to comply with the articles.

The Master and Wardens of the company appointed a number of Officers or "Searchers" who were required to make regular visits to all barbers and surgeons. Searchers were entitled to inspect a member's place of business at any time. (Barnet 1968) Any recommendations made by the Searchers, including recommendations for treatment, were to be followed, or the member could be fined or dismissed from the company.

### **The Education of a Barber-Surgeon**

The education for surgeons was standardized under the regulations of the new company. The apprenticeship period for surgeons was to be seven years. During this time, the apprentice would be indentured to a Master Surgeon. Many master surgeons indentured more than one apprentice at a time. (Barnet 1968)

The apprenticeship period emphasized practical training, with the apprentice observing and assisting his master with different surgical procedures. Apprentices were barred from performing any surgery or tooth drawing without the direct supervision of their master. (Barnet 1968) Augmenting this practical training was a series of compulsory anatomy demonstrations organized by the Barber-Surgeons Company. While written materials were also used (Barnet 1968) (Erler 1985), many barber-surgeon apprentices were illiterate, and among those who were literate very few could read or write Latin. (Buckland-Wright 1985) This posed a major problem as virtually all of the academic texts at this time were written in Latin. The Barber-Surgeons company responded by creating its own publications, in English, to assist with the training of their members.

The first book, appearing in 1542 was the *Questyonyary of Cyrurgens*, published by Robert Copland. This book, written in question-and-answer format was essentially a study guide for the apprenticeship examinations. This book was largely a translation of an existing surgical apprentice's manual, *Le questionnaire des Cirurgiens et Barbriere*, originally published in French. (Erler 1985) In 1548, Thomas Vicary published his book *A Profitable Treatise on the Partes of a Manne's Bodie*, the first comprehensive English translation of Galen. In terms of its anatomical information, it was clearly outdated, having been superseded on the Continent by the publication of *De Humani Corporis Fabrica* by Vesalius in 1543. (Buckland-Wright 1985) In 1553, Thomas Geminus, published *Of the Parts of Mannes Bodye* the first English translation of Vesalius' anatomy. Essentially this was a working guide to a human dissection, published with the hope that it "might greatly avail to ye knowledge of the unlatined surgeons." (Dobson 1979) Finally in 1578, shortly before being appointed as Reader in Anatomy for the Barber-Surgeons Company, John Banister issued his book *The History of Man Sucked from the Sappe of the Most Approved Anatomists*. This landmark book contained the latest understanding of the "new anatomy" as taught by Vesalius and Columbus (Buckland-Wright 1985), and did much to dispel the continued teaching of outdated Galenic anatomy. These four publications did much to liberalize the control over medical-surgical information, and broadened access to include lay practitioners. (Erler 1985)

Upon completion of their apprenticeship, apprentices would take an oral examination called the First Preferment of Grace. Passage of this exam gave the surgeon a temporary license to practice. Young surgeons were expected to travel and broaden their experience, and were to be re-examined every six months. Once the surgeon had demonstrated sufficient skill and knowledge, he would be admitted to the Company as a Surgeon and Master of Anatomy. The candidate would then apply for a Bishop's license or Great Diploma, giving him a permanent license to practice. (MacDonald 1967)

In 1555 it was decided that a Court of Examiners should examine all apprentices upon completion of their apprenticeship. The Court of Examiners consisted of eight members in addition to the Master and Wardens of the company. (Dobson 1979) Agreement was reached

with the Bishop of London that a candidate would not be licensed until he had been approved by the Court of Examiners of the company.

Even after a surgeon had earned his Bishop's license, he was still obliged to attend a mandatory series of quarterly anatomy lectures. These anatomy lectures, organized and conducted by the Barber-Surgeon's Company, are perhaps the greatest contribution this organization made to the teaching of anatomy and the advancement of surgery in England.

### **The Teaching of Anatomy**

The Anatomy Act, passed by Parliament in 1540 granted the newly formed Barber-Surgeons Company the right to claim the bodies of four executed criminals per year "to be dissected or used in any other way for the advancement of anatomy and surgery. (Buckland-Wright 1985) This Act allowed the organized study of human anatomy to begin in England. Thomas Vicary, one of the founders of the new company felt that the study of anatomy was an essential part of the training of any surgeon "Also he must knowe his anatomie for all authors write against those surgions that worke in mans bodie not knowing the anatomie." (Buckland-Wright 1985) Vicary became the first in a long line of readers who gave formal anatomy lectures to the members of the company. (MacDonald 1967)

Beginning shortly after the formation of the new company, anatomy lectures were given four times a year. For reasons discussed earlier, dissections had to be conducted in a quick and orderly fashion, in order that the dissection might be completed before the cadaver putrefied. For each dissection, three lectures were delivered: visceral, muscular and osteological. (Dobson 1979) The teaching of anatomy was formalized through the appointment a Reader of Anatomy and two stewards or demonstrators. The reader had overall responsibility for the content of the lectures. The demonstrators were responsible for acquiring the cadavers, and actually conducting the dissections. Attendance at the anatomy demonstrations was compulsory for all surgeons and apprentices within the company. (Dobson 1979)

Over the years, the company had many illustrious readers of anatomy. Two early readers who stood out for their contributions were John Caius and John Banister. John Caius was a physician, who had studied anatomy with Vesalius at Padua. He was appointed as Reader of Anatomy in 1545 and held the post until 1563. Caius was a gifted lecturer and teacher. While his outlook was traditional, favouring the teachings of Galen over Vesalius, (Buckland-Wright 1985) it is generally acknowledged that the content of his lectures made important and lasting contributions to the study of anatomy. The caliber of his anatomy demonstrations set the standard by which future readers in anatomy would be judged. Caius eventually went on to become president of the Royal College of Physicians, served as a Physician to three monarchs, and founded Gonville and Caius College at Cambridge. He was certainly a high profile physician in his day, and the fact that the Company of Barber-Surgeons was able to retain him as a lecturer reflects of the effort that went into establishing a high quality anatomy teaching program.

John Banister, the second reader worthy of special mention, was appointed as Reader of Anatomy in 1581 and held the post until 1596. He was originally trained as a surgeon and subsequently licensed by Oxford as a physician, and thus had the rare distinction of being able to

practice both surgery and medicine. He made two major contributions to the teaching of anatomy in his day. The first, was his creation of various visual aids to teaching. These included models of various organs, the first use of a human skeleton for teaching purposes, and demonstrations using live animals. His second major contribution was his textbook *The Historie of Man Sucked from the Sappe of the Most Approved Anatomists*. This text summarized the teachings of Vesalius and Columbus and provided an current reference for students of the day, advancing them beyond the teachings of Galen for the first time. (Buckland-Wright 1985)

A final point highlighting the Barber-Surgeon Company's strong commitment to the ongoing teaching of anatomy was the construction of a dedicated anatomy theater, which was completed in 1638. The quarterly anatomy lectures were initially conducted in the Barber-Surgeons Company Hall, often making use of the kitchen. This apparently lead to some distress among the members of the company.

*"Hitherto the bodies have been a great annoyance to the tables, dresser boards and utensils of the upper kitchen by reason of the blood, filth and entrails of these anatomies and for the better accommodating of these anatomical affairs and preserving the kitchen to its own proper use: We now order that there shall be a fair room built over the great staircase next the backyard to be employed only for the dissection of private anatomies..."* (Dobson 1979)

The anatomy theater was an elaborate structure designed by famed architect Inigo Jones, and modelled after the famous anatomy theatre in Padua. (Dobson 1979) The building was elliptical in shape and had four tiers of benches surrounding a central dissecting table. The Anatomy theater was the first of its kind in England. It provided the Company with a permanent facility for teaching, and was symbolic of the company's long term commitment to teaching.

### **Factors Leading to Dissolution of the Union**

In spite of the many public successes and great advances made by the united Barber-Surgeons company, there were disagreements that took place behind closed doors. While the union of the two groups had initially served both the barbers and the surgeons, gradually tensions began to rise as the surgeons began to better themselves, and felt more secure in their position. With their long training, and extensive examinations the barber-surgeons and surgeons considered themselves very different from their barber colleagues. In 1684 the surgeons petitioned King Charles II for separation from the barbers on the following grounds:

*"Upon the petition of the Surgeons of the City of London praying in regard it is found by experience that the Union of the Surgeons with persons altogether ignorant of the Science or Faculty of Surgery (as the Barbers are) who were heretofore a different company from the Surgeons doth hinder and not promote the order for which they were united, that His Majesty would make that all Surgeons within 7 miles distant thereof a Body Politic under such regulation as His Majesty shall think fit."* (Dobson 1979)

Charles II took no action, and it was not until four years later that King James II denied their petition. The tensions did not go away however, and in 1703 the barbers accused the surgeons of rigging the election of Governors of the company. This matter could not be resolved internally and eventually proceeded to litigation in the King's Bench. The barbers ultimately prevailed in the matter, the election results were overturned, and a new election of Governors was held. (Dobson 1979) Eventually, these tensions led to a movement among the surgeons to separate from the barbers and to form their own company. Leading this movement was William Cheselden a leading surgeon in London.

Cheselden lent the Surgeons Company £550 to bring bill of separation before the house. It is noteworthy, that no other surgeons contributed to the cause. (Meade 1968) On Jan. 31, 1745 the Surgeons petitioned Parliament for separation from the Barbers. On Feb. 6, 1745 the Barbers countered that the company should remain united the basis of their historical association. Recognizing that their protests might go unheard, and that separation might occur, they also demanded that their company retain the possessions of the united company in the event of a split. A Parliamentary Committee was appointed. The Committee was headed by a Dr. Cotes who, coincidentally, was married to Cheselden's only daughter Williamina. (Dobson 1979) The Parliamentary Committee heard arguments from both sides, and in the end, concluded that the formation of a separate Company of Surgeons would improve the practice of surgery, and thus would benefit society as a whole. Accordingly, the Surgeons were given permission to form their own company. The two sides did not part amicably however.

In the separation, the Barbers retained the hall, and most of the assets of the original company. (Dobson 1974)( McCord 1970) The surgeons however, had won their freedom, and were soon incorporated as a new company. William Cheselden became a warden of the newly founded company. The Company of Surgeons met for the first time on July 1, 1745 in the hall of the Guild of Stationers. The surgeons were unable to reach an agreement with the barbers over the use of the anatomy theatre. The Company of Barbers had no further use for it, yet they were unwilling to rent it to the surgeons. The Company of Surgeons was unable to hold anatomy demonstrations again until 1752. (Dobson 1974)

In summary, it can be concluded that the union of the Company of Barbers and the Fellowship of Surgeons in 1540 served both sides early on. Surgeons were able to secure a place for themselves in a competitive environment, and Barbers benefited from the prestige of being associated with an elite and educated profession. This union also benefited England as a whole through significant advances in the teaching of anatomy, and in the training and regulation of the surgical profession. Despite internal tensions, this union prevailed for more than 200 years. Ultimately however, the differences between barbers and surgeons proved too large leading to their separation in 1745.

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# SIR ISAAC NEWTON WHAT HE MEANT TO OPHTHALMOLOGY

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## ABSTRACT

**There is little doubt that Sir Isaac Newton was one of the most influential individuals the world has ever seen. His scientific contributions to the fields of mathematics, motion, and optics are the basis of much of our understanding of many other areas including Medicine. More specifically, his 1704 publication *Opticks*, described the particle theory of light, raised questions about the anatomical and physiological basis of vision, and helped to bring about a new era of scientific study where postulation was replaced with scientific experimentation. Although some of his contemporaries disagreed with his conclusions, Newton's stature in the scientific community ensured that his findings received significant attention and acceptance. Over the years, many of his conclusions have endured and influenced the evolution of Medicine. Much of what we understand in Ophthalmology, and many of the procedures in this field, can be directly or indirectly linked to Newton's groundbreaking work.**

## Introduction

If one were to ask the question, "Who is the greatest scientist that ever lived?" Sir Isaac Newton's name would likely be mentioned more often than not. There is little doubt that Newton was one of the most influential individuals the world has ever seen. His scientific contributions to the fields of mathematics, motion, and optics are the basis of much of our understanding of many other areas including Medicine.

## The Man

Newton was born in Woolsthorpe, Lincolnshire, a small town in central England, on Christmas day in 1642, two months after the death of his father. (Sepper 1994) When his mother remarried in 1645, she left Isaac in the care of her mother. As a child he attended the King's School in nearby Grantham. An indifferent student, he was removed from school in 1656 and entrusted with the task of operating the family farm. However his uncle, apparently recognizing Isaac's talents, urged him to return to his studies. So in 1661, Newton enrolled at Trinity College of Cambridge University, receiving his bachelor's degree in 1665. Later that same year, an outbreak of the plague forced the University to shut down and Newton retreated to his home in Lincolnshire.

Legend has it that it was in this period of retreat to Woolsthorpe that he made major breakthroughs in optics, mathematics, and motion that were to serve as the foundation for his later achievements. When he returned to Cambridge, he was made a Fellow of Trinity College, which provided a stipend and entitled him to a permanent place in the College, and the next year he was awarded the Master of Arts degree. (Albert 1993) In 1669 his mentor in mathematics, Isaac Barrow, retired from the Lucasian Chair of Mathematics and Astronomy, and Newton replaced him. In the next years he published important contributions to optics, based on lectures given at Cambridge, in a series of letters addressed to the Royal Society of London. His work on motion, *Mathematical Principles of Natural Philosophy*, was published in 1687.

Although he had an intensely private, even secretive, personality, Newton also took on various public responsibilities and made the acquaintance of influential people. He engaged in university politics, and resigned in 1696 to become Warden of the Mint in London. He became a member of parliament and was knighted. In 1703 he was elected President of the Royal Society, a position he held until his death. In 1704 he published *Opticks*, a work that can be said to mark the beginning of the science of light and colour and provided his contemporaries with a paradigm for how experimental science ought to be done. Newton is also hailed as the inventor of calculus and he discovered many other important mathematical theorems and techniques. He died in London at the age of eighty-three, on March 20 1726 and was buried in Westminster Abbey. It is stated that he retained his mental powers until the end. For example, problems set by Johann Bernoulli in 1696 and by Gottfried Wilhelm Leibniz in 1711 to challenge “the acutest mathematicians in the world” were solved by Newton within a few hours. (Sepper 1994)

### **His Work**

When Newton became interested in it, optics was already an established science with traditions extending into antiquity. Many of the theories held at the time had their roots in antiquity, the Middle Ages, and the Renaissance. The ancient Greeks believed that “light was not something in itself, but the means of sight; not something to be considered apart, but as a condition of the visible.” (Wade 1998) The Pythagoreans believed that sight, like sound, was something that emanated from the organs of seeing or hearing. Before Newton’s time, progress had been slow and numerous questions remained unanswered. The work of men such as Johannes Kepler, Christiaan Huygens, and Rene Descartes accelerated progress in the field, but little of the work prior to Newton’s was experimental. Descartes proposed a purely imaginative explanation of the nature of light and colour, without any experimental evidence. He maintained that light was “a pressure transmitted instantaneously through space.” (Wade 1998) The effect of this pressure on matter was to give a translational motion to certain particles, which Descartes named “light globules.” The impact of these globules on the retina produced the sensation of whiteness. However, if, in their passage through matter, the globules also acquired a rotary motion, then a person experienced the sensation of colour. Descartes maintained that colour was only a modification of white light. This idea was supported by most of Newton’s contemporaries and was one of the first beliefs that Newton was to attack.

Newton’s earliest consideration of light and colours was recorded in his notebooks in the mid 1660’s. He already believed in the corpuscular conception of light. It was in this period that he

performed his famous prism experiments. A beam of white light could be split into a spectrum of colours, and made white again with a second prism. Newton deduced that the rays of light were heterogeneous, and the various colours were caused by the different rays being separated from one another. (Hall 1993) In 1672 he published his first article on his optical research, entitled “New Theory about Light and Colours” in the Royal Society’s *Philosophical Transactions*. Over the next few years, numerous criticisms from Newton’s adversaries appeared in *Philosophical Transactions*, together with replies by Newton. The main reasons for the skepticism was that Newton’s ideas on colours were a contradiction of the universally held “modification hypothesis” according to which colours are produced by a modification of white light. In addition, Newton disagreed with the generally accepted wave theory of light, holding to an emission hypothesis that explained light as streams of particles emitted by shining substances.

For the rest of the 17<sup>th</sup> century, Newton continued to work on his optics research while he lectured at Cambridge. He furthered his work on refraction, reflection, and other phenomena. (Fauvel *et al* 1988) In this time, he also perfected the reflecting telescope, which eliminated some of the errors inherent in refracting telescopes. Criticism from some of his distinguished contemporaries, including Robert Hooke and Christiaan Huygens, continued. The result of this controversy was that while Newton had completed most of the work for *Opticks* by 1675, he became so fearful of exposing his discoveries and beliefs to criticism that he withheld publication until 1704, one year after Hooke’s death. By that time, Newton held a place of profound respect and admiration throughout the scientific world.

Newton begins *Opticks* by stating “My design in this Book is not to explain the Properties of Light by Hypotheses, but to propose and prove them by Reason and Experiment.” In it, he provides a complete discussion of his discovery of the composition of white light, the coloured images produced by lenses, the reflecting telescope, the explanation for the rainbow, and Newton’s rings. (Sepper 1994) Newton concludes the first edition of *Opticks* with sixteen “queries” [he later added queries 17-31 in subsequent editions], whose purpose was to stimulate others to continue with the research. Queries 1-4 deal with the interaction between light and matter; queries 5-11 with the apparent relationship between light and matter that gives rise to heat; and queries 12-16, which are of particular interest to ophthalmologists, deal with the various aspects of vision.

The pervading thought at the time concerning vision was that when light struck the eye, it caused some substance, or “ether”, to be transported along the optic nerve to the brain. This may have been in part due to the anatomical belief at the time that the optic nerve travelled to the ventricles of the brain. (Grom 1971) Newton deduced that light produced vibrations in the retina, and these were conducted to the brain along the optic nerve. He conducted experiments with cut sections of optic nerve, and was unable to isolate the aforementioned substance. He states, “I tied a piece of the optic nerve at one end, and warmed it in the middle, to see if any airy substance by that means would disclose itself in bubbles at the other end, I could not spy the least bubble...And that vision is thus made, is very conformable to the sense of hearing, which is made by like vibrations.” (Wade 1998)

As for the functional significance of the optic chiasm, most early scholars assumed that the optic nerve connected each eye solely with the same side of the brain and treated the junction of the

two nerves at the chiasm as a mere matter of appearance. Others asserted the opposite, that all fibres cross to the contralateral side of the brain without intermixing at the chiasm. (Reynolds 1987) Newton, however, reasoned that for binocular vision to be possible – proper fusion of the visual fields of the two eyes – fibres from each retina must distribute to both sides of the brain. This was stated in query 15, instead of the body of *Opticks* because he was not able to prove it through experiment.

### **His Influence**

Although a few of Newton's conclusions were false, the majority were very significant discoveries that have endured. His insistence on experimentation over postulation helped to push the world of scientific research into modern times. Newton advanced the fields of optics and dynamics more than anyone else who came before him. Although he is known as a great physicist, we in the medical community also owe a great deal to him. Specifically, much of what we understand about optics and sight in Ophthalmology, and most of the equipment used in this field, can be directly or indirectly linked to Newton's groundbreaking work on light and vision. Direct and indirect ophthalmoscopes used for funduscopy, slit lamps for viewing the anterior segment, and lasers used for therapy are just a few examples.

Alexander Pope sums up Newton's significance very well; "Nature, and Nature's Laws lay hid in Night. God said, let Newton be! And All was Light."

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**“NO-ONE CAN DIAGNOSE TYPHOID AT FIRST.”**  
**(SIR WILLIAM JENNER, 1877)**

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**ABSTRACT**

**On December 14 1861 Albert, Prince Consort to Queen Victoria, died of an illness that has historically been attributed to typhoid. Among those treating the Prince at the time of his death was William Jenner, the nineteenth century physician who earned medical fame through his work differentiating typhoid from typhus fever. However, questions were raised at the time of Albert’s death that brought doubt on the diagnosis of typhoid. This paper examines why Jenner himself could not have been more definitive in his diagnosis and that, perhaps, Jenner and other physicians involved with Albert’s care downplayed any indication of a fatal illness. Because of the Queen’s reliance on the Prince and on his crucial role in averting war between the United States and Britain, had Jenner and the other physicians diagnosed anything other than a “slight cold” prior to the Prince’s death the Queen would have collapsed and Diplomacy might have fallen along with it. The Prince had to be pictured as suffering from an illness that could be overcome.**

It is 1877. Sir William Jenner writes at his desk by gas light. He stews over a letter. The letter is written in the way of an Apologetic: his words betray a sense of guilt, as if they are an attempt to reconcile his role in Prince Albert’s death some sixteen years before. He writes: “*No-one can diagnose typhoid at first.*” It is an odd admittance, especially from one who gained medical prestige by mastering the clinical differentiation of typhoid. In a comparable gesture, Queen Victoria underlines “no-one” in her personal memo of the correspondence, as if to justify the uncertainty surrounding her husband’s illness, as if to allow for the apparent limits of clinical judgement to account for the shock of his death. Yet controversy remains as personal records of the time speak of numerous competing diagnoses coupled with a covert attempt to keep the true prognosis of the Prince Consort from the Queen. Why did Jenner and the other physicians ascribe multiple diagnoses that invariably kept the hope of the Queen alive? The answer is one of precarious politics and paternalism on a national level: the doctors believed that they had no choice.

William Jenner, born in 1815, ascended rapidly through the ranks of medicine to reach levels of medical distinction remarkable for his humble beginnings. As a Fellow of the Royal Society and President of the Royal College of Physicians from 1881 to 1888, Jenner had risen from the overcrowded and unsanitary conditions of London’s training hospitals to earn his colleagues’

respect and admiration. However, it was Jenner's meagre past that brought him true medical achievement: for Jenner knew typhoid. Having witnessed the course of the disease countless times during his early training and gaining considerable expertise on its clinical diagnosis, Jenner was able to differentiate between typhoid and typhus fever, originally thought to be one and the same disease, Jenner's distinction was seen as a significant advancement of Victorian medicine and his reputation grew so that he was now considered the leading expert on the diagnosis of typhoid (Reid 1987). Jenner's reputation did not escape Queen Victoria, who requested that the "first fever Doctor in Europe" be brought to the bedside of an ailing Prince Consort in December of 1861.

Jenner's appointment at Windsor was made by Victoria on the behest of Sir James Clark, the senior Physician-in-Ordinary to the Queen (Longford 1964). The title given to Jenner upon his arrival was that of Physician Extraordinary, a subservient position to the Physician-in-Ordinary. Jenner belonged to an expanded host of physicians each of whom were obligated to abide by their respective roles in the hierarchy of the Medical Household. When the Prince Consort fell ill, the physicians involved acted according to their position, independently assessing the Prince and careful not to dispute diagnoses too vigorously. Bound by his position in the Household and the short time he had been there, Jenner was seen by others as quiet, respectful and careful not to dispute the diagnoses made by his superiors (Reid 1987).

The exact time when the Prince Consort did fall ill is a matter of contention. It is clear Albert suffered from chronic illnesses prior to the onset of the symptoms associated with his death, and some believe that the fatal illness was the product of past disease exacerbated by unusual stressors in his life (Weintraub 1987). That Albert was under stress is an understatement; his final year brought duties and responsibilities that took on an unprecedented level of national importance, albeit mostly hidden behind the intricacies of Royal Diplomacy. The stress generated during this period was not lost on his physicians as 'overwork' and 'fatigue' became recurring themes in the diagnoses preceding his death (Matson 1978). Nor were these revelations foreign to the Queen, who made reference to Albert's weakening constitution in her daily journals. Indeed, her concern regarding Albert grew when the apparent frequency and severity of his familiar syndromes escalated in 1858. Chronic, recurrent bouts of stomach problems that had long-since plagued the Prince suddenly became severe enough to render him bedridden for a part of their duration. Baron Christian Stockmar, a former physician and the Prince's closest adviser, expressed grave concern over what Victoria dubbed "the old enemy" and remained at a loss to adequately explain the symptoms (Weintraub 1987). Albert solemnly wrote that a "weak stomach would go with him to the grave", a prophetic statement that reflected Albert's obsession with what he believed to be his encroaching death.

Not only was Albert physically deteriorating, but he was spiritually depressed and seemed to overly dwell on the idea that he was dying. Referred to as his "death wish" (Longford 1964), Albert's conviction alarmed those around him, especially Victoria. Upon visiting Coburg in 1860 Albert wept openly in front of his brother as if he knew that he would never see his birthplace again. His brother wrote that Albert "was well aware that he had been here for the last time in his life." The Prince's instincts were accurate, for in less than a year Albert was dead.

Other mild complaints suddenly became more serious, often presenting with new symptoms. Albert had long been susceptible to “chills” and frequently complained of rheumatism, but by 1861 these complaints followed with fever, swollen glands and neuralgia. A new and unusual symptom of aching gums appeared as well. Nevertheless, Jenner convinced the Queen that these ailments were not serious enough to warrant a physician staying at Windsor (Longford 1964). Even now Jenner and the other physicians were taking the first steps to protect the Queen should her Prince’s health deteriorate further.

Albert’s final decline in health coincided with an upheaval in personal responsibility, working relentlessly in secrecy on behalf of the Monarchy. It was long since recognized by many within the Medical Household that Albert was the Right Hand of the Queen, especially in his last years when Victoria’s emotional and bureaucratic dependence on him exceeded even his regular commitments (Strachey 1987). Albert was her personal advisor, the hidden voice behind the throne, redrafting official communications for her to copy and keeping the Queen abreast of situations that impacted her Kingdom and the world. According to Victoria, “his wishes, his plans... about everything, his views about every thing are to be my laws.” Indeed, during the final years of Albert’s life Victoria became so dependent on her husband that he frequently worked himself to exhaustion (Hibbert 1976). Unfortunately, the stress of the Prince Consort’s responsibilities proved to be too much for his deteriorating health. The *Trent Affair* saw Albert avert possible British involvement in the American Civil War, while at the same time costing him what remained of his strength; he redrafted a letter to Washington from Britain that could have been tantamount to a declaration of war (Weintraub 1987). The Prince transformed the situation from one of an ultimatum to an opportunity for negotiation. Although Albert may have prevented an Anglo-American War, the task was overwhelming. As the Prince reworked the letter he told Victoria, “I am so weak, I have hardly been able to hold the pen.” The *Trent Affair* proved to be the last of Albert’s Diplomacy.

December of 1861 saw the rapid, final decline in the Prince’s health and the formation of the so-called “well-intended conspiracy” of the physicians whose intent was to protect the Queen from the anguish of Albert’s illness (Giles St. Aubyn 1991). On December 2, the same day that Cabinet accepted Albert’s redrafted letter, Victoria summoned the physicians to her husband’s bedside. Jenner’s examination revealed that a fever was imminent, though reassuring her that there was no need for concern. Consultations with Sir James made it immediately clear to all concerned that the Queen was never to be confronted with the potential severity of Albert’s illness, assigning the phrase “no cause for alarm” to be repeated dutifully in her presence.

The physicians’ motivation for deception was what they believed to be the Queen’s own fragile state of mind. Following the recent death of her estranged mother, the Duchess of Kent, Victoria suffered a nervous breakdown and descended into alarming depths of depression and social withdrawal from which she barely returned. Indeed, the death of her mother left the Queen in such a state that rumours began to circulate within the Household that she had gone mad. Sir James and Dr. Jenner recalled all too clearly how the Queen’s mind “trembled in the balance” during this time, justifying what they believed to be their duty to shield the Queen from the truth should Albert’s illness be anything less than benign.

The initial diagnosis of Albert's illness was that his rheumatism had simply worsened due to the December chill. When a fever developed, Victoria recorded in her diary that Albert's rheumatism had "turned out to be a regular influenza" but became concerned over his recent loss of appetite and insomnia (Hibbert 1984). Although Jenner insisted that Albert must eat to maintain his strength, the Prince could hardly muster the will to get out of bed, absolutely convinced of his approaching death. The Queen remained firm in her belief that her husband's ills were due to a cold he caught, compounded by the anxiety over the recent heartbreaking escapade with a prostitute of their son, the Prince of Wales. Victoria reassured her husband that he would be fine but that he was suffering from overwork, excessive worry and anxiety, a diagnosis fully supported by Sir James (Longford 1964).

Finally, on December 8, the Prince lapsed into episodes of delirium. Jenner could no longer remain idle and reported to the Queen that Albert suffered from bowel fever, a more delicate name for typhoid fever, the Queen still took great comfort in the fact Jenner insisted that this is what they had "been watching for all along" and that they knew exactly how to treat it. With a remedy that would be effective within a month, Victoria, though relieved, wondered aloud how she could cope without her husband even for that long. The initial diagnosis of typhoid by Jenner was quickly denigrated by Clark, who insisted that the illness was stress-related. That Jenner failed to follow through with his cure haunted Victoria in her later years, left wondering if Jenner had somehow misdiagnosed her Prince (Weintraub 1987).

Victoria's faith in Jenner and Sir James was absolute, such that when Lord Palmerston insisted that the Prince receive a second opinion by Dr. Thomas Watson, Physician Extraordinary, she adamantly refused. Nevertheless, as Albert seemed to deteriorate before her eyes she allowed the consultation. Dr. Thomas, Dr. Jenner and Sir James met to inspect Albert on several occasions. In the presence of the Queen, Watson would comment on the Prince's "improvement" and Jenner spoke of "positive gains." Although it is likely that Jenner and Watson recognized the gravity of the Prince's condition, they remained hesitant to break ranks with Sir James and his so-called "psychological treatment" of the Queen (Longford 1964). Instead, the physicians soothed the Queen and treated the Prince with doses of brandy. Bulletins were issued to the public that were hardly indicative of the serious nature of the Prince's condition. Relatives who came to visit the Prince were left aghast at the site of him, having been led to believe that he was suffering from a minor cold.

The Prince Consort died on December 14. Even on that fateful morning the physicians maintained their vigil to the Queen's comfort, allowing her to leave the Prince's bedside for a walk as they assured her that his condition would improve. Watson, whom the Queen now regarded in a more positive light, told her that he had seen much worse cases and he never "despairs with fever", the doctors all agreeing that there was "ground to hope that the crisis was over." Nevertheless, the Queen sensed that the Prince's death was eminent. After what the doctors acknowledged to be the onset of pneumonia, the Queen cried "Oh yes, this is death, I know it. I have seen it before." The Prince died, with the journal of a Lancashire weaver (1982) reading two days later "It is true that Prince Albert is dead...There was no one expected such a sad calamity, he being a young man and had only a slight cold. Every one has got a shock by it being so sudden."

While alive, the Prince never received a definitive diagnosis. Once dead, the physicians scrambled to account for their apparent lack of decisive clinical judgement (Weintraub 1987). Jenner had at least proposed typhoid to the Queen (bowel fever) as the possible source of Albert's fatal illness, yet even after Albert died he confided in her that his death was due more to his "heart being over-strained by the Prince's heavy frame." Sir James also continued to make diagnoses *post mortem*, claiming that three factors led to Albert's death: the stress of overwork, the worry over his son's misguided love affair, and the effect of a winter chill on an already sick Prince. On December 21 Jenner officially declared in Albert's death certificate that the culprit had been typhoid, with no autopsy to be performed by order of the Queen.

Questions raised over the appropriateness of this diagnosis would continue for years. Both the *Lancet* and the *British Medical Journal* expressed concern over how Jenner's final diagnosis of typhoid was not consistent with the official bulletins preceding the Prince's death (Weintraub 1987). Anger within the Aristocracy itself blamed Albert's death on the incompetence of his physicians, who had been portrayed as unable to provide a diagnosis of any kind. Lord Clarendon announced that he felt the doctors "were not fit to attend a sick cat". Sir James was particularly prone to this type of criticism; in 1835 he misdiagnosed the fatal tumour of Lady Flora Hastings as a pregnancy and proved willing to keep the error from her family. Even modern theories suggest that Albert suffered from carcinoma of the stomach, especially in light of some of the chronic symptoms he was reported to endure together with the history of cancer in his family (Weintraub 1987).

Nonetheless, what Albert died of is not as important as the manner in which his death was managed. The Medical Household had at its heart the need to protect the Queen from Albert's illness, a paternalistic attitude that encompassed not just her best interests but those of Her Kingdom. The physicians felt that had the Queen been told that her beloved husband was dying, she would have descended into a depression even exceeding that which had followed her mother's death (Mullen and Munson 1987). This surely was the motivation for Sir James, who instructed the other physicians never to even whisper the word "fever" in the Queen's presence. Her doctors felt that they simply had no choice but to keep the hope of their Queen alive, given her emotional frailty. In fact, their fears were not exaggerated; the Queen's grief over her husband's death reached legendary proportions, continuing from the time of his death until her own in 1901. Not only did the nation bury its "uncrowned sovereign" Albert the Good, but in essence they lost the Queen they knew as well.

Sir James and the other physicians took it upon themselves to preserve the Monarchy to the extent that time would allow, refuting the obvious severity of Albert's condition. Clark believed that it was far better to keep the hope of the Queen alive rather than face the "uncontrollable grief" that would undoubtedly ensue should the Prince be portrayed as dying (Giles St. Aubyn 1991). It is likely that Jenner suspected typhoid, especially given his concern over the unsanitary drainage conditions at Windsor and a suspect rash that covered the Prince's abdomen, but he initially either failed to voice his opinion or chose to deny them in light of his junior position within the Household (Reid 1987). His obedience to Sir James may have superseded his medical responsibilities, even though Clark's misguided intentions may have actually prevented the Prince from the care he needed. The Royal Family felt that Clark's appointment as senior physician to Albert was tantamount to nothing less than a death sentence. These revelations

haunted the Queen, who for the rest of her days wondered if the physicians could have saved her husband, had they been willing. Ten years later, when the Prince of Wales became sick with typhoid, Victoria was certain at first he was doomed to suffer the same fate as his father. When he survived, she was reported to have cried, “Had *my* Prince had the same treatment as the Prince of Wales, he might not have died.”

Part of the historical controversy over the Prince’s death remains over the question of what actually killed the Prince. Some biographers believe that typhoid may not have led to his death but instead the culprit was Albert’s so-called “death wish”, his lack of will to live while suffering from a benign illness (Sinclair 1981). Indeed, just prior to the onset of the symptoms in December he remarked: “I am sure, if I had a severe illness, I should give up at once, I should not struggle for life. I have no tenacity for life.” The Queen knew this to be true, as did his physicians, and years after his death Jenner and the Queen spoke of Albert’s death as a result of his wish to die. Others believe that Albert died of an illness other than typhoid (Weintraub 1987), based on Jenner’s reluctance to diagnose the disease and that no one else became sick (if indeed the plumbing at Windsor was to blame.) In addition, when the Queen saw her son struggling with typhoid ten years later, she eventually came to the realization that his disease was not the same as the one that killed her husband. “It seemed more and more like ten years ago,” the Queen said, “yet it was very different too.”

Even if it was typhoid that killed the Prince, or perhaps a stomach cancer as some believe, then could Albert have been saved? Treatments for both diseases were minimal. One in three died of typhoid, and a treatment for cancer was virtually non-existent. Even if the doctors knew what Albert was suffering from, their opportunity to save him was unlikely, though certainly not absolute. What the physicians did know, and what underlies the controversy of Albert’s death, was that they felt he was beyond cure and declined to administer any aggressive treatment lest they upset the Queen (Weintraub 1987). The diagnoses made by the physicians were made to protect the Queen, not to benefit the Prince. Even Jenner’s quiet suggestion of typhoid had at its purpose to reassure the Queen, when he promised a treatment. The controversy of Albert’s death is how the physicians “covered up” the fact that he was dying, and not what he was dying from.

The price for Clark and Jenner’s “well-intended conspiracy” condemned the Queen to struggle for the rest of her life with the events surrounding her beloved husband’s illness and death. That the Prince may or may not have died of typhoid is secondary to the fact that the Medical Household took it upon themselves to shield the Queen from the reality of her husband’s illness. To do so preserved the Crown only temporarily, but the damage it left lasted for years. Victoria, who was left totally unprepared for Albert’s death was overwhelmed with the shock, ironically fostered by the physicians who had hoped to protect her. The Monarchy ceased to function, the Queen becoming incapable of performing even the most menial of tasks; Victoria was unable to open Parliament for almost ten years, to say nothing of fulfilling any of her other important duties (Whittle 1980). But Perhaps her guilt over Albert’s death was the worst, leaving her forever trying to understand what had happened and if anything could have been done differently. This sense of responsibility was not limited to the Queen. Jenner would privately recount his role in the Prince’s death, long after the retirement of Sir James and Jenner’s own ascension to Physician-in-Ordinary to the Queen and his knighthood. Sir William Jenner would always remain torn between his duty to medicine and his responsibility to protect the Queen.

The misguided attempt that sacrificed the Prince to save the Queen remained with Jenner for the rest of his life.

Jenner looks up from his work. He cannot write all of his thoughts.

He speaks: "What could I have done, those sixteen years ago? I know typhoid. But typhoid was the label; not the cause of death. Mama needed the hope we gave her. Cause of death? For me: the Prince's will to die; his lack of pluck. For the world? Why, typhoid."

Jenner reads his letter. "No-one can diagnose typhoid at first."

"Indeed", he quietly confesses. "That is so."

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# **THE LEGACY OF GALL'S ORGANOLOGY ON MODERN NEUROPSYCHIATRIC INQUIRY IN THE 21<sup>ST</sup> CENTURY**

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## **ABSTRACT**

**The origins of conscious experience and the determinants of human behaviour remain some of the last remaining mysteries of the natural world. The 1990's, coined "The Decade of the Brain", produced a virtual explosion of information about how different aspects of mental functioning are represented by discrete regions in the brain. The intellectual framework for these breakthroughs were laid down in the pioneering work of Franz Joseph Gall in the 19<sup>th</sup> century.**

**A gifted neuroanatomist, Gall conceived an empirical approach to the ancient problem of the mind in his theory of organology, later known as phrenology. Gall correlated 27 observable aspects of behaviour, including such diverse concepts as "vanity" and "memory for facts", to measurable prominences in the cranium believed to have been molded by the underlying brain. Thus, by measuring the contours of the skull, a technique known as cranioscopy, a link between brain and behaviour could be deduced.**

**Under modern scientific scrutiny, none of the areas of the brain delineated by Gall's organology are currently accepted to perform the functions that he originally attributed to them. However, Gall's legacy remains in his concept that discrete regions of the brain were specialized to mediate specific functions has become embraced as a core concept in neuroscience. This theory of the localization of cerebral function marked a radical paradigm shift from the dominant Cartesian view of the mind as a unitary entity and Galen's concept of the humors.**

**In the forthcoming "Decade of the Mind", the increasing use of highly sophisticated tools such as PET and fMRI should further solidify our knowledge about the relation between the structural and functional anatomy of the brain. Modern psychiatry as heirs to Gall's efforts is closer than ever to establishing the "scientific psychopathology" that Freud first proposed over 100 years ago.**

The nature of the mind has been a source of debate among philosophers and scientists since the dawn of time. For centuries it was believed that it was not possible to dissect the workings of the mind into biological substrates. However, through the efforts of Gall and later Broca, the concept of discrete localization of function within the organs of the brain has become an important tenet in the field of neuroscience. At the beginning of the 21<sup>st</sup> century, psychiatry as

intellectual heirs to the pioneering brain and behaviour work of Gall is poised to better understand the relationship between the structural and functional anatomy of the brain.

Decomposition has been rejected by some for failing to provide an adequate explanation of the workings of the mind. Galen proposed his humoral theory of behaviour in the first century A.D. (1). According to this view, there were four humours, black bile, blood, yellow bile and phlegm. Each one of these substances corresponded to a particular temperament. The brain was not thought to play a role in the creation of behaviour. A melancholic predisposition was due to an excess of black bile. The excitable in nature were experiencing a surfeit of blood. The psychotherapeutics of the day, leeches and bloodletting, were geared to expunge the superfluous substances from the body (2). The Galenic notion of humours was popular for over a millenium.

In the 17<sup>th</sup> and 18<sup>th</sup> centuries Cartesian dualism was the prominent opponent to the mechanistic view of the behaviour. Descartes and his followers maintained that higher order processes in human beings such as cognition, consciousness and volition were not amenable to reduction into mechanistic terms (3,4). The Cartesians held that the mind could not be analyzed in the same manner as the brain. While the latter is material, the former is dependent on a different kind of substance, the immaterial soul. The mind could only be explored with introspection and speculation, not experimental investigation (3). According to this view, the brain was merely the organ on which the ethereal mind exerted its will. This unitary view of the mind precluded any meaningful dissection of the mechanisms through which the brain controlled behaviour. The brain and the mind were thus assumed to be dichotomous.

The orthodoxy of the Cartesian mind/body dualism was not challenged for several centuries. After all, if the mind was an unitary concept, higher cognitive functions could not be further decomposed. In the final decade of the 18<sup>th</sup> century Franz Joseph Gall proposed a novel theory of cerebral localization called organology (3,4,5). Gall's mechanistic approach to the age old debate about the nature of the mind is regarded as a major achievement in the history of neuroscience.

Mechanistic explanations assume that a complex system is a composite of components each performing its own functions (6). When the output of these units are combined, the behaviour of the system is produced. Therefore, mechanism posits that higher order emergent phenomena such as cognition and mood are the consequences of the parts of the system and their relation to each other. Similarly Gall believed that the mind and behaviour could have substrates in the biological brain.

As Bechtel and Richardson (6) assert, there are two broad experimental approaches in the development of a mechanistic model. The first, is to isolate the components physically within the system and then ascertain the function of each component. The second strategy is to observe the behaviour of the system and then to identify components within the system responsible for each of the subtasks. Gall's ambitious theory sought to achieve both goals simultaneously.

Franz Joseph Gall (1759 –1828) was born in Tiefenbronn, Austria. He began the study of medicine at Strasbourg in 1777 and received his M.D. in Gall was an astute observer of behaviour from a very early age. He noticed that the students who possessed the best memories

also had bulging eyes (3,5). He thought that the reason for this was that the underlying brain tissue must have been so extensively developed and hypertrophied in these people that they were displacing their eyeballs forward. This belief began a lifelong journey to try to establish a meaningful model of brain and behaviour.

In 1791, Gall published a book which espoused his now famous theory of organology. Gall hypothesized the existence of many cerebral organs, as mentioned above tantamount to heresy at the time, which each subserved a particular psychological faculty. In total Gall identified 27 distinct faculties/organs which were thought to be the locus of such diverse concepts as poetic talent, wit, sense of language and memory for facts (3,4,5). Since the organs were independent each could be more developed in one individual than another. The size of the organs were thought to be plastic, largest in those gifted with those particular traits and in those who exercised that psychological faculty. With an increase in size, the cerebral organs were able to mold the overlying skull and create a physical impression upon the cranium. Gall believed that by measuring the contours of one's head, a technique known as cranioscopy later to be popularized by the phrenological movement, the make-up of the underlying cerebral organs could be inferred. Furthermore, by correlating the cranioscopic findings to the behavioural characteristics of the person in question, a direct link between the brain and the mind could be made.

Gall correlational approach was summarized (5) in his four "fundamental theses" that guided the remainder of his life: 1) moral and intellectual qualities are innate; 2) their functioning depends on organic supports; 3) the brain is the organ of all faculties, of all tendencies, of all feeling; 4) the brain is composed of as many organs as there are faculties, tendencies and feelings. The first thesis directly supported the nature side of the "nature versus nurture" argument, a contention not commonly held at the time. Both his second and third theses, when translated into modern terms state that all affective and cognitive behaviour is dependent on brain function. Using his cranioscopic method he produced the fourth thesis. Therefore it appears that Gall observed data for his first and fourth theses and went on to argue for the veracity of the second and third assertions (4,5,6). Ironically, Gall's legacy to science rests on his inferences and his downfall proved to be his observations.

In organology, Gall's radical cerebral localization theory shook the prevailing philosophical and scientific belief in the dualism of the mind and brain. However Gall's important contribution to the history of science was almost overshadowed by its relationship to the disastrous theory of phrenology and its technique cranioscopy. By the middle of the 19<sup>th</sup> century, phrenology was in utter disrepute and condemnation was heaped upon those that supported this pseudoscientific belief that bumps on one's skull could reveal information about character and behaviour (1,4). Organology, the original theory about the multiplicity of the cerebral organs was also relegated to the realm of scientific buffoonery by association. Although time would reveal that Gall's theory was indeed correct, his crude methods and haphazard approach to the scientific method, prevented him from establishing the direct mechanistic link between brain and behaviour that he desperately sought.

Vindication for organology came in the form of the analyses of a French physician and anthropologist on patients suffering from a form of aphasia. Paul Broca (1824 – 1880) forever

secured his position in the history of cerebral localization theory with the study of his patient Leborgne, also known as Tan (3,4,6). Although Broca rejected the cranioscopic method of phrenology, he was an ardent defender of organology. Like Gall before him, Broca was committed to pursuing a doctrine of direct localization in the brain. In fact, Boring (7) reports that at a meeting of the Parisian Anthropological Society in 1861, Broca praised Gall and the principle of localization of function, going so far as to describe it as “the point of departure for all the discoveries of our century in the physiology of the brain.”

In August of that year, Broca had described in great detail the results of his clinical and anatomical investigations of a case of isolated disturbance in the production of speech. His patient was an unfortunate man named Leborgne. Leborgne had suffered from intractable seizures from childhood. By the time he reached adulthood he had lost the ability to speak, despite demonstrating normal comprehension and intelligence (4). While in hospital, Leborgne became known as Tan since this was the only word he was able to utter. Tan’s condition gradually worsened and eventually he died of gangrene. On autopsy, Broca discovered a large lesion in the inferolateral aspect of the left frontal lobe (3,4,7). After evaluating similar cases of pure expressive aphasia and documenting identical neuropathological findings, Broca concluded that this area in the frontal cortex must be a region specialized for the production of language.

Therefore it was Broca and his famous clinico-pathological study which provided the theory of organology its first experimental support. The difference did not lie in theoretical considerations, since both Gall and Broca put forth the idea that a discrete region of the brain was responsible for language. Rather the difference in their results rested on their respective approaches to the problem. While Gall strictly relied on speculative correlations, Broca compared pathological symptoms with neurological lesions. Furthermore, the level of analysis had changed. Broca studied the effects of the brain on behaviour from within the skull as opposed to Gall’s study of the gross organization of the brain from outside of the skull. Gall was content to infer the underlying cerebral organs from the bumps they produced on the overlying cranium. As a result, a “phrenology of convolutions, not bumps” was established (7). Organology had exorcised its phrenological demons and the concept of cerebral localization had finally come of age.

In 1870, German psychiatrists and physiologists Gustav Fritsch (1838 – 1927) and Eduard Hitzig (1838 – 1907) further solidified the burgeoning concept of the divisibility of the cerebral cortex (1,2). By applying direct electrical stimulation to the exposed cortex of dogs, they elicited reproducible motor responses. Extending this technique, they were able to map the motor cortex and demonstrate that discrete parts of the frontal lobes immediately anterior to the Sylvian Fissure controlled individual muscle movements in different parts of the body. As the methods of scientific investigation improved over time, investigators were delving further into the living brain. Autopsy studies were no longer the gold standard.

In 1895, a young neurologist named Sigmund Freud (1856 – 1939) produced a startling document named, *A Project For a Scientific Psychology*. (1,2). This paper was the first attempt at explaining complex human behaviour such as sexual desire as the end-product of the coordination of distinct circuits of neurons. Freud’s initial eagerness to “neurologize” psychiatry and to find the neuroanatomical substrates for psychological processes stemmed from his

classical training in neurology, and the neuroanatomy and histology of the central nervous system (2). Curiously, the very next year Freud abandoned his *Project* for his theory of psychoanalysis which models the mind after the hydraulic systems which were en vogue. According to Freud, there were three competing forces which controlled behaviour, the primitive Id, the moralistic Superego and the conscious Ego. Imbalances in this tripartite system caused by sublimated or repressed ideas eventually manifested themselves as psychopathology. So it was the psychiatrist's goal to create a therapeutic environment whereby the patient could achieve insight into the nature of the repressed material (usually sexual in origin). The moment of insight, the psychoanalysts believed, would cause a resolution in the imbalanced psychic forces and provide relief.

Rejecting medication and the brain, psychoanalysis put forth a new model of psychiatric illness stressing psychogenesis as opposed to neurogenesis (2). What the theory was lacking in biological mechanism, it more than made up for with its scope. The theories were all encompassing but often frustratingly parsimonious. On the analyst's couch everything could be explained in retrospective using the concepts of psychoanalysis. However the heuristic value of this simple theory did not translate itself into the realm of scientific inquiry. The circular nature of the causative mechanisms of psychopathology in psychoanalysis meant that the theories were not falsifiable or even testable. By the 1970's psychoanalysis was bypassed by the burgeoning field of psychiatric neuroscience as the dominant model of disordered behaviour.

Psychoanalysis with its origins in neurology and neurophysiology represented in one historian's mind, "an interruption, a hiatus" in the field of psychiatry and the theory of the relationship between the mind and the brain (2). With the ever increasing discoveries in the field of brain research, modern psychiatric inquiry recognizes that the brain is the substrate of the mind, a fact first proposed by Gall over 200 years previously. Curiously, we are rediscovering psychoanalysis' original assertion about the role of neural circuits on behaviour. Modern neuroscience's departure from the ideology proposed by organology arises mainly from the role that the interactions between the different faculties of the brain play in the production of behaviour. Gall assumed that there was no significant interaction between faculties and thus complex abilities were simply aggregates of simple and lower-order abilities (3,4). Current thinking suggests that behaviour is the end result of the coordination of multiple systems interacting with one another (6). It is this axiom which precludes a simple one lesion-one disease model for complex psychiatric disorders. Disorders of the mind appear to be disruptions in the coordination of brain function that occur in the absence of gross neuropathology (8). As a result the static techniques used by neuroscience in yesteryear such as post-mortem studies are being replaced by non-invasive imaging modalities such as functional magnetic resonance imaging (fMRI), positron emission tomography (PET) and magnetic resonance spectroscopy (MRS) (9,10). Psychiatry has shifted its level of analysis from the level of brain structure and morphology to the level of the functioning of neural circuits and individual neurons. These approaches provide information about the dynamic functioning of the living brain in vivo and are leading the neuropsychiatric revolution in the next century and promise to further elucidate the relationship between brain and behaviour.

A case in point are functional neuroimaging studies of depression (8 –12). These studies have provided intriguing information regarding the neural basis of this illness. The major depressive

disorders appear particularly amenable to dissection by functional imaging approaches aimed at elucidating their pathophysiology because they are assumed to represent dysfunction in the coordination of several distinct regulatory mechanisms in the brain. PET and fMRI approaches are able to detect changes in local blood flow, glucose metabolism and oxygen utilization to a resolution of millimeters (8,9). Dynamic brain imaging can therefore be used to provide maps of regional neural function in an alive brain.

Several reproducible findings have emerged in the literature from imaging studies in depression. Perhaps the most widely reported abnormality in this illness is in the hypofunction of the prefrontal cortex (PFC) (8,9,11,12). The PFC is thought to play a role in the mediating higher-order functions such as planning, cognition and volition. A decrease in blood flow and metabolism in the PFC is seen in people with depression relative to controls (8,9,11). This abnormality appears to represent a feature state characteristic with the changes in the brain during a depression. With antidepressant treatment, this hypofrontality reverses (8,9,12) as well as the deficits in attention and cognition seen in depression and assumed to be mediated by this region.

In addition to the changes in cortical function seen in unipolar depression, subcortical alterations are also prominent in this illness. A critical role for limbic structures in affective regulation have been postulated since the early part of the 20<sup>th</sup> century (13). These regions are uniquely centrally placed within the brain to receive and integrate inputs from all regions subserving diverse motor, sensory, cognitive, autonomic and homeostatic functions. Evidence from both human and animal studies suggests that that these areas become hyperactive (8-12). The activity of the amygdala, a structure in the brain which plays an important role in the perception of emotional cues in the environment and regulation of affective states, is increased in depression. This thought to drive the hypothalamus and other centres which mediate vegetative function in the body. As a result, in the midst of a depressive episode the basic human functions of sleeping, appetite and sexual interest are frequently greatly diminished.

Recently the role of the cingulate cortex in coordinating the activity of both the cortical and subcortical areas functionally compromised in depression has been emphasized (8,13). With reciprocal connection with both areas, the cingulate represents a way station in affective regulation. PET studies indicate that activity in the cingulate is an important predictor of response to antidepressant medication (8,12). People with a hypofunctioning cingulate during their depression are much more likely not to respond to treatment (8). With successful treatment the activity of cingulate cortex increases, followed by increases in the PFC activity and a decrease in limbic functioning (8,12). Therefore, it appears that the cingulate may play a key role in regulating both the critical dorsal (cortical) and ventral (limbic) circuits involved in mood.

With the theory of organology, a radical departure from prevailing thought, Gall established an intellectual movement that was intent on transforming psychology from its speculative form into a more scientific discipline which approached its questions in a manner similar to biology and chemistry. The theory of cerebral localization proved to be a major paradigm shift from the prevailing mind/brain dualism of the time (1,2,4,6). As the first systematic approach to exploring the relationship between brain and behaviour, the legacy of this approach is still felt today. At perhaps no other time in history are we closer to making Gall's dream of a biological

model of the mind a reality. The 1990's, called the "Decade of the Brain" saw a virtual explosion of information in neuroscience at both the molecular and system levels. Despite this vast increase in our knowledge a mechanistic model of the brain and the mind is still eluding science (15). Despite our ever expanding understanding of lower order brain phenomena such as intercellular communication between cells via neurotransmitters and intracellular signal transduction, the way neurons work together to produce behaviour it is still not completely understood. The forthcoming "Decade of the Mind" promises to continue to unlock the secrets of cognition, perception and affective regulation. For the first time in history technology permits us to examine in real time the functioning of the living brain. The evolution in the analysis of brain and behaviour has surely evolved from organology, the earliest cerebral localization theory. However great changes have been made in the ideology of this theory. The static nature of the brain has been replaced by a dynamic model. Where there was unitary cerebral organs, there now is a complex coordination of multiple brain systems. A decomposing of function has become an integration.

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# **THE COLD WAR IS OVER: A TIME TO PUT SOVIET PSYCHIATRY INTO CONTEXT**

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## **ABSTRACT**

**Ideology-laden disciplines are particularly vulnerable to political interference and few scientific or medical disciplines have suffered as greatly as Soviet psychiatry. The influence of ideology, culture, anti-semitism, and a totalitarian regime have had a marked impact on the development and oppression of Soviet psychiatry.**

**Soviet psychoanalysis both influenced and was influenced by Sigmund Freud. While Sergei Korsakov, the “Russian Pinel,” achieved international renown for his work with alcoholic psychosis, Alexander Luria was one of the founding fathers of neuropsychology who contributed to our understanding of linguistics, memory, and language disturbances.**

**Unfortunately, Soviet psychiatry would suffer greatly under the Stalinist regime. From 1930 to 1950, the best psychiatrists in the country were oppressed and many were killed. In 1951, a special “joint session” meeting was conducted in the name of Ivan Pavlov, the most famous Soviet scientist. This meeting made Pavlov’s neurophysiological theories the only acceptable basis for psychiatry in the Soviet Union. From then on, Pavlov’s name and much of Soviet science would be tainted by the ideology of ‘physiological psychology.’ More recently, in the 1970s and 1980s, Soviet psychiatry was misused for the purpose of repressing political dissidents.**

**At the end of the 19<sup>th</sup> century, Soviet psychiatry expanded greatly and was heavily influenced by its western counterparts. From 1930 until recently, it passed through a long period of oppressive political ideology; now, it is reopening its eyes to the rest of the world. An appreciation of the origins of Russian psychiatry, the Soviet conceptualization of mental illness, and the influence of political ideology sheds light on the development, and lack thereof, of psychiatry in the former Soviet Union.**

## **Introduction**

Across the globe, the recognition of Russian writers, musicians and artists is far greater than that of Russian scientists. The great writers Dostoyevsky, Tolstoy, and Chekhov are familiar to most, as are the composers Tchaikovsky, Rachmaninoff, Stravinsky, and the artists Chagall and Kandinsky. But Russian science and medical accomplishments were not given much regard until the Sputnik headlines in 1957 first alerted the world to the scientific potential of the Soviets.<sup>1</sup>

Prior to the revelation of the Soviet scientific juggernaut, there was a history of political forces that significantly oppressed and suppressed scientific thought and endeavor. In particular, during the reign of Joseph Stalin (1928-1953), the Soviet dictator and Vladimir Lenin's successor, there was a profoundly harmful impact on Soviet science and medicine. Stalin's period of influence was particularly difficult on Mendelian genetics, Einstein's theory of relativity, quantum physics, mathematical logic, and psychoanalytic studies.<sup>1</sup> While the Soviets were active in advancing many areas of science and medicine, the history of Soviet psychiatry is conspicuous for the publicity given to the abusive treatment of political dissidents in psychiatric hospitals during the 1970's and 1980's. While this period was one of the darkest that any medical field has experienced, it was in fact foreshadowed by events years prior.

Despite political and economic hardship, Soviet medicine had groomed several gifted psychiatrists, psychologists, and psychoanalysts. The most famous Soviet psychiatrist was Sergei Korsakov (1854-1900), a brilliant clinician, educator, and health care reformer. He may have been the first to recognize that amnesia was not necessarily associated with dementia, and thus is now best remembered for his work with alcoholic psychosis (Korsakov's psychosis). Others who impacted the scientific community include Sabina Spielrein who posited the notion of the death instinct, later adopted by the brilliant psychiatrist and father of psychoanalysis, Sigmund Freud. As well, Alexander Luria was a powerful force and one of the founding fathers of the field of neuropsychology; his work has contributed greatly to our understanding of linguistics, memory, and language disturbances. Many others influenced the development of Soviet psychiatry, but they were less influential internationally.

Initially, Russian psychiatry between the 18<sup>th</sup> century and beginning part of the 20<sup>th</sup> century, was quite progressive and productive. Beginning with Stalin's rise to power up until a few years past his death, Soviet psychiatry suffered immeasurably. This dark period would prefigure the oppression of political dissidents many years later, which garnered widespread condemnation by the international psychiatric body. At present there is an ongoing revival of psychiatry and a long process of re-inclusion into the psychiatry world body. Through such contrasts, the history and development of Soviet psychiatry has been marked by the interplay of brilliance, ideology, anti-semitism and terror.

## **Origins of Russian Psychiatry**

In medieval feudal Russia, before the great social reforms initiated by Peter the Great, psychiatry fared as badly as in Western Europe, and probably worse.<sup>3</sup> Peter the Great (1682-1725) was the first to propose that mentally ill patients be placed in secular hospitals.<sup>4</sup> The first asylum for the mentally ill was opened in Novgorod in 1762, followed by Moscow in 1776 and St. Petersburg in 1779.<sup>4</sup> Russian psychiatry in the 17<sup>th</sup> to early 19<sup>th</sup> centuries experienced a strong German

influence, because German professors, supported by the Russian Tsars, taught in the Russian universities.<sup>7</sup>

However, there were many Russian psychiatrists who were also important in developing early Russian psychiatry. In 1841, Verchatsky proposed a psychiatric classification system (including: mania, mania with excitement, periodic mania with agitation, hypochondria, melancholy, epilepsy with mania, epilepsy with dementia, dementia and amentia) and later in 1843, Diadokovsky classified mental disorders as five levels of nervous and mental illness (disorders of sensory functions and perception, cognition, volition, and motor and energetic functioning).<sup>7</sup> With such progress and acceptance of the specialty of psychiatry, it was only a matter of time before psychiatry was included as part of medical training. The Russian psychiatric profession was created by the state immediately after the Crimean War (1853-1856) with the founding of the prestigious Military-Medical Academy in St. Petersburg, which became the locus of training for most of Russia's earliest psychiatrists.<sup>5,6</sup>

### **Progress**

Russian psychiatry evolved in the 19<sup>th</sup> century similar to that in the West, and the Russians were strongly influenced by the work of their Western colleagues.<sup>8</sup> By 1828, Russian psychiatry would witness chains being abolished, occupational and recreational activity introduced, and case histories utilized.<sup>3</sup> Unlike the West, by the end of the 19<sup>th</sup> century, there were no psychiatric institutions in Russia which still employed crude restraints.<sup>9</sup> This achievement of Russian psychiatrists can be attributed both to the extraordinary efforts of Sergei Korsakov, and to the traditionally humane attitude of the populace toward the mentally ill.<sup>9</sup> In 1885, the first Russian neuropsychiatric journal was founded by Kovalevskii and the first Russian medical congress devoted to psychiatry took place in 1887 in Moscow.<sup>3</sup> Because of the training programs organized by Sabler, Balinsky, Korsakov and others at the end of the nineteenth century, the psychiatric profession expanded greatly.<sup>4</sup> Psychiatric theory before 1917 was dominated by Korsakov and Bekhterev, and it was oriented around the notion that most mental disorders were based on functional changes in cerebral activity or various brain injuries.<sup>3</sup>

The most prominent and influential pre-Revolutionary Russian psychiatrist was Sergei Korsakov. He was not only a charismatic teacher and creative researcher, but also an innovator in his treatment of mental patients.<sup>4,5</sup> With his training influenced by Maudsley, Charcot, and Kraepelin, he combined clinical activity with a wide interest in the organization of public mental health facilities, and he was the first to clearly define a medical entity, polyneuritic psychosis, in psychiatry.<sup>3</sup> The first paper on the subject of "no restraint" in Russia was delivered at the First Conference of Russian Psychiatrists in 1887 by Korsakov and it was his efforts which allowed the no restraint movement to come to fruition.<sup>3,5</sup> Korsakov has often been referred to as the "Russian Pinel," in honor of an influential French psychiatrist who was one of the first to discuss and implement the moral treatment of psychiatric patients (support, care and a degree of freedom).<sup>5</sup> He is credited with revolutionizing the practice of psychiatry in Russia as well as psychiatric science. His clinical insight was extraordinary as he proposed a system of classification of mental disease over half a century ago which closely approximates current concepts.<sup>3</sup> He went on to achieve international renown, especially for his pioneering research in the diagnosis of alcoholic psychosis (Korsakov's psychosis).<sup>4</sup> Although he died prematurely in

1900 at age 46, he had attracted a wide circle of pupils and followers, and left an indelible impression on Russian psychiatry.<sup>3</sup> Of the numerous psychiatric journals published before the Revolution, only one survived and became the official journal of Russian-Soviet psychiatry. This journal was established in Moscow in 1901 shortly after Korsakov's death and named in his memory, the *Korsakov Journal of Neurology and Psychiatry*.<sup>4,5,7</sup>

Another psychiatrist to have a significant impact on Russian psychiatry was Ivan Balinsky, essentially the founder of Russian scientific psychiatry. Academic university psychiatry began in the Military Medical Academy of St. Petersburg under his professorship.<sup>3,5</sup> He ensured that psychiatry was made part of the medical curriculum, supported the use of psychiatric expert testimony in the courts, and organized the first Russian psychiatric society in St. Petersburg in 1862.<sup>3</sup> Unfortunately, he left few important literary or scientific testimonies. Thus his status, as one of the first in Russia to advocate humane attitudes toward the insane (also occasionally described as the "Russian Pinel"), was historically overshadowed by Korsakov's rising international fame as the Moscow psychiatry school (where Korsakov taught) gained increasing favor over the St. Petersburg school.<sup>5,7</sup>

Other figures who had a significant impact on Soviet psychiatry include A.S. Makarenko (1888-1939) whose combination of collective therapy and work therapy became hallmarks of Soviet psychotherapy.<sup>10</sup> As well, the famous Russian neurologist, physiologist, and rival of Pavlov, V.M. Bekhterev (1857-1927), founded the first laboratory of experimental psychology in Kazan, Russia in 1879 and the Institute of Psychoneurology in St. Petersburg in 1907 (still the leading center for the study and practice of clinical psychology in the country).<sup>2</sup>

Prior to the Bolshevik Revolution of 1917, Freud's psychoanalytic method remained unknown to the majority of Russian psychiatrists, although a few Russian psychiatrists did try to popularize his theories in Russia in the period between 1910 and 1914, including starting the journal *Psikhoterapiya* (Psychotherapy).<sup>3</sup> The origin of psychoanalysis in Russia dates back to 1909 when Nikolai Osipov (1877-1934) returned to Moscow from his medical training and psychoanalytic study under Carl Jung in Switzerland.<sup>11</sup> In the early 1920's Osipov corresponded with Freud who expressed great esteem for both Osipov and Moshe Wulff (the first fully trained Russian psychoanalyst).<sup>11</sup> Freud made many statements in his correspondence about the emergence of psychoanalysis in Russia and his works were translated into Russian in a series called the "Psychoanalytic Library," edited by I.D. Yermakov.<sup>4</sup>

After the Revolution, out of interest and admiration for Freud, many tried unsuccessfully to relate Freudian psychoanalysis to Marxism and to understand communism from the Freudian standpoint.<sup>3</sup> The connection between Freud and Soviet psychoanalysis was more than just mutual admiration. Freud's first Russian patient, known in the literature as the Wolfman, was an Odessa (Ukrainian) aristocrat, and Freud actually borrowed the idea of a death instinct from Sabina Spielrein, a Russian psychoanalyst.<sup>11</sup> Sabina Spielrein was the first woman analyst to have a significant theoretical impact on psychoanalysis.<sup>12</sup> She was Carl Jung's first psychoanalytic case, his muse and mistress. Her connection with Freud and Jung impacted both men and their theories.<sup>12</sup>

Interest in psychoanalysis in the Soviet Union during the 1920s increased until the late 1920s, when Stalin moved to consolidate his political authority. By 1930, Stalin's impact on Soviet society included condemnation of psychoanalytic theory and practice. According to the official view, Freudian theory was rejected because it exaggerated the role of sexuality, underestimated the social problems of the working class and was rooted in an unempirical methodology and a non-materialist theoretical framework.<sup>4</sup> It certainly did not help matters that Freud was Jewish as well. In the 1930s, Freudianism was labeled a bourgeois pseudo-science calculated to deceive the workers.<sup>2,13</sup> Freud's name was only uttered in disdain, and the practice of psychoanalysis prohibited.<sup>13</sup> Journals and associations were closed down. Scholars had to move into new fields, including one early Russian psychoanalyst, A.R. Luria (1902-1977), who went on to become a world-famous neuropsychologist. Luria first came to the attention of the scientific community through his book on conflict, and became a prolific writer, having written books on memory, mnemonists, the frontal cortex, and language disturbances.<sup>14</sup> He was the first to document the importance of verbal experience in shaping brain function and therefore behaviour, and also the first to employ linguistic analyses to the problems of aphasia, and thus the first neurolinguist.<sup>14</sup>

### **Stalinist Oppression**

In the 1930s, after Stalin had risen to power, a period of repression and isolation of Soviet science and medicine ensued.<sup>13</sup> In Soviet Russian history from the late 1920s until the late 1980s, there was the most overt politicization of psychiatry seen in the twentieth century.<sup>5</sup> There were two key destructive periods in the history of Soviet psychiatry: at Stalin's rise to power in the 1930s which culminated in a Pavlovian physiological psychology that would be implemented in the 1950s, and later the use of psychiatry to oppress and suppress political dissent in the 1970s and 1980s.

The great scientist Ivan Pavlov (1849-1936) achieved fame when he won the Nobel Prize in 1904 for his work on the digestive system, and garnered even more distinction when he accidentally discovered the conditioned reflex.<sup>15</sup> This would make his work and writings very significant to Soviet science.<sup>2</sup> Pavlov had enormous vitality, uncompromising honesty and great courage, and for decades before his death, he was not only Russia's most distinguished physician, but her most renowned contemporary scientist as well.<sup>3</sup> Although he was not personally involved in the development and progress of Soviet psychiatry, this great scientist's name was shamefully misused by Stalin in his oppression and manipulation of Soviet psychiatry.

Beginning in the 1930s, contact between Soviet and foreign psychiatrists ended with most Western psychological theories, especially Freudianism, labeled "antiscientific" by Stalin.<sup>13</sup> The theoretical development of psychotherapy was inhibited even more than that of other fields of psychiatry, and only Pavlov's physiologic theory remained as the sole "truly materialistic" theoretical basis for Soviet psychotherapy.<sup>13</sup>

The most somber event in the history of Russian-Soviet psychiatry took place in October 1951. The "Joint Session" of the Academy of Medical Sciences of the U.S.S.R and the Board of the All-Union Neurologic and Psychiatric Association, conducted in the name of Pavlov, considered the matter of several leading psychiatrists and neuroscientists of the time accused of practicing anti-Pavlovian science.<sup>7</sup> Pavlov's doctrine was declared to be the brilliant discovery of Russian

science, and the leading doctrine in psychiatry and medicine.<sup>13</sup> The Pavlov name was used since it carried with it credibility and respect. Reprisals against the “enemies” of this doctrine and “cosmopolitans” (mainly Jews) included organized purges and persecution of scientists and doctors, dismissals and arrests.<sup>13</sup> Pavlov was endorsed by the highest political powers and raised to the level of the founding father of Soviet psychiatry, on par with the influence of Kraepelin and Freud in Europe.<sup>4</sup> Future psychiatric research was to be oriented within the physiological and behavioural parameters established by Pavlov.<sup>4</sup>

The joint session prevented productive research in psychiatry and neurosciences for years to come.<sup>7</sup> Pseudo-science took over. Psychiatric and psychotherapeutic terminology was altered and made to conform to Pavlovian terminology so that psychiatrists were obligated to use physiological terms and concepts in their diagnostic statements, instead of any behavioural or conceptual schema; thus, terms such as schizophrenia or depression were avoided.<sup>2</sup> Indeed, a group of ignorant Party careerists endlessly quoting Stalin, Lysenko, and Pavlov emerged as the “heads” of Soviet psychiatry.<sup>13</sup> The liquidation of the scientific school of brain pathology and neuropsychiatry established by the distinguished psychiatrist A.S. Shmaryan led to the practical cessation of research in neuropsychiatry for years to come.<sup>7</sup> Since translation of foreign literature ceased, the younger generation of psychiatrists was completely unfamiliar with psychodynamics.<sup>13</sup> Not only did many great psychiatrists lose their positions and ability to voice their opinions from the 1930s to 1950s, but many were killed as well.<sup>7</sup> The joint session foreshadowed later psychiatric abuses against political dissidents in the former Union of Soviet Socialist Republics (U.S.S.R.). Russian society has yet to fully recover from the consequences of this period in Soviet history.

Ironically, Pavlovian science and medicine were antithesis to Pavlov’s own views. Pavlov was critical of communism and in 1923 addressed a class of medical students at the Military-Medical Academy in Leningrad, stating that “science and free criticism, these are synonymous” and that “Marxism and communism are not absolute truths, [but] only a theory in which there may be a part of a truth, but in which there is perhaps no truth.”<sup>16</sup> Pavlov was one of the earliest critics of Marxism in pointing out the contradictions inherent in the Marxist-Leninist theory and the clash between the theory and the reality of life in the Soviet Union.<sup>16</sup> Pavlov’s higher education was mainly in physiology, and although his interest in psychiatry went back to 1918, he had no formal training in psychiatry until the establishment of the Moscow Psychiatric Clinic in 1931.<sup>8</sup> From 1931 until his death in 1936, Pavlov studied cases of psychiatric disorders, with teaching from practicing psychiatrists. Pavlov often offered an explanation of the patient’s condition based on his theory of higher nervous activity.<sup>8</sup> There is not a single sentence in Pavlov’s papers on psychopathology and psychiatry that can be construed as an endorsement of tyranny, psychiatric terror, or even hostility to psychiatry as such.<sup>17</sup> Given the ideological environment of the Soviet Union from 1923 to 1936, one can well appreciate Pavlov’s reticence to invoke the name of his Jewish colleague Freud.<sup>17</sup> Fortunately, after Stalin’s death, the Pavlovians’ dominance in psychiatry began to wane along with some liberalization in political and scientific life in general, and presently, little remains from this Pavlovian era of psychiatry.<sup>13</sup>

The second subversion of psychiatry in the former Soviet Union involved the misuse of psychiatric hospitals, techniques and medications to repress political dissidents during the 1970s and 1980s.<sup>18</sup> Adler and Gluzman succinctly state that “one of the most flagrant violators of

commonly accepted medical and legal standards was the Soviet special psychiatric hospital system, which was at worst criminal, and at best had lost contact with scientific reality.”<sup>18</sup> Many mentally healthy people forced into special psychiatric hospitals were later released as true patients, with many psychosocial disturbances.<sup>18</sup>

### **Road to Recovery**

At present, Russian psychiatrists admit the reality of past abuses and are trying to analyze their causes and consequences.<sup>7</sup> Currently, an eminent dissident psychiatrist, Semyon Gluzman, travels with a high-ranking KGB official to international meetings, to discuss the past and future of psychiatry and politics in their country, including the history of abuse and what steps they are taking to remedy the damage.<sup>19</sup>

Because of the numerous barriers, including political, linguistic, and scientific, Western psychiatric literature is virtually devoid of references to Russian work.<sup>7</sup> Unfortunately, the political misuse of psychiatry in the former U.S.S.R had led to a virtual cessation of interaction between Russian and international psychiatry, depriving both sides of mutual enrichment.<sup>7</sup> While some researchers and psychiatrists believe that Soviet psychiatric treatment methods are still lagging behind Western approaches, others believe that the Soviet system of patient care may be a helpful model. Further, the Soviet “spectrum model” of classifying schizophrenia may add to our understanding of the condition.<sup>4</sup>

Russian psychiatrists tend toward genetic, biochemical, neurological and physiological explanations in their research on schizophrenia and affective disorders.<sup>4</sup> The environmental factors are considered to be less significant, although they are considered quite significant in non-serious mental illness. According to Miller, the Russians tend to be more physiologically and biologically oriented than their American counterparts, but use psychopharmacology with the same frequency.<sup>4</sup> Although working in complete isolation from one another, both Russian and American psychiatrists appear to treat many of the same disorders in a comparable manner. One significant difference is that Russian psychiatry has always operated in the context of a collectivist society while North American practices are based on a more individualist society.<sup>4,7</sup> That is, the Soviets were ingrained with the communist ideology of shared pain and success at the expense of personal gain. Conversely, North Americans have more commonly strived for mutual gains without compromising personal benefit.

In North America, many psychiatrists work in private practice and psychiatry is not held in the highest esteem. This differs from the former Soviet Union where most psychiatrists work in hospital settings and psychiatry as a specialty earns higher regard in terms of prestige and salary.<sup>4</sup> As in all Russian medicine, there has always been a preventive trend in psychiatry, which is one trend that North American medicine has only started to adopt in the last few years.

Since the demise of the Soviet Union, Russian psychiatry has shown a renewed interest in Freudian principles and psychodynamically oriented psychiatry.<sup>7</sup> In 1985, the first Soviet Psychotherapy Manual was published, and since the fall of the “Iron Curtain,” Russian psychotherapy has experienced a boom of Western knowledge.<sup>2</sup> The first Russian law on psychiatric care and patients’ rights protection became operational in 1993 and the Russian

Society of Psychiatrists approved the Ethical Code for Psychiatry in 1994.<sup>7</sup> Humanization of psychiatry has been proclaimed a priority for Russian psychiatrists and in 1997, Russian President Boris Yeltsin signed a declaration encouraging the development of psychoanalysis in Russia.<sup>7</sup>

As a result of some positive changes, the Soviet Association of Psychiatrists was conditionally readmitted to the World Psychiatric Association in October 1989.<sup>7</sup> Unfortunately, there have been many difficulties in developing new psychiatric services based on financial constraints, lack of regulations in psychiatry, lack of information from the West, an archaic system of psychiatric training, and lack of support services.<sup>7</sup> Given that the former Soviet Union kept poor track of population health measures, and with the former political dissidents passing away or immigrating to other countries, the extent of the consequences of the many years of political oppression will be difficult to assess.

While western psychiatry has a wealth of knowledge to share, it might be worthwhile to take a more extensive look at some of the psychiatric practices in the former Soviet Union such that the entire profession may grow and learn from its shared tragedies and achievements. One has to wonder where Russian psychiatry, and our understanding of psychiatric disorders in general, would be now had Soviet psychiatry not been oppressed or corrupted? Could a similar misuse and abuse of medicine happen again? Regrettably, the answer is obvious. Accordingly, we must take steps to be more aware of, and participate more actively in, international medical and political issues.

The early stages of Russian psychiatry, similar to the West's, were progressive and impressive. Several physicians strongly influenced the development of Russian psychiatry and had an impact on the profession worldwide. Sadly, as a result of an oppressive, ideologically based totalitarian regime, the productive early gains of Russian psychiatry were lost for several decades. More recently, the psychiatric profession in the former Soviet Union suffered its second major setback, for its role in repressing and abusing political dissidents. In recent years, however, the profession is trying to recover from this dark period. Russian psychiatrists now have to overcome many difficulties in joining the international psychiatric community. Through a new open dialogue and inclusion into the world psychiatric body, the future of psychiatry in the former Soviet Union seems guarded, but hopeful.

The author wishes to thank Dr. Paul Potter, Dr. Leonardo Cortese, Dr. Toni Swart, and Kimberly Liu for reviewing this manuscript.

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## EMDR: THE MAKING OF A PSYCHOTHERAPY

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### ABSTRACT

**Eye Movement Desensitization and Reprocessing (EMDR) therapy burst upon the psychotherapeutic scene in 1989 as a time limited, cost-contained, and efficacious treatment for posttraumatic stress disorder. Although this therapy has been claimed as "revolutionary" by its inventor, Francine Shapiro, it has distinct historical precedents. By using long-standing models of pathogenic memory, dissociation theory, and mechanical inference, EMDR is at once familiar and salient. EMDR, like many other therapies, has been tainted by accusations of hypnosis and suggestion, and subsequently pseudo-science and quackery. Through a personal interview with Francine Shapiro, and analysis of the conceptual and practical histories of traumatic memory, dissociation and suggestion, I argue that this therapy is not revolutionary. It is a powerful technology of the self, normalizing and valourizing certain way of thinking and behaving. The concepts of suffering (expression, interpretation, and value) will be problematized, and a brief comment on the moral, political, and psychotherapeutic implications of EMDR therapy will be provided.**

In the late 1980's a new psychotherapy, called Eye Movement Desensitization and Reprocessing (EMDR) therapy was presented as a treatment of post-traumatic stress disorder (PTSD). This psychotherapy has situated itself within, as well as generated, much debate on the genesis and nature of traumatic memories, treatment strategies, and the production, reproduction, validation, and reliability of scientific knowledge in the mental health disciplines.

The relief and easing of suffering, whether physical or existential, is often the implicit motive driving the production and engagement of myriad psychotherapeutic interventions. Suffering, though, has no intrinsic, timeless meaning. It is provided meaning by systems and institutions, most prominently biomedicine. The common explanation provides us with an etiological event, leading to alterations in brain chemistry, which the scientific community is slowly unraveling in its attempts to end this scourge of pain. It is a moral argument in which suffering is the evil against which we can rally our resources together in opposition. Less often, however, are the historical, political, legal, economic, and philosophical dimensions brought into this discourse.

In this paper, I plan to situate EMDR therapy in the debates through which a particular type of experience of suffering is circumscribed and given meaning. As Ian Hacking (1986) observes when considering the manifold ways in which science and technology "make up" people, the very diversity of human life means that a general theory bent on explanations and predictions

will make little headway. Consequently, historians, philosophers, sociologists and anthropologists alike must attend carefully to the origin of our ideas and their evolution.

In 1979, Francine Shapiro was undertaking a PhD programme in English literature at New York University when she was diagnosed with cancer. Unsatisfied with biomedical approaches to treatment, she left New York "in search of workshops and seminars on mind, body, and psychological methods to enhance physical and mental well being" (1995:vi). Shapiro's new-age investigative odyssey eventually led her to enrol in a doctoral programme in clinical psychology at the Professional School for Psychological Studies in San Diego. It was in 1987, at age 39, while strolling through a park, that she noticed that her disturbing thoughts began to dissipate, as she instinctively moved her eyes from side to side. For her dissertation, she put together a study of people diagnosed with PTSD (both sexual abuse and combat-related), to be treated with what was then called Eye Movement Desensitization therapy (1989a; 1989b).

A comprehensive account of its practice and theory can be found in the book *Eye Movement Desensitization and Reprocessing: Basic Principles, Protocols, and Procedures* (1995; hereafter referred to as *Principles*), written by its inventor Francine Shapiro. She proposes a conceptual framework in which psychological trauma is located in the brain, through a mechanism of dysfunctional memory storage (See appendix for a brief description).

EMDR began as a therapy specifically intended for the treatment of people with PTSD, Shapiro maintains (ibid. 18). Separate protocols are outlined by Shapiro which distinguish between recent, single-event, and multiple-event trauma, general anxiety, phobias, excessive grief, anxiety caused by illness and somatic disorders, and children as young as two years old (1995: Ch. 9, 307). As well, EMDR has been used to treat panic disorders, body dysmorphic disorders, sexual dysfunction, crime victims, accident and burn victims, drug addictions, and persons with dissociative disorders (1995: 10-11, Chap. 9; see Cusack and Spates 1999: 88). More recently, EMDR has been used as a general performance enhancement tool. Shapiro writes, "The use of EMDR to give the client healthy 'templates' for appropriate future action has proved [sic] so successful that many EMDR clinicians are now working as 'coaches' with athletes, musicians, and executive officers of major corporations to achieve peak performance" (1997: 241). The therapeutic value of transforming "dysfunctional" into "functional" seems to have been extended to transforming "functional" to "exceptional."

All of Shapiro's claims for EMDR therapy are derived from two basic, implicit assumptions. The first is that existential suffering (and its cognates, anxiety, stress and distress, psychological pain and trauma) are scourges that should be alleviated toward a better quality of life. Her second postulate<sup>5</sup> is that there is an innate, largely unconscious mechanism by which certain events cause biological responses, triggering trauma and suffering.

There are four corollaries which necessarily follow from these two postulates: 1) The body (including the brain and its properties) is universal; 2) Knowledge of the body (ailments, symptoms) is uncovered, making them ahistorical; 3) Our memories are linear and associative, thus allowing any distortions to be observable and measurable; 4) Observations and measurement of bodies can be objectively made; representation is not affected by intervention.

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<sup>5</sup> I use this term to mark an assumption or position assumed without proof, and therefore self-evident.

The symptoms, through which this suffering is recognized and characterized are understood by, and suitable for, scientific inquiry; the science of suffering is the domain of the psy disciplines (psychiatry, psychology, and psychoneurology). That is, the symptoms are meaningful, and thus amenable, to interpretation and intervention.

These assumptions are not without historical precedent. Indeed, what we now call hardship and suffering have characterized the human condition probably since its inception, and this sentiment provides the backdrop against which this paper is made possible and relevant. The intellectual history of a certain type of suffering—psychic trauma—begins in the mid-nineteenth-century with notions of physical versus psychological trauma and distress. I intend to place EMDR therapy within such a historical dialogue, whereby the notion of psychological trauma has co-evolved with the discourse produced by those who have claimed authority in its characterization and treatment.

Until the second half of the nineteenth century, persons who claimed to be sick, but could not convince a physician that their suffering was due to a known malady, were generally regarded as faking their illness, and were labeled malingerers. And those who claimed to heal the sick without recognition from the medical establishment were labeled quacks or charlatans. This perspective, both medical and lay, on suffering and healing, was remarkably transformed as result of the influence of Charcot, Janet, and Freud.<sup>6</sup> Their object of study was hysteria, around which concepts of patient and physician, disease and illness, psychiatry and quackery, and diagnosis and treatment revolved. "One could say" wrote Ellenberger, "that modern dynamic psychiatry emerged entirely from the study of hysteria" (1961 republished in Micalé 1993: 242).

The word "hysteria" is derived from the Greek word for uterus, which is taken from the older Sanskrit word for stomach or belly. It was first noted in the written record in 1900 B.C.E., referring to a series of curious behavioural disturbances in adult women. Various descriptions and interpretations of hysterical symptoms cycle among gynaecological, demonological and neurological models, identified by irregularities in gestation or birth, anaesthesias, mutisms, or convulsions in demon possessions, and treated, in turn, by regimens of marital fornicatio, legal punishments involving confession, torture and execution, and medical ministrations of purges, powders and rest-cures (Micalé 1995: 19-24; Freud [1923]1959: 436-472). By the early eighteenth century, the ties between female anatomy and hysteria were reintroduced within a physical model, and etiological models involving animal magnetism, suggestion, and the intimate rapport between patient and physician gained popularity.

Hysteria was considered a great synthesis of various conditions, that included lethargy, catalepsy, ecstasies, hallucinations, somnambulism and personality changes. All of these conditions frequently occurred in the same person, and could be provoked and treated by hypnosis (Ellenberger 1970: 141-145). Having become associated with suggestion and hypnosis, a diagnosis of hysteria was a stigmatizing label. It connoted poor breeding and congenital

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<sup>6</sup> This historical relationship and influence of these three figures is well documented by some great works of scholarship. These works focus on the history of the dynamic unconscious: Ellenberger's *The History of the Unconscious* (1970); psycho-legal issues: Laurence and Perry's *Hypnosis, Will, and Memory* (1988); Crabtree's *From Mesmer to Freud* (1993) and *Animal Magnetism, Early Hypnotism, and Psychological Research, 1766-1925: an annotated bibliography* (1998); and Gauld's *A History of Hypnotism* (1992).

weaknesses, usually met with punishment rather than treatment. Describing the period between 1860 and 1880, Ellenberger writes, "magnetism and hypnosis had fallen into such disrepute that a physician working with these methods would irretrievably have compromised his scientific career and lost his medical practice" (ibid. 85). It was Jean Martin Charcot, the director of the famous Salpêtrière neurology clinic, who made the first synthesis between these two traditions, bringing hysteria and hypnosis back within the realm of an official, scientific psychiatry (Chertok 1984: 111; Gauld 1992: 306, 311; Makari 1994; Binet and Féré [1890] cited in Crabtree 1993: 167). In doing so, Charcot took a large part in the birth of mental illness as the object of modern "psychiatric science." Hysteria became an illness which was not discovered by some physical alteration, but was invented by expanding the criterion of disease. Hysteria was *declared* to be a disease: a functional or conversion disorder understood in relation to organic pathologies, but with no identifiable physical cause (cf. Szasz 1960).

Charcot's hysteria was hereditary, and thus betrayed a physiological degeneration patterning itself with gender, social and personal characteristics, leaving the patient highly suggestible, and thus susceptible to hypnotic induction (a pathological process). There was, thus, no need for an emphasis on treatment in this model, only anatomical and behavioural description. It was a disease of the nervous system akin to epilepsy and syphilis.

Ultimately, Charcot lost this battle, and hysteria dropped out of favour as a diagnosis, and eventually as a medical entity altogether. In her 1965 study, Veith marvels at the "nearly total disappearance of the disorder" (pp. 273-274). And in 1990, Slavney writes: "This could well be the last book with *hysteria* in its title...*Hysteria, hysteric, and hysterical* are on the verge of becoming anachronisms" (p. 190). This was not to be the case. In 1997, Showalter proposed that "hysteria not only survives in the nineties, it is more contagious than in the past" (p. 5). We are, she contends, right in the middle of an "epidemic" or "plague" of hysterical disorders and imaginary illnesses. What is most distinct, and should be thought of in light of the following text, is the *definition* that Showalter gives to hysteria. It is a "universal human response to everyday human conflict," and is said to be part of everyday life, as we convert feelings of shame, guilt, and helplessness into symptoms when we are unable to speak. Hysteria is now identified with any negative self-feeling, and underlies the most general anxiety and strain.

Shapiro's EMDR therapy has aligned itself with this view of suffering, and her therapy can only be understood with this in mind. She writes: "EMDR's success is not limited to people who have experienced a diagnosable trauma....Almost every type of suffering that we define and label a *disorder*—almost every type of psychological complaint—can be traced to earlier life experiences, which can also be healed" (1997: 11).

My interview with Francine Shapiro reflected much of this sentiment. I traveled to California with intentions to discuss how her experience with suffering had influenced the development of a psychotherapy leveled at its cure. Francine is a warm and heartfelt woman, and she spoke passionately concerning the need to address the pervasive minor and major traumatic events in everyday life. By her estimation, all school-children should have an EMDR session at the end of every day to "work out" the day's events. EMDR was, I was surprised to learn, more focused on the path toward enlightenment and "consciousness-raising" than it was simply moving away from abnormality and dysfunction. Throughout the interview, my two basic postulates—that

suffering is a scourge, and that there is an innate healing mechanism within the body—were confirmed. Progress is, in part, described as a move towards an understanding of one's life, and the therapist has privileged knowledge enabling him or her to aid the patient in this journey.

Shapiro's ideological claim that science embodies progress is one dimension of how science reflects and constitutes a moral ordering. A subsequent claim holds that certain feelings and bodily states are to be identified and remedied by an 'authorized' practitioner. These claims are usually tacitly shared among Westerners (North Americans, at least). Our bodies and minds are normalized and idealized toward a model that is set by the medical establishment, as well as the mass media. It is the scientific rhetoric which carries the day, however: "Although moral economies draw routinely and liberally upon the values and affects of the ambient culture, the reworking that results becomes the particular property of scientists" (Daston 1995: 7). And it is the prestige of science that leads us to understand ourselves in specific ways, casting all our complexities into a sanctioned explanatory model.

Distress is expressed in culturally sanctioned ways. If television (often a professional on a talk show) dictates that traumatic memories are acceptable as a medical diagnosis, a person might begin to interpret and reinterpret experience within this framework. We learn *how* to be sick, tired, and anxious. "The limits of my language mean the limits of my world," Wittgenstein once wrote. As we learn to reflect on our bodies, cognitions, and even causes in a language of suffering in the idiom of trauma, our world expands. Yet it is also constricted so that although we have more *options* (epistemological spaces), language of trauma becomes privileged, allowing selective access to medical care, compensation, legal defense, and empathy.

By the patient's tacit belief in the therapist's expertise, he conspires to occupy the very space (diagnostic pocket) that his conviction empowers the therapist to create. The patient accepts the diagnosis as real, because it explains his suffering. He has undergone a battery of psychometric (and sometimes physiological) tests, and has symptoms which are both consistent with what the therapist expects, and the reason that he is interesting to the therapist at all. The patient is also told that the condition is reversible, giving the patient hope, in relieving anxiety, stress, and pain toward a new future. The patient is further told that *he* is responsible for the cure, thus bolstering a feeling of self-efficacy.

Within EMDR's explanatory framework, causes are biological. In this genetic fallacy, the cause and origin of a phenomenon (bodily state, cognition) and its eventual utility lie worlds apart. Yet whatever exists is repeatedly reinterpreted to new ends, redirected by some power superior to it. The trauma stories become the symbolic currency in which exchanges between patients and therapists takes place. The essential movement which makes EMDR a necessity is the obsession with psychological trauma: a mix of fascination, revulsion, anger, and fear. All human experience is reduced to an endless stream of connection making and connection breaking in the brain. The existential aspect is less important.

By eliminating these questions toward a genetic resolve, culture becomes irrelevant. Our differences are merely held as an example of the wonderful plasticity that our anatomy allows. "As cases pour in from all over the globe, it has become clear that there are many more common denominators among people and societies than there are differences...cross-culturally we share

physiological responses that can offer a window into the human mind and potential” (Shapiro 1997: 223). Cultural imperialism is now conducted by psychiatrists instead of missionaries. To date, the EMDR Humanitarian Assistance Program have provided services and training for therapists in Zagreb and Sarajevo, Northern Ireland, Kenya, The Ukraine, Colombia, El Salvador, Serbia, and Hungary (EMDR website; June 1999).

Although some forms of anxiety have been suggested to have some cross-cultural validity (see Kleinman 1988: 40), the field of transcultural psychiatry has raised many questions concerning the cultural variations in the experience of emotional distress (Kleinman 1995; Littlewood 1990; Summerfield 1999 for examples). It is a conceit of those who share this genetic fallacy that the world exists to provide metaphors for the irreducibility of brain physiology: the plateau of information, the channel of a memory, the neuro network.

We should be clear when examining the impact of EMDR on any mental state that we are not witnessing the effect of one tool on a social process, but rather one social process on another. EMDR is a moral tool of the first order, as it creates and regulates an ideal self. It is, like the psychological discipline, an intellectual technology, a way of making visible and intelligible certain features of persons, their conducts, and their relations with one another. Claims to understand the inner determinants of such actions and cognitions allow a delocalized expertise, enabling those empowered to speak of the morality of another.

In 1989, the director of the American Psychiatric Society recalled:

...that [by the 1970s] psychiatry was perceived by the federal government and by private insurance companies as a ‘bottomless pit’—a voracious consumer of resources and insurance dollars—because its methods of assessment and treatment were too fluid and unstandardized (Wilson 1995: 1993: 403).

A recent article in the New York Times re-addresses this concern for late twentieth-century America, where 10 percent (\$80 billion) of the health budget is earmarked for mental health research and treatment (Sharkey 1999). One of the selling points of EMDR therapy has been its time-limited nature, reducing symptoms without the use of expensive drugs, and complicated physiological testing. A study at the Kaiser Permanente health maintenance organization compared EMDR to its standard method of care for its clients. Shapiro reports that “in the wake of that study, it has been estimated that having EMDR available throughout the region where the study took place would save the institution 2.8 million dollars per year” (Shapiro 1997: 262 fn 5). Another study analysed the expense of EMDR against the standard treatments for PTSD, in an HMO setting (Marcus, Marquis, and Sakai 1997). More recently, Shapiro has written that “It is clear that the substantially reduced time required to produce observable therapeutic results with EMDR brings benefits to the client in terms of both reduced suffering and cost, benefits especially appreciated in this age of managed care” (Shapiro 1999: 61). When a maverick psychotherapy starts addressing issues such as cost containment for the benefit of insurance carriers, we know that it has established itself.

EMDR is also a business. The fee for the first level of training is in excess of \$500, and again for the second level. Conferences were held in 1999 in Utrecht, Nevada, and Copenhagen, and

there are 21 training sessions offered across North America, and 15 courses around the world (Tokyo, Helsinki, Cologne, Buenos Aires, Johannesburg, Sydney, Adelaide, Denmark, London, Milan, Paris, Rio de Janeiro, Brasilia) for the level II course alone (EMDR web-site; June 1999). To counter claims that EMDR is business-oriented, Shapiro has written:

“While the writers’ emphasis may be on finances, mine is on training people to assist in alleviating a massive amount of suffering” (1992: 112).

In 1987, *The Journal of Anxiety Disorders* was founded, and only one year later *Anxiety Research* published its first edition. The 1980s were labeled “the decade of anxiety” by the former, citing the proliferation of books, articles, grant applications, and other funding opportunities in the field.

EMDR supports the ‘life as catastrophe’ model of mental illness, eroding away the concept of trauma until the event sounds suspiciously like everyday experience. That is, it has high sensitivity to human suffering, and zero specificity—everyone is suffering in some way or another. In the absence of a systemic integration of notions of psychological suffering, Prozac, and what has been called its “behavioural equivalent,” EMDR, are prescribed. EMDR is more than any of its specific uses, however, as it has the distinct quality of continuing to produce events.

Can the treatment of traumatic memories in crime prevention programs demonstrate a significant impact on the incidence of violence and criminality? One of the goals of EMDR researchers is to inaugurate large-scale studies to *investigate the possibility* of using EMDR in the prison systems and crime prevention programs in inner cities. This is a special project under the auspices of the EMDR Humanitarian Assistance Programs, a non-profit organization dedicated to providing EMDR relief services globally (Shapiro 1997: 276; my emphasis).

If you are unwell, it will make you well, and if you are well, it will make you better, all the while defining what these states are. It creates new ways to be a person, new choices to make.

In 1995, the American Psychiatric Association (Division 12: Clinical Psychology) initiated a project to determine the degree to which the extant therapies were supported by empirical evidence. EMDR therapy was placed on a list of “empirically validated treatments,” as “probably efficacious for civilian PTSD” (cited in Shapiro 1999: 36). The future of EMDR therapy lies in the ability of its proponents to make it so common that institutions and therapists run the risk of *not* using it.

If we are to engage in such a discourse without needless acrimony and confusion, we must at least have an appreciation for historical development of the ideas we propose, and the courage of our parochialism. We must recognize that only those with whom we share implicit and explicit knowledge derived from common preoccupations and epistemic temperaments will see the point of our communications, and we must relinquish any claim on those who do not.

## Appendix

In *Principles*, the EMDR protocol is divided into eight phases, the first three revolving around history-taking and rapport-building, designed to evaluate the client's dysfunctional behaviours, stimulating triggers, and to determine which of "the traumatic memories are directly responsible for the present dysfunction and therefore should be processed with EMDR, and which are incidental to the crisis, and can be set aside... [to be] remediated by education, problem solving, or stress management techniques" (Shapiro 1995:93,102,116).

Phase Three, the assessment phase, produces positive and negative statements (cognitions) that will be used in the EMDR sessions, and provide baseline values for subjective reporting of emotional states. While the image of a specific past event is held 'in mind' with a negative statement such as "I'm powerless" or "I cannot succeed," the client is asked to name an emotion, and choose a number from 0-10 indicating their Subjective Units of Distress (SUD) level, and to then locate this distress in some "bodily sensation." Following, a positive cognition such as "I can control my actions" or "I can succeed" is rated by the client as to its perceived truthfulness on a 1-7 Validity of Cognition (VoC) scale. It is assumed that this "convergence of the image and negative cognition will generally stimulate the dysfunctional material to a greater intensity than either of the two alone" (ibid. 135).

Phases Four to Six are named Desensitization, Installation, and Body Scan, and are described as operating under the principle of Accelerated Information Processing. Shapiro's sample phrase for this phase is "Bring up the picture and the words [clinician repeats the negative cognition] and notice where you feel it in your body. Now, follow my fingers with your eyes" (ibid. 142). Sets of saccadic eye movement, approximately 24 forward and backward motions of the therapist's fingers, tracked by the client across his or her field of vision, is the most unique aspect of this EMDR therapy. "Its purpose is to merely serve as an initial focal point for entering the memory network" (ibid. 142). Organized around terms like *neuro network* (see figure below; ibid. 77), Shapiro has developed a new language with which to identify and explain traumatic memory. She maintains that there appears to be a "neurological balance in a distinct physiological system that allows information to be processed to an 'adaptive resolution'." This resolution, also called "digesting" and "metabolizing," is the body's natural tendency to heal, citing the analogy of the body's tendency to heal after a laceration, by connecting dysfunctionally stored information to "appropriate associations...integrated into a positive emotional and cognitive schema" (ibid. 29).

EMDR therapy thus proceeds with the identification of troublesome memories or ideas followed by sets of eye movements (and other bilateral stimulation; see Section Three) while keeping in mind both this memory and the bodily sensation that it incurs. Following each set, the client is instructed to "Rest/let it go/blank it out, and take a deep breath," and asked "What do you get now?" Using shifts in awareness and beliefs, body sensation locations or intensity, and new images, emotions and insights, the therapy continues until the SUD level is reported at 0-1.

The feelings of safety reached in the sessions must be "ecologically valid" before they are able to generalize with distressing memories, relieving them of their negative affect quality.<sup>7</sup>

For instance, to enable the client to express feelings of violation to an authority figure, the clinician might say 'Let's pretend. If you could say something to him, what would it be?' If the client answers in a way that reveals the appropriate attribution of responsibility, the clinician responds, 'Good. Now just imagine it and pretend you are saying it,' and then initiates another set.

Sessions are not complete until "the client can re-access the original traumatic material without disturbance" (ibid. 260). The final session, entitled "Reevaluation," is used both at the beginning of every session to ensure that the previous session's reprocessed memories are still reported as a 0-1 SUD rating, and as a final review of all targets when psychotherapy ends. "Each target must be individually circumscribed and fully processed" (ibid. 56). These reportings are on specific memories, as well as the ability of the client "to feel at peace with the past, empowered in the present, and able to make choices for the future.... in a healthy social system."

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<sup>7</sup> The term "ecologically valid" is used throughout the book, interchangeably with "appropriate," "adult," "consensus-reality validity," and "adaptive." In one case Shapiro writes "inappropriate (i.e., not ecologically valid)" (1995: 257).

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## THE CASE OF THE BODY SNATCHERS

by:

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### ABSTRACT

**Early in the morning of November 9, 1876, a grisly discovery was made in Stratford, Ontario: a headless corpse was found floating in the Avon River. Many of the townspeople offered their theories as to how the victim came to be in the river. It was generally agreed that the unfortunate man was either the victim of a murder, or was exhumed from his grave in order to supply the needs of medical students for human bodies, for use in anatomical study and dissection. The inquest revealed that indeed, the grave of Henry Derry, who died in the County Gaol some months prior, was empty. A medical student later admitted to stealing the corpse, removing the head, and dumping the body to get rid of the evidence.**

**This type of event was rare in Ontario, but the activities of these “resurrection men” were at their peak during the first thirty years of the nineteenth century in Britain. The demand for bodies for dissection greatly outweighed the legal supply as the enrollment in medical schools rapidly rose. The body snatchers were medical students, their professors or others who created a lucrative trade in corpses. The most infamous of the body snatchers were not technically body snatchers at all: they were murderers who sold their victims bodies to the highest bidder. Citizens of Britain lived and died in fear of the resurrectionists until the passing of the Anatomy Act in 1832.**

**There are reports of empty graves in Upper and Lower Canada as early as 1829 and as late as the turn of the century. The first Anatomy Act of the Provinces was passed by the Legislation of the United Canadas in 1843, but clearly the supply of bodies was inadequate for the medical students of Montreal, Kingston and Toronto.**

The townspeople, both horrified and thrilled by the discovery, were quick to offer their theories as to how the man came to his unfortunate state. It was generally agreed that he was either the victim of a murder, or that he had been exhumed from his grave by body snatchers.

Body snatchers, also known as ‘resurrection men’ and ‘sack-em up men’, were in the business of supplying medical students with cadavers for anatomical study and dissection. This practice was relatively rare in Canada, but was rampant during the first thirty years of the nineteenth century

in Scotland and England, where the demand for bodies greatly exceeded the legal supply, due to rapidly rising enrollment in medical schools. The body snatchers were sometimes medical students and their professors, but more often unscrupulous men who engaged in a lucrative trade in corpses, selling bodies to the highest bidder.

Prior to the seventeenth century, anatomy was studied from classical Greek and Roman texts such as Galen's second century A.D. *Anatomical Procedures* and *Uses of the Parts*. This method was problematic, however, since Galen had been limited to the dissection of animals, and had sometimes made inaccurate extrapolations from animals to humans (Duffin 1999, 15). The importance of actual dissection of the human body as a method of learning anatomy was slowly established in Europe during the Renaissance. Vesalius' *De humani corporis fabrica*, published in 1543, was the first full scale textbook accurately based on the examination of human subjects, both dead and alive.

However, not until early in the seventeenth century did routine anatomical dissection come to be seen as an essential part of the study of medicine; function had been more important than structure to the early physicians. The sick were treated on the basis of their signs and symptoms, but as direct repair of structures was rarely possible, knowledge of anatomy was not seen as relevant (Duffin 1999, 24). This change in attitude towards dissection was completed at the beginning of the nineteenth century, when advances in morbid anatomy and physical diagnosis cemented the link between structure and function.

Courses in human dissection now became mandatory for medical students. This new requirement inevitably caused conflict due to the public's long standing aversion to dissection. The ancient Greeks only allowed human dissection for a brief period around 300 B.C. in Alexandria, and in the Roman period Galen could only dissect animals. In the Christian tradition, dissection was viewed as an impediment to eternal salvation, preventing the literal resurrection of the body and soul on Judgement Day. In Great Britain and particularly Scotland, dissection was often viewed as "a fate worse than death" (Cohen 1997, 111).

Until the end of the seventeenth century, the only bodies legally available to medical students and their professors were those of executed murderers, for they were the only people deemed to deserve this "further terror and peculiar mark of infamy" (Johnson 1999). In 1694 this category of the damnable was expanded to include those who had died in jail, foundlings, and stillborn babies (Adams 1972, 11). Later, the poor, the infirm, and the insane were also included in this category.

However, the new supply was still not enough to meet the demand. In Edinburgh alone in 1818 there were over 900 medical students, and hence the need for cadavers was enormous. Bodies were needed, and bodies were available--in graveyards--so that few went unmolested (Adams 1972, 8). The era of the resurrection men was in full swing.

The first body snatchers in Great Britain were students and teachers themselves. Commonly, it was required that students take part in grave robbing: those that shirked these duties were fined. Others, not so squeamish, actually paid their medical fees in corpses (Cohen 1997,114). Professional body snatchers tended to come from the lower social orders, persons who could not

make a living in a more respectable way. It has been estimated that in 1828 in Edinburgh there were 10 full time resurrection men, and up to 200 who worked part-time (Bailey 1896,45).

A body snatching raid had to be carefully planned to avoid detection. Oddly enough, at the time body snatching was not illegal. A corpse was not seen as property; the shroud and coffin were however, so that body snatchers were careful to take only the body, leaving all else behind. The main danger the snatchers faced was the anger of the local citizens, who were known to riot and to beat the body snatchers caught in the act. It was preferable to be caught by the law: fines were light and were usually paid by the medical school. The fines were not for violating the grave or stealing the body, but for having the body in one's possession, knowing it to have been disinterred (Bailey 1896,90).

A typical raid took place the night after a funeral. It was common to send a spy to the funeral to note the grave's location, its depth and the type of coffin used. The robbers would carefully dig to reach the head of the coffin, break the wood and pull the body from it using grapple hooks and ropes. Both the clothing and the earth would be replaced. Professional body snatchers were so good at their trade that oftentimes there was virtually no evidence that anything had occurred at all. The body was usually stuffed into a sack and spirited away to the dissection hall, or it was hidden in an abandoned area and claimed the next day. On a 'good' night, a number of bodies could be had (Adams 1972,30).

The people of Scotland were horrified by these practices. In response, they devised many tactics to prevent the bodies of their relatives being stolen and dissected. It was common to lay a pattern of rocks and flowers on the grave, and check daily to see if it had been disturbed. But, the body snatchers could easily replace these items after stealing the body. Watch towers were built in many graveyards, and the fresh graves guarded for a number of weeks until it was felt that the body would be too decomposed for medical students to want it. However, sometimes these very guards could be bribed to look the other way. Mortsafes, constructions of iron bars, can still be seen atop graves in some cemeteries in Scotland. Booby traps were employed as well, but resourceful body snatchers could detect these and disarm them. Perhaps the only device that worked consistently was the wrought iron coffin that an enterprising businessman invented and sold as a defense against body snatching. (Adams 1972,50)

But, not all bodies sold to anatomists were stolen from graves. Professional body snatchers sometimes claimed the bodies of persons who died in poorhouses, posing as family members, obtaining the body, and taking it straight to the anatomists (Adams 1972,71). Pleased to receive fresh corpses, they rarely asked questions as to the source of the body (Cohen 1997,123).

This lucrative trade inevitably led even to murder as way of obtaining saleable bodies. The most infamous of these murderers were Burke and Hare in Edinburgh. Within 9 months in 1827-1828 they killed 16 people, selling their bodies to the anatomist John Knox, who was believed to have known about the pair's methods but chose to remain silent as the quality of the corpses were excellent. The pair were caught, Hare turned King's evidence and Burke was convicted, hanged and publicly dissected; his skeleton and death mask are still on display in the Anatomy Museum in Edinburgh (Cohen 1997,130). The term "burking" entered popular language, and in 1831, "burking" came to London when Bishop and Williams were caught and convicted for drowning

three people and selling their bodies (Bailey 1896,viii). These murderers were also publicly dissected.

In 1832, a new bill was introduced in London, in response to the Bishop and Williams case. It was the Anatomy Act, which finally helped to end the era of the resurrection men. The Act made it necessary to obtain a licence to obtain and dissect bodies, as well as forcing public institutions to hand over all bodies. (Bailey 1896,103)

While Canada never saw the extent of body snatching that England and Scotland did, the practice was known. Doctors began to train in Toronto in the 1830s, and the first Anatomy Act of the United Canadas was enacted in 1843, not long after the British law. The Act stipulated that the bodies of those who died in public institutions for the insane and infirm should be handed over to the medical schools, if there was no objection from the deceased's family, or if that person objected to it before their death. However, there are reports of empty graves in Upper and Lower Canada as early as 1829 and as late as the turn of the century. (MacGillivray 1987,55). Clearly, the supply was not enough to meet the demands of the medical schools.

The practice was much more common in Quebec than Ontario, the Cote des Neiges Cemetery in Montreal being particularly notorious (Jack 1981, 123). If a snatch was discovered, the victim's relatives would visit the dissecting rooms in the city, and if the body in question was discovered, the professor of anatomy would be fined \$50, approximately the price of the body in the first place. The end of the body snatching days in Montreal came after the 'Convent Scandal'. During a very cold winter, victims of typhus were placed in a vault to await burial in the spring. Medical students saw this as an opportunity to get a maximum haul with minimum effort, and a large number of bodies were stolen. However, as some of the victims were Americans, the scandal became international. Enraged relatives offered a reward for the return of their family members' bodies, which the students happily collected. This scandal led to amendments to the Anatomy Act of Quebec: public institutions that did not hand over bodies were fined, causing the supply of bodies to become great enough that the practice of body snatching disappeared. (Jack 1981, 130).

In Ontario, the earliest body snatching was in Perth in 1832, and the last reported case was in 1884 in Kingston. There is evidence that Ontarians were both aware of the practice and anxious to prevent it, making arrangements to guard graves and placing rocks on the graves as deterrents to the potential thieves. (MacGillivray 1987,55). The concern can be understood, as almost one million people immigrated from Great Britain between 1815 and 1850 (Gentilcore and Matthews 1993,21) bringing along memories of the body snatching days at home.

It is apparent that the citizens of Stratford, Ontario were aware of the possibility of body snatching, as very early on, speculation led them to suspect this had been the fate of the body found in the river that morning in 1876. The Coroner's Inquest called the day of the discovery instructed the town constable make a search of the cemeteries, leading to the discovery of the empty grave of Henry Derry. He had died in the County Goal a few months earlier, and the floating body was identified by the prison shirt he wore and by the pattern of hair on his chest, remembered by the doctor who had attended him in his fatal case of tuberculosis.

A Dr. James Robertson was called to give evidence concerning two medical students from Toronto who had studied with him that summer, and had since returned to that city. He denied any knowledge of the affair. A curious part of his testimony, as reported in the *Stratford Herald*, came in response to questioning about a man named Renney, an employee of his: "I did not hear him say that he raised bodies; a subject is worth about \$10." Apparently, this man Renney was suspected of being involved, but as he was away and could not be subpoenaed, no further investigation was made. Indeed, at the end of the doctor's testimony everyone seemed to be satisfied, as it was reported that: "The body having being identified beyond question, and the original idea of foul play dispelled; public interest in the matter ceases; as it is evidently a case of medical science investigation." (*Stratford Herald* 1876).

All the local papers stopped reporting the story at this point, and the Inquest proceedings have since been destroyed. It is only from the reminiscences of R. Thomas Orr, a local historian and politician, that we have the end of the story. He recounted in a local newspaper article in 1976 how a "sheepish medical student" later came forward and admitted to stealing the body, removing the head, panicking and dumping the body in the river to get rid of the evidence. A later article about the case concludes: "whether that was actually proven at the inquest, or was simply conjecture that came to be accepted as fact over the years, will never be known" (*Stratford Beacon Herald* 1983). The townspeople in 1876 were evidently satisfied with the explanation, and forgot about poor Henry Derry, upsetting his ghost so much that he resorted to walking the river banks at night asking passersby if they had seen his head (without a mouth I am not sure how!) (*Mitchell Advocate* 1976).

The public's attitude toward body snatching and dissection in general can perhaps be extrapolated from these events: it was a deplorable activity, yet a practical necessity for medical students. Also, it was perhaps no coincidence that Derry was an itinerant who died in prison with no family to claim his body. Being an unimportant common criminal, he fell into the same category as the murderers, infirm, and insane that were the first to be legal subjects for dissection. We do perhaps know more about Henry Derry now than the participants in the Inquest did, or cared to. The story of the ghost of Henry Derry was included in a 1990 talk given by Carolyn Bart-Riestra, an archivist in Stratford, and came to the attention of a Margaret Korchinski in Saskatchewan, researching her family origins. Ms. Korchinski believes that Derry was her great-great grandfather, born in 1831 in the United States. He died leaving 7 children, with the circumstances of his death a mystery to his descendents (Korchinski Letter 1996). No real effort was made to even find his head in 1876: it was found many years later and proven to be Derry's head through forensic testing in the 1980s (*Stratford Beacon Herald* 1983).

Our society's attitudes toward the dead body have changed. Early dissections were of criminals executed for murder; later hospital, asylum and workhouse poor were classed alongside the worst of criminals as potential subjects for dissection. Today, all cadavers used for dissection are those of philanthropically minded individuals who, while still alive, made arrangements to donate their bodies to the medical school of their choice.

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**MASTURBATION: A “DISEASE” OF THE PAST.  
DOES THE PHYSICIAN OPEN DOORS TO ALL CONCERNS?**

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**ABSTRACT**

**“Like yourself I was fearful the Dr. made much lighter of my case [disease of masturbation] than he himself really thought of it & still he spoke so candidly and positively. Th’o he differs entirely from all writers I have read on the subject I cannot but think him perfectly sincere in what he told me.”**

**This quote was taken from a Philadelphia medical student who desperately wrote to his father in 1848 concerning his habit of masturbation—viewed as a serious “disease” in the nineteenth century. The principal purpose of examining the unpublished, revealing letter is to look beyond the worries over the disease to the student’s difficulties in trusting a physician whose treatment differed from that of his contemporaries. As historians we need to make sure the patient’s voice is heard.**

**Masturbation at the time was considered to herald such conditions as epilepsy, blindness, vertigo, loss of memory and irregular action of the heart. Clearly, the habit could only bring about pure alarm within the individual, especially in a medical student. This young man had already paid a large sum of money to a “quack” for treatment. As he struggles with the recommendation of his physician that contradicts the leading opinions of the time, a sense of helplessness and frustration overcomes him as the injury within him grows.**

**Although written 150 years ago, the letter prompts thoughts about patients’ concerns today, especially about sexual habits and desires.**

*“I conversed with [Dr. Chapman] several times on the subject & I am confident he told me not only once but several times, as I questioned him particularly, that weekly emissions at my age were as natural as to discharge urine daily...that if emissions continue they will not injure me, that now my constitution is perfectly sound & not the least impaired.”*

So wrote Iveson Brookes, a medical student in 1848. His extensive reading of both popular and professional texts told him he was suffering from the disease of masturbation. On the other

hand, student Brookes' physician, Nathaniel Chapman, contradicted their dire predictions. The patient was bewildered by Dr. Chapman's indifference and seemingly irrational remedy, which will be considered in a moment.

This paper looks at: One, masturbation as a disease in the 1800's. Two, the relations between a physician and his patient: Chapman and Brookes. Three, what the letter suggests to us about today's sexual concerns.

### **Masturbation as a disease**

Brookes explained that Dr. Chapman "differs from all writers ...on the subject as [Sylvester]Graham, [Simon-André]Tissot, [Francois J.V.]Broussais & 2 or 3 other." Simon-Andre Tissot, in a widely read book *Onanism* (American translation of 1832) labeled masturbation as an action that was unnatural and detrimental to nerve tone. Sylvester Graham, another popular authority used by Brookes had similar views to Tissot and only added to Brookes' desperation. Graham viewed masturbation as the imagination acting upon the genitals to cause reciprocal influences between the brain and genital organs.(Nissenbaum, 1980) An inescapable vicious cycle was created, he said, when the brain excited the genitals to give way to an unnatural and debilitating act.(Nissenbaum, 1980) Brookes learned from Tissot and Graham that only an abundance of semen within the testes could call for a physiological evacuation.(Nissenbaum, 1980) Brookes was committing an act that was not being governed by need but by sheer habit that would lead to his downfall. How could he believe the physician's remarks suggesting that the action would not lead to serious disease?

The public concern with masturbation goes back to at least the early 18<sup>th</sup> century. A book titled *Onania* set forth the mode of thinking that accepted masturbation as a disease and proclaimed that the chief prevention for masturbation and any other sexual vice, was marriage, a method that was rejected by Graham (Nissenbaum, 1980). According to Graham it did not abolish the problem, it just allowed it to exist in a different setting. The *Onania* is a mixture of traditional folklore and a combination of Christian beliefs such as repentance and mortification for practitioners of the vice.

By the nineteenth-century many regular physicians were contributing to discussion on the disease. Francois J.V. Broussais, mentioned by Brookes, associated masturbation with damaging the vital force, which he saw was the basis of physiology. Broussais and many other physicians indicated a wide range of problems from masturbating.

Shrunken testes and such ailments as epilepsy, blindness, vertigo, loss of hearing, loss of memory, irregular action of the heart and general debility (Engelhardt, 1974). Not surprisingly Brookes felt angst, guilt and anxiety.

### **Brookes and Chapman**

The letter written by Brookes to his father the Reverend Iveson Brookes, from which I have been quoting, not only gives us insight into the frustration of a young man, but also raises questions about the attitudes of Dr. Chapman. Chapman was one of the most celebrated physicians of

Philadelphia of the time. Two questions arise. Was Dr. Chapman's disagreement with others a reasonable position to take at the time? Or is it that he was not really comfortable about talking or dealing with the issue?

Brookes tells his father that a solution has not been suggested nor practiced as efficiently as he had hoped. All his worries and concerns have not been addressed. Has Dr. Chapman fully directed his attention and devotion to the problem at hand? Is the patient being listened to? These are questions that must be asked in the light of his comment: "He said my disease was entirely mental, my weakness & debility arose altogether from the mind." The contradiction of Dr. Chapman's opinion with Tissot's theory that the debilitation arises from the loss of seminal fluid and that one ounce is equivalent to the loss of 40 ounces of blood is obvious but not satisfying to Brookes (Engelhardt, 1974). If, in fact, Chapman agrees with Graham that imagination is an issue, then a change of environment (e.g. a visit to the seaside) would seem to be rational. However, no such explanation was apparently given to Brookes. Brookes indicates that he is already injured and that he is submerged in doubt that he will ever be cured.

Given the year 1848, why did Chapman, being the esteemed medical teacher of his day, fail to set Brookes' fear to rest? In disagreeing with the influential popular and medical writers, by mentioning to Brookes that injury from masturbation was not worse than from sex, Chapman failed to convince. How appeasing could Chapman's words be to Brookes without any physiological reasoning? It would seem that Chapman, eclectic in his theories of medicine, was unable to undermine such popular concepts as vitalism, the mind and horrible results from masturbation. While this may be so, there is of course the possibility that Chapman was generally uncomfortable with discussing such matters, even though Brookes was a medical student.

Brookes himself seems uncertain about whether he could trust Chapman's honest opinion, for Brookes writes, "But his last decision as to sea baths would seem to show that he was not flattering my hope with language not his real opinion or spoken otherwise than he really thought." Chapman's approach was in stark contrast to the other recommended treatments such as restraining devices, infibulation or placing a ring around the prepuce (Engelhardt, 1974). A woman suffering from the vice might be treated with a clitoridectomy. Other treatments such as herbs, active tonics, cold baths at night before bedtime and the use of opium were methods focused to treat the excitation and debility that masturbation provoked (Engelhardt, 1974). Perhaps the sharp contrast prompted feelings in Brookes that the advice was nothing more than a method to dismiss him in hopes of bottling and sealing the problem. On the other hand, there were the conflicting authorities I have mentioned as well as his father who seemingly did not add to Brookes' confidence. Brookes' father expressed certain opinions towards Chapman that were interpreted as "the Dr.'s language to me was surely to allay my fears...and that his prescription would prove long and tedious." Was it a possible escape for Chapman due to a lack of comfort level that he finds himself in?

### **What the letter suggests to us about today's sexual concerns**

The letter written by Brookes to his father is of historical interest, but it also raises ongoing concerns that exist within the physician-patient relationship. If I am correct in suggesting

Chapman was uncomfortable, or just a poor communicator, then it —discussion of sexual problems— reminds us of the same problem existing for many physicians today. It's been said that a “number-one health risk for gays and lesbians is fear of seeking medical care.”(Robb, 1996) Effective care is certainly hindered by obstacles from a physician, either ignorance or discomfort with sexual matters. As health-care providers, it is our responsibility to set forth an environment that readily allows a patient to raise sexual concerns. Even masturbation is a worry for some mothers today. Such concerns should be welcomed, addressed and discussed.

Nowadays with the emphasis on responsibility for one's health, many a patient will be as widely read as was Brookes. How many patients still go away dissatisfied like him? Actually having to open oneself to discuss any possible dilemma which can be placed within the realm of sexuality is difficult. The fear of being rejected, ridiculed or overlooked overcomes us in such a forceful manner that adds to our inhibition. Patients arrive with plenty of information; much of it acquired from the Internet. Physicians, then, are frequently faced with incomplete or false information that has to be negotiated in part by being forearmed. It seems very likely Chapman was not sensitive to the worries aroused by popular knowledge. Lack of knowledge presents another obstacle to overcome when diligently attempting to provide the level of care necessary to tackle a patient's sexual concern. Today, for instance, we have the guidance of a four level approach to sexual problems that is referred to as PLISSIT. The combination of permission, limited information to dispel any myths or misunderstandings about the problem, specific suggestions and intensive therapy may allow the physician in aiding a patient who is discouraged or confused regarding an issue.

And lastly, a French physician from the mid-19<sup>th</sup> century had confidently stated, “In my opinion, neither the plague, nor war, nor smallpox, nor a crowd of similar evils, have resulted more disastrously for humanity, than the habit of masturbation: it is destroying the element of civilized society.” (Duffy, 1963) Can you suggest an appropriate alternative for masturbation in this quote? If so, perhaps we have not changed as much as we like to think we have.

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# MEDICINE IN ANCIENT CHINA: THE IMPACT OF RELIGION AND PHILOSOPHY ON HEALTH PROMOTION

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## ABSTRACT

**In 1984 the World Health Organization defined health promotion as the process of enabling individuals to take control over and to maintain their health. Western nations are currently taking more interest in the concept of health promotion as we become more aware of the importance of the impact of structural factors in society on our health. In contrast, health promotion in ancient China was evident as early as the Shang Dynasty (B.C. 1765 – 1122).**

**The concepts of *yin-yang*, the Five Phases and *chi* reflects the Chinese belief that in order for a state to function successfully everything must be harmonious and in balance. The health of the people will complement the health of their monarch, the Jade Emperor who is Heaven's representative on Earth. The concept of immortality and the influence of *Taoism* were also influential in the evolution of health promotion in China. Some of the arts the ancient Chinese practiced in order to improve their health includes the art of meditation, acupuncture, massage as well as a form of exercise known as *daoyin*. In addition, hospitals and public law affecting the health of the people were evident during the Tang Dynasty.**

**This paper will be an introduction to the impact of religion and philosophy in ancient China on the health of the individual and will attempt to illustrate the origin and evolution of health promotion in China.**

For centuries medicine in western cultures evolved around the victory of reason and pragmatism over culture and tradition. The quest for scientific basis of disease and the acknowledgement of the human body as an efficient machine has led us to believe that what science says about reality must closely correspond with reality. Consequently, western medicine emphasizes the treatment of diseases. The ancient Chinese civilization has opted to emphasize the concept of health promotion and prevention rather than the treatment of diseases in their society. The attitude that the ancient Chinese adopted was largely influenced by the philosophy and religion of the time. Philosophy and religion had a large impact on the concept of health by the individual in ancient China and also influenced the origin and evolution of health promotion and prevention in ancient China.

## **The Concept of Self**

In ancient China, the individual was regarded to be within an ever evolving relationship with the environment. Geomancy, or the thought that the nature of human fate is determined by the interaction of heaven and earth, greatly influenced the way the ancient Chinese viewed the concept of 'self' (5). First and foremost was the reverence due to "Heaven's" representative on earth, also known as the Jade Emperor. The health of the Jade Emperor is closely associated with the success of the nation's economy and the health of the people. Analogous to an oscillating spring, the continuously evolving relationship between Heaven and Earth corresponded to the appeasement of the gods and the bestowing of good fortune by the gods onto the people. The individual fits within the moving scheme, merely as a single turn of wire within the spring. However, the dysfunction of the individual by illness or by breakdown within the family system, will ultimately affect the Jade Emperor and consequently the balanced relationship between Heaven and Earth is disrupted, thus causing an adverse affect on all of society. The universe in Chinese cosmology is conceived as a vast indivisible entity where each individual has its definite function within it. No one thing can exist without the others, and to each thing, in turn, is linked a chain of concepts which correspond to each other in harmonious balance (7). Hence, the individual is viewed as a microcosm, or a little universe, and it is the relationship between microcosms, including that between the body and the state, which will influence the totality of the macrocosm or the environment at large. This concept of self is especially evident during changes in society or politics where in chaotic times a stagnation in the state paralleled the sickness in the nation. Thus, the onus is on the individual to maintain his or her health, for the consequence of illness on an individual level will ultimately be reflected in a dysfunction in society. This concept of 'self' selected for the promotion of health at the level of both the individual and the community in ancient China.

During the Zhou Dynasty (1121 – 249 B.C.) the concept of 'self' shifted towards the relationship of the individual with that of the family. The Confucian influence of filial piety was reflected in the need to maintain the health and 'wholeness' of the human body. The 'sacredness' of the human body is evident in Confucius' teaching which states that "only those who at the end of their lives return their physical body whole and sound will be truly revered. The human body is not the property of the person but a gift bequeathed to us by our parents and forebearers" (7). Hence illness and the lack of action undertaken to prevent disease was not only perceived as unfilial and grossly disrespectful but the return for such unfilial practices was that the ancestor is no longer revered, a state worse than hell as one is now considered non-existent.

## **The Concept of Illness**

Health in ancient China was believed to be a balance in the dynamics of body processes; consequently illness was an imbalance of the body processes (6). The Doctrine of the Two Principles considers illness to be a consequence of the imbalance of *yin* and *yang*. *Yin* and *yang* are two great forces with male (*yang*) or female (*yin*) attributes and include heaven and earth, the sun and the moon, day and night, high and low, joy and worry, good and evil, and so on (9). However, it is vital to understand that *yin* and *yang* forces are not as simplistic as black or white. The traditional symbol of *yin* and *yang* depicts that *yin* flows into *yang* even as *yang* approaches its zenith, thus illustrating that the forces are never completely separated. Different organs

within the body possess *yin* and *yang* in different proportions. For example, the heart and the lungs are considered to have an excess of *yin*, whereas the stomach and gallbladder have an excess of *yang* (7). An imbalance of the forces merely reflects a state of change from normality, such as a gain or loss of either or both *yin* and *yang* forces.

Unlike the Doctrine of the Two Principles, the Doctrine of the Five Elements considers the human frame to be composed of a harmonious mixture of metal, wood, water, fire and earth (9). The similarities with the Humoral theory first described by Hippocrates and elaborated upon by Galen in the second century is quite obvious. The five elements interact with each other and corresponding to the five elements are the five organs: the spleen, liver, heart, lungs and kidneys which are further related in a complex system of arrangements to the planets, climate and the environment (9). The counter-relationship of the elements to the external environment further supports the idea of the individual as a microcosm and interaction within a macrocosm, where disturbances within the balance of the five elements results in disease.

An additional concept in ancient China which exists today, is that of *chi*. *Chi* can be translated as 'breath' or 'energy' whereby in animating matter, *chi* controls the working of the organs through which it circulates (1). A lack of or stagnation in *chi* will engender problems. By unifying the concepts above, an imbalance, be it in *yin* or *yang* or in the five elements may result in the stagnation or lack of the vital energy *chi* such that illness is allowed to occur. Acupuncture or moxibustion are two of the therapies which unblock the flow of *chi* along its specified meridian which is thought to be responsible for the restoration of health.

### **The Impact of Religion and Philosophy**

The origin of the concepts of *yin* and *yang* is unclear, but early work suggests that they were referred to during the eight century B.C. Early Taoistic beliefs reflected in the works of Lao Tzu unite the two elements of *yin* and *yang* seeing the forces as being inseparable and dependent on each other. The *Book of Changes*, a work on divination compiled during the Western Zhou, also influenced the philosophy of the time and advocated moderation in eating and drinking (1). Taoism later evolved beyond an ideal guide to follow in life to become an orthodox religion which is infused with the concepts of immortality and transcendence. By the Han period (206 B.C. – 220 A.D.) immortality was thought by the Taoist to be a development within the individual of the immortal internal embryo which when cultivated would transform the mortal body into a refined immortal being (1). In order to achieve this state of immortality, the people of the Han period had to practice alchemy, follow strict dietary rules as well as combine gymnastic, respiratory and sexual exercises and be virtuous. The fear of death and the desire for longevity were a prime impetus in propelling individuals into conducting vigorous breathing and daily exercises such as the *dao yin* which is comprised of 44 postural positions and bears some similarity to modern-day *Tai chi chuan*. In Taoism, it is vital to prevent illness, but more importantly health must be maintained and promoted in order for the immortal embryo to transform.

While Taoism was concerned about physical immortality, Buddhism in China primarily focussed on transcendence and enlightenment of the mind. Buddhist considered the practices of Buddhism to be remedies effective against mental afflictions (4). The art of meditation and

mental as well as breathing exercises were developed to aid the individual in the transcendence of daily life. People of all classes in society practiced meditation, and while illness was regarded negatively it was only because illness prevented the act of meditation in itself. Buddhism further contributed to health promotion in ancient China with the introduction of boxing by the monk Bodhidharma (527 A.D.). According to Bodhidharma the body should be properly exercised so that the muscles and tendons may be supple and the spirit will not then suffer from the misery of weakness. Boxing became and continues to remain a common physical activity among individuals in China.

### **Common Practices in Ancient China**

Ancient Chinese physicians considered health promotion and prevention to be better than the treatment of disease. The physician Huai Nan-tzu is thought to be responsible for stating that the “good physician first cures the disease of the nation, then human ailments” (10). The methods of typical ancient treatments included acupuncture, moxibustion and massage. Acupuncture was widely practiced in ancient China and continues to be practiced today. There are 365 acupuncture points and each point is along a specific meridian of *chi* or energy and bears relationship with the internal organs fed by the meridian. The puncture of certain acupuncture points in the body is thought to stimulate or promote the flow of *chi*. In ancient China, acupuncture was chiefly used in cholera, colic, cough, rheumatism, sprains, swollen joints and deep seated pains (9).

Moxibustion is a method which utilizes the points on a meridian identical to that used for acupuncture. Combustible cones made of common mugwort (*artemisia*) are applied on the skin at certain points using a geometrical design. The cones are lighted and allowed to burn down to cause a blister. Moxibustion is often used in soft tissue infections but there is a high risk of the moxa wound getting infected thus it is not as popular as acupuncture.

Chinese massage consists of tappings, kneading, chafing and pummeling the body all over. Massage is used chiefly as a relief from tiredness but is also used in muscular fatigue, rheumatism, headaches as well as others (9). Massage, acupuncture and moxibustion were routinely used in ancient China. The main belief was that in undergoing routine procedures, stagnation of *chi* was prevented. If the vital energy was disrupted or blocked, then routine treatments would also allow for early detection and effective treatment.

Routine treatments of acupuncture or massage also led to a greater awareness of the body and health by the individual. This gave individuals greater control over the state of their health and their bodies. Throughout Chinese history, and especially in the Ch'ing dynasty (1644-1911), Chinese society took an unfavourable attitude towards the medical professions. Individuals considered medicine as an avocation and the practice of medicine as one which was purely business. Therefore, doctors often played a secondary role in the treatment of a case and their prescriptions were viewed with suspicion. A course of treatment was taken only after several physicians were consulted (9). This attitude or suspicion of the medical profession was the stimulus for individuals to take an active interest in matters regarding their health.

Chinese habits and customs were often based on principles of health preservation and promotion. Ancient Chinese were extremely interested in their diet and often partook of herbs or foods which were considered to be beneficial. For example, seaweed used in their diet in the treatment of goiter was later found to contain iodine 100 times as active as iodine found in potassium iodide (3). Other foods advocated to help in therapy included pigs liver for the treatment of pernicious anemia, ginger for nausea, ginseng for energy as well as others (9). Furthermore, many individuals preferred to drink tea rather than unboiled water and chose to eat well cooked meat (11). As early as the Zhou Dynasty, hygiene and public health was in an advanced state. The correlation between contaminated food and disease was recognized and recorded in the *Analects* of Confucious. Ice was used for conserving food and the *I Ching* notes that muddied water from the well was not to be drunk. The Chinese have a great reverence for authority and the ancient works and books such as the *Analects* or *I Ching* were regarded as the final authority and above question, thus the practices advocated above were closely followed.

Health promotion in ancient China is evident early in the Zhou Dynasty. In existence were national prohibition laws with the emphasis on moderation in eating as well as drinking. Physical culture and sports were regular practices and included archery, charioteering and ceremonial observances. The beneficial effects of deep breathing were known and thought to clear the intellect and prolong life (9). In order to maintain the health of the nation, state regulations prohibiting consanguineous marriage were in place. Prostitutes were confined to a district thus providing a more conducive atmosphere for families as well as for merchants to carry out their trade (9). By the T'ang and Sung Dynasties, brothels were even licensed which allowed the State more control in its operation. Hospitals were also evident during the Zhou Dynasty but were limited to the hospitals for the deaf, the blind, the lame or paralytic, the deprived and the mentally disturbed. These hospitals were initially supported by religious groups such as the Buddhist monks and were often extensions of the monasteries, but were later taken on by the State. Variolation against small pox was widely practiced in ancient China and is thought to have been begun by a person named Zhao (713 – 741 B.C.) with the inoculation of the nostril of a patient with a small amount of variolous pustules. By the Song Dynasty (960 – 1279 A.D.) urban areas contained both dispensaries, hospitals and orphanages. Road sweepers and night soil collectors were also employed in the maintenance of public health.

### **The Movement in Modern China**

With the introduction of running water, cleaning of the streets, and bureaus to combat epidemics, China saw a vast improvement in public hygiene. When Mao Zedong came into power in the early 1930's, he observed that in order to defeat the enemy it was necessary to 'solve the problems facing the masses – food, shelter and clothing as well as problems of sickness, hygiene and marriage'. Thus China implemented a massive campaign of health promotion with the creation of a central hospital, health centers as well as public education regarding disease and were successful in the eradication of Bilharzia in urban and rural communities (8).

### **Conclusion**

Medicine in ancient China was greatly influenced by religion and the philosophy of the time. The concepts of *yin* and *yang*, the Five Elements, *chi* as well as filial piety were influential in the

establishment of 'self' or the identity of the individual within the community which was instrumental in how ancient Chinese viewed illness and health. Consequently, the ancient Chinese were actively involved in the prevention of diseases and the promotion of health both on an individual level as well as that within the community. Taoism and Buddhism advocated both mental and physical health and widely promoted exercises which were utilized to attain the final goal of immortality or enlightenment. Finally, the arts of acupuncture, moxibustion, and massage as well as the care the Chinese took with their diet were common practices in ancient China which further established the active involvement of the individual regarding matters of health. Together, the complimentary influences of religion and philosophy were vital in the promotion of greater knowledge and awareness of common health and illness in ancient China.

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# MEDICAL WESTERNIZATION IN CHINA AND THE PEKING UNION MEDICAL COLLEGE

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## ABSTRACT

Traditional Chinese medicine places its faith in *yin* and *yang*, anecdotes, traditions, and the five elements of wood, stone, fire, water, and metal. The religious awakening that swept the Western World in the late 19<sup>th</sup> century brought hordes of missionaries to China seeking converts to Christianity, partly by the introduction of Western medicine. In an extreme portrayal as written by John Z. Bowers in the *Bulletin of the History of Medicine*, the goal of the missionaries was “the salvation of the heathen who ‘bows down to wood and stone’”. However, the dedication of the Chinese people to the traditional *Chung-i* system of medicine made it difficult for Westerners to introduce their medicine into China.

Due to financial hardships and the lack of perceived effectiveness of medical colleges run by the missionaries, many efforts at medical Westernization were limited. Probably the most successful attempt to introduce Western medicine was the establishment of the Peking Union Medical College (PUMC) by the Rockefeller Foundation. The PUMC became the largest foreign philanthropic commitment of the Foundation. It became known as the “Johns Hopkins of China” and was a milestone of medical Westernization.

PUMC Physician-in-Chief, Dr. Franklin McLean, wrote, “It is the best of our modern medicine that we desire to give to China, that China may take advantage of our own recent progress”. The PUMC was active in research with faculty authoring 300 publications between 1919 and 1925. It produced graduates who pioneered China’s public health movement and modern midwifery programs. Perhaps most importantly, the College allowed the dissemination of Western knowledge to such a great extent that it is incomparable to other colleges. Its Western-dominated faculty was slowly replaced with Chinese and many graduates involved themselves in teaching Western medicine to other Chinese.

## Introduction

The establishment of Western medicine in China was a slow process that met up with much resistance. Through much trial and error, the persistent Westerners created many medical

colleges in the attempt to disseminate their medicine. Few attempts were more successful than that of the Peking Union Medical College (PUMC), built in 1917 and officially opened in 1921 (Bullock, 1980). In order to examine the successes of the PUMC, it is first appropriate to explore the evolution of Chinese medicine, and its subsequent uptake of Western concepts and principles. It will later be seen how the PUMC rose to become one of the most successful attempts at medical Westernization in China.

### **Origins of Traditional Chinese Medicine**

*Chung-i*, the traditional form of medicine in China, has its origins as described by the legend where the inhabitants of the Yellow River Basin were given the gift of medicine some time in the fourth millennium BC. Progress was slow until *Huang-ti*, the “Yellow Emperor” created a compilation of all of China’s principles for health and medicine called in *Huang-ti nei-ching* or “The Yellow Emperor’s Inner Classic” in the third or second century BC (Crozier, 1968). It was not until Chang Chung-ching, the “Chinese Hippocrates” (born c. 158-166), that the principles of *yin* and *yang* were fully described. He described the body as a constant balance between two opposing forces; an imbalance of which leads to disease. These principles, along with those of acupuncture and some kill-or-cure invasive surgeries, were reinforced and practiced by *Hua T’o* under the reign of *Ts’ao Ts’ao* (Huard and Wong, 1968). Even up to present, concepts such as *yin* and *yang*, the Chinese pharmacopia of herbs, and the five elements of wood, water, metal, stone, and fire dominate Chinese health principles. It is obvious that Chinese medicine had been well established long before the first inkling of Western medicine began its penetration.

### **THE Beginnings of Western Penetration**

The entrance of Western medicine is largely credited to the arrival of Christian missionaries onto Chinese shores in Macao -- the first being Robert Morrison in 1807 (Bowers, 1971). Missionaries came to China in the spirit of charity and with the hope of converting its citizens to Christianity (Crozier, 1968). These missionaries came with traders, merchants and explorers who wished to discover this unexploited territory. Medicine factors into this scheme because the missionaries and others who landed on Chinese shores had obtained a variety of levels of training in the art of Western medicine. It was felt that if Western medicine could cure some of the ailments of the Chinese, then those cured would convert to Christianity and sympathize with the Western cause. The missionaries desired to change the paradigm of Chinese medicine: the *yin* and *yang* and the five elements being the pillars. Therefore, as was written by Bowers, the goal of the missionaries was “the salvation of the heathen who ‘bows down to wood and stone’”.

As time passed, Westernized hospitals were opened, the first of which was opened in Macao by the English surgeon, Thomas Colledge, in 1827. Chinese treaties were later signed which granted entry, residency, and trading privileges to the Westerners. This began the mass infiltration of medical missionaries all throughout China (Bowers, 1971).

This infiltration encountered many obstacles. For the Chinese to accept Western medicine, the millennia of tradition and *yin* and *yang* would have to be uprooted, a choice that was hardly popular. *Chung-i* had been the paradigm of medicine and produced satisfactory results, even for ailments that modern medicine could not cure. Also, modern medicine could not explain or replace traditional medicine (Quinn, 1974).

Complicating this problem was the lack of stability in China. At that time, there was much civil unrest and relations between the West and China were rocky. The Opium Wars (1839-1842), the Anglo-French seizure of Canton (1858), and the Boxer Rebellion in 1900 exemplify this antagonism (Bowers, 1971).

Despite these roadblocks, what started from mentorships between Western doctors and Chinese technicians grew into medical colleges owned and operated by the missionary societies. By 1889, hospitals and clinics run by Westerners in China numbered sixty-one. This count increased substantially by the turn of the century: a Western clinic penetrated every province and major city of the Chinese Empire (Croizer, 1968). Also, the colleges that opened their doors included the “Yale-in-China” (Hsiag-Ya) in Hunan, the “Harvard-in-China” in Shanghai, and those which were a result of collaborations by missionary societies including the Union Medical College of Peking in 1906. Unfortunately, these ventures were relatively short-lived or seen as relatively ineffective as they did not have sufficient funding or adequate standards of excellence. As noted in 1912 by Charles W. Elliot, then President of Harvard University, the Chinese “have no knowledge of the practice of scientific medicine and surgery in the modern sense ... the treatment of disease is ignorant, superstitious and almost completely ineffectual” (Bullock, 1980). The medical colleges in China were substandard and did not reach the standard offered in America. Elliot reported this information to John D. Rockefeller, Jr. in the China Conference and from there the history of the PUMC began to unfold.

### **Peking Union Medical College**

It was not until the Rockefeller Foundation involved itself in this venture that the best in Western medical education was offered in China. The oil-magnate philanthropist John D. Rockefeller, Sr. funded the Foundation, which was administered by his son, John D. Rockefeller, Jr. After much research, the Foundation concluded that medical education in China was substandard, and that the only existing college that could possibly meet the standards of the Foundation, after much modification, was the Union Medical College in Peking (Bowers, 1971). The Foundation then took over this college, built upon it in 1917, and officially opened it in 1921. This was the Peking Union Medical College.

In a letter to his father, John D. Rockefeller, Jr. in 1921 stated the following about the newly-opened PUMC: “The influence of this medical school is going to be much more far reaching than we had dreamed. It is already setting the standards for China and its influence is extending even now beyond the boundaries of that country” (Bullock, 1980). The main differences between this college and the others were that a standard of excellence was maintained and well over 45 million dollars was funnelled into the PUMC from the Foundation.

As Franklin McLean, Physician-in-Chief at the PUMC when it opened, said in 1916, “it is the best of our modern medicine that we desire to give China, that China may take advantage of our own recent progress” (Bullock, 1980). The Department of Anatomy alone was 3 stories tall including a museum, cold storage, and labs. The Library included over 50,000 German dissertations. Only the best students in China were admitted, their scores on national examinations would be the highest in the country (Dimond, 1988). Expert professors included

two Canadians who taught anatomy: Davidson Black, an anthropologist who found the famous *Sinanthropus pekinensis* skull in Chou-K'ou'Tien; and Vincent Cowdry, a graduate from John Hopkins University and the University of Toronto who founded the Anatomical and Anthropological Association of China in 1920 (Bowers, 1971).

The amount of research done at the PUMC was also impressive. From 1919 to 1925 alone, over 300 articles were published in Chinese, American and European journals (Bullock, 1980). Research included work on Kala-azar, a disfiguring parasitic disease caused by *Leishmania donovani* that affects children and adolescents. Researchers at the PUMC, along with collaborators around the world, elucidated the transmission of this organism from different carriers. This example demonstrates the world-class level and far-reaching public health research performed at the PUMC. Other research included the study of the action of *Ma Huang*, a traditional Chinese medicine used in the treatment of asthma. It was found that the active ingredient in this herb was ephedrine, an adrenergic bronchodilator that is commonly used in Western medicine today (Bullock, 1980).

The PUMC also sparked the beginning of public health care reform. John Grant, PUMC Professor of Public Health, first established a public health pilot program called the Health Demonstration Station in 1925. It had initially served 58 000 people. By 1927, it had grown tremendously to include 6 physicians, 17 nurses, 1 dental hygienist, 1 pharmacist, and 3 sanitary inspectors serving nearly 100 000 citizens. Initially, 36% of people in the region served by the Station received no treatment and the number of deaths per thousand people was 22.2. By 1934, only 25% of people did not receive any treatment and the number of deaths per thousand decreased to 18.2 (Bullock, 1980). Soon, health centers were established in the Yenching Rug Factory and in some public and private schools. These centers became the springboard for the public health revolution in China.

This legacy of John Grant was carried forward by PUMC graduate Ch'en Chih-ch'ien who pioneered rural public health care in China. Village stations were set up for smallpox vaccinations, the reporting of births and deaths, first aid, and the disinfection of drinking water. Although these services were expensive and initially thought to be impossible to apply to the rest of China, this program carried out by village stations and health workers became the prelude to the famous Barefoot Doctors (Bullock, 1980).

Lastly, and perhaps most importantly, the number of graduates from the PUMC who later involved themselves in teaching positions afterwards was tremendous. Slowly, the PUMC faculty was replaced with Chinese. Also, when compared to other more typical medical schools in the country, a significantly higher number of graduates from the PUMC were involved in teaching. For example, in the 313 students that graduated from Cheeloo College (a representative of the typical medical college in China), only 9% were involved in teaching. This contrasts sharply with the 51% of graduates from the PUMC between 1924 and 1933 who were later involved in teaching (Bullock, 1980). As articulated by John D. Rockefeller, Jr. himself during his PUMC dedication speech in 1921, by slowly increasing the number of Chinese involved in teaching other Chinese, the PUMC became a "permanent establishment on Chinese soil". The attainment of Chinese teachers of Western medicine became a guarantee for the perpetual dissemination of Western medicine.

## Conclusion

The PUMC is currently in operation after many temporary closures due to war and political instability. It continues to publish important research articles and educate future young doctors (Yuhua, 1988).

All of the accomplishments of the PUMC made it probably the most successful attempt to introduce Western medicine in China. The PUMC became the largest foreign philanthropic commitment of the Rockefeller Foundation. It became known as the “Johns Hopkins of China”. Rightly so, the PUMC was a milestone of medical Westernization.

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# **ALCOHOL: ITS PAST AND PRESENT ROLE IN THE HEALTH OF NATIVE COMMUNITIES**

By:

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## **ABSTRACT**

**Each society faces death with varying degrees of resolve from fighting the prospect to fatalistic acceptance. In the past the extreme northern landscape and scarcity of resources regularly resulted in accidental and premature deaths among northern Alaska Native communities. Drownings, falling through the ice, hunting accidents, and starvation came to be regarded as 'natural deaths'. This presentation looks at the role of alcohol, past and present, in contributing to premature deaths and the fatalistic acceptance of them.**

**Russian, American, and Canadian trappers and prospectors introduced alcohol across the north. Alcohol proved to be a devastating force in the Native communities and continues, despite being under some form of prohibition throughout Alaska for the past two hundred years, to contribute to the high accidental and premature death rate in the communities.**

**While fewer 'natural deaths' occur as a direct result of the landscape, the deaths relating to alcohol have increased and have become regarded with traditional resolve and acceptance. Consequently, deaths involving alcohol are often not seen as necessarily preventable as they would be in the Europe paradigm.**

In September 1741, Vitus Bering offered a beaker of gin to a Chugach man. This first encounter heralded a horrendous saga of alcohol and ill-health across the Alaska, reaching a crisis situation in many aboriginal villages today. This presentation outlines the 259 year story of (i) alcohol as an inexorable tide of destruction, (ii) the attempts to limit its effects on Alaska Native communities, (iii) the hold alcohol continues to have on the Native populations, and (iv) comments on difficulties addressing the problems today.

### **Pre-contact Native Health**

The first Europeans to reach Alaska were impressed by the Native population. George Stellar, a doctor and naturalist who sailed with Vitus Bering, described the Natives he first encountered as "tough and strong". Others documented life spans reaching into the 90's. Nonetheless, life in the north was a perpetual struggle with the environment as well as with common disease. While it is often difficult to interpret eighteenth-century descriptions of diseases, archeological and historical evidence suggests that infections contributed to pre-contact ill health. Carbon

monoxide poisoning and chronic lung infections were also common from burning seal oil lamps inside confined spaces. (Brems and Sullivan, 1997; Fortuine, 1989)

Famine, too, sometimes linked to the unpredictability of the weather, animal migrations, and herd sizes, proved a determinant of health from pre-contact times through the early parts of the twentieth century. The spring seems to have been the most common time for famines to devastate populations; the Aleut word for the month of March translates into "when they gnaw on straps." Famine was probably more common among the Athabascan population living in the deep, extremely cold interior of the land, away from coastal resources such as marine mammals. (Fortuine, 1989)

Prior to contact, injuries from hunting accidents, acute weather, and intertribal hostilities, as well as murder and suicides were also major causes of premature death. Accidents and injuries, often involving alcohol, *are* now the leading cause of death throughout Native Alaska. Drownings were and remain the single largest grouping of accidental deaths. (Fortuine, 1989)

### **The Inexorable Tide I: 1700's to early 1900's**

When the Russians reached Alaska in the 1700's, alcohol was unknown to the Aleut, Athabascan, and Eskimo. The Russians seeking furs were a rough lot often opting for the work out of desperation, perhaps to escape debts. They tended to drink and drink hard, hence the first problems with alcohol in Russian-America were amongst the Russian Promyshleniki. The Russian Crown initially controlled the sale of alcohol to maintain a monopoly, but the reasons changed as alcohol began to have more severe implications for the Aleut and their ability to take fur. From the outset, Russian commercial interests observed the deleterious effects of alcohol on the First Nations and the sale of alcohol to the Aleut was soon forbidden. The Russian's, depended on Aleut hunters for the supply of furs and alcohol reduced the number of hunters available. Since then alcohol has had a checkered history and prohibition, in some form, has continued to the present. (Fortuine, 1989)

After particularly disturbing violence in the Southeast town of Sitka during the Spring of 1842 involving Natives and alcohol, the Russian-America Company and the Hudson's Bay Company were legally forbidden by the Russian territorial governor from selling alcohol in the Native communities. The increasing commercial resource exploitation over an endless coastline, however, made policing extremely difficult. Shortly after the 1868 US purchase of the territory, American legislation codified the prohibition of sale of alcohol to Natives and the Alaska Commercial Company. These American attempts were inadequate, for it was virtually impossible for the revenue cutters to effectively patrol from the intricate archipelago of southeast Alaska, out the Aleutian Chain, and the high arctic which was inaccessible in the winter due to ice. Whenever the policing became at all effective, the traders would traffic in molasses, which was used to make home brewed concoctions, and when policing focus shifted to stills, the traders resumed outright "rum running." (Fortuine, 1989)

While The Alaska Commercial Company did not directly traffick in alcohol, its widespread presence, immediately after the American takeover, accelerated social change as more permanent Native settlements developed around missions and trading centers. The late 1800's brought

accelerated change on many other fronts after whaling, fisheries and gold brought even more non-Natives permanently in the territory. By 1898, fifty-five canneries were operating along the coast from southeast Alaska out to Naknek. Meanwhile, the Yukon gold rush brought a flood of prospectors down the Yukon River through the relatively unexploited interior eventually to the gold fields of Nome, where the 1900 influenza epidemic took an especially high toll on the Native population. (Fortuine, 1989)

By the end of the nineteenth century, the American bureaus running the territory had reached a consensus that Native hospitals were needed to combat the widespread scourge of alcohol's effects, tuberculosis, and other epidemics of European origin which swept through the land. Epidemics were many and widespread. The new illnesses, killing thousands, caused an inevitable disruption in social order. (Fortuine, 1989)

The Native population had learned to seek out western medicine when and where it was available, usually on US Revenue Cutters or military vessels. Infectious diseases brought by the westerners had gone far to undermine the traditional healers who could not address the new ailments, including alcoholism. Although the new medicine was seen as bringing some solutions, the institutions that came with health care contributed significantly to alcoholism. Along with attention to Native health concerns the United States government began to develop overall policies concerning the Alaska Native population. Yet these were undermined by increased social disenfranchisement and systemic effects of alcohol; an underlying tension began to develop within the Native communities over the emergence of modernity and cultural identity. (Fortuine, 1989)

Up to this point, the alcoholism amongst the Native population in general does not fit the classic definition of alcoholism since it was most often intermittent binge drinking. This reflected the inconsistent supply of alcohol; however, chronic alcoholism began to emerge as a relatively large permanent non-Native population began to reside in the territory.

### **The Inexorable Tide II: Deculturalization**

The period beginning in the early 1900's lasting through the 1970's is best characterized by deculturalization of the Native populations. Through the late 1960's, Native youth were sent in droves to church or government boarding schools away from their villages as far as the lower forty-eight states where they were forbidden to speak their languages and cultural expressions, and were sometimes subjected to various forms of abuse. Cultural practices were outlawed in villages as well. The results were cultural confusion made worse by the presence of alcohol. World War II exposed Alaska to the rest of the U.S. as never before. Following the war more settlers came and the United States military began to build installations in every part of the state. Thousands of soldiers were stationed on bases before and after the war. The war brought more of that continual contact which carries the significant implications for cultural change up and above that detailed in government policies. (Brems and Sullivan, 1997; Fortuine, 1989)

Against this backdrop, alcohol related problems increased consistently throughout Native communities: the levels of suicides, hospitalizations, domestic violence, and the need for social

services rose dramatically in the second half of the twentieth century. (Brems and Sullivan, 1997)

### **The Inexorable Tide III: Beyond the 1970's and into the Modern Era**

The 1970's brought an oil boom to the state, but only after the 1971 Alaska Native Claims Settlement Act (ANCSA). The state's economy had traditionally been based on boom-bust cycles with each boom being more widespread than the previous. The state of Alaska has been living on oil since the 1970's and it was money from the boom which brought an end to the forced boarding schools. With the oil money and a court decision, the state built massive schools in villages, large and small, and instituted a state-run village television service. The oil money brought liberation from the boarding schools while simultaneously bringing new, modern assaults on the culture, and ANCSA forced the communities to manage their lands as if they were corporate entities. Any rapid transition has consequences and, during this period, it became apparent that the extent of the problems facing villages was extreme and that alcohol was a problem as well as a symptom of greater problems.

In March of 1988, *The Anchorage Daily News* published a reported entitled "A People in Peril" bringing attention to the crisis in Village Alaska and it was now undeniable that oil wealth had not improved everyone's lot. This report marked the culmination of the events of the modern era, now that Alaska was much like the rest of the country with a relatively stable, sustainable economy for the first time. Investigating the changes in Native communities that have brought the villages to the brink of cultural and physical extinction suggests that alcohol is by no means solely responsible for the present plight, but is inextricably intertwined with the cumulative effects of deculturalization. (Brems and Sullivan, 1997)

In 1976, at the peak of oil-related growth, the Native suicide rate also hit its peak. Clearly the Native communities by the 1970's did not resemble the sturdy and hardy, well-functioning communities described in the 1700's. Since the 1970's most of the Native villages throughout the state have exercised their "local option" initiative and voted either to prohibit alcohol or severely limit its presence, a solid proactive autonomous step. (Brems and Sullivan, 1997)

While most Native villages throughout the state are now completely dry or "damp" (importation allowed by individuals for personal consumption only), alcohol continues to plague the Native populations in ways that have not changed. Binge drinking, while still common, has tended towards more chronic consumption over time.

The health of communities often remains influenced more by alcohol than any other single source. The present suicide rate among Native males age 20-24 is roughly twenty-six times the national average and four times for male and female adolescents. The data from one recent year reveal that 79% of the Natives who committed suicide had detectable levels of alcohol in their blood. The literature suggests that suicide and alcohol is more closely associated among the Native populations than in non-Native groups. Alcohol serves as a relief from cultural confusion and increased incidence of suicides carries the implications that, with an decreasing sense of autonomy, the Native populations are ever more unable to sort out minor stressors. Suicide among the young is, after all, the ultimate statement about hope for the future. These suicide

numbers mark a 500% increase since the early 1960's. The state of Alaska as a whole has relatively high suicide numbers, however while the Native population constitutes 18% of the population, 49% of the suicides are Native. (Brems and Sullivan, 1997; Baumeister, 1991)

### **Commentary**

An examination of the historical and contemporary role of alcohol in northern aboriginal life instantly offers the realization that issues regarding alcohol are not static. The negative effects of alcohol have become institutionalized to the extent that premature death and disease resulting directly or indirectly from the use of alcohol have likewise become institutionalized. After placing the evolution of alcohol's role in a historical context what is to be learned? What questions should now be asked? Does the traditional acceptance of early death due to the extreme environment linger to influence modern notions of death regarding alcohol? Interestingly, while life in extreme environments should have become less fraught with danger due to the security brought by modernity, the acceptance of premature deaths seems not to have changed in any appreciable way. Thus unnecessary premature deaths continue to be regarded as environment-related. I suggest this 'natural death' perspective---a sense of fatalism---coupled with the power of alcohol creates a scenario making it difficult for communities to overcome alcohol's devastation.

"We were lucky to have him as long as we did" is the inscription on the grave of a recently deceased 22 year old, which implies a paradigm regarding death that is not easily understood by those outside of the Native communities. Along the north bank of the middle Yukon River up from the only "wet" village, the traditional cemetery is maintained at the old village site. The cemetery sits on a bank rising up on the north side of the river and from the boat the setting looks serene and peaceful, but a stroll amongst the highly ornamental graves leaves a decidedly different impression. I wandered through the graves with some Native kids who put stories with the markers, "...they say he died in a snow machine accident." The cemetery has numerous such stories buried underneath the elaborate grave caps. Each grave is shown respect and visitors leave gifts that the dead liked; quite often the gifts are various bottles of alcohol.

While suicide rates have increased, not all of the momentum has been counterproductive. The state's maturing, stable economy is better suited to respond. In the late 1980's, the Fetal Alcohol Syndrome (FAS) rates reached 20/1000 regionally and attempts to reverse the trend in FAS have made progress through massive education and related support networks. Healthy communities require healthy youth. Most villages have taken the initiative to make the sale of alcohol illegal. However, the chronic problem persists and historical indicators do not suggest a reversal in the overall influence of alcohol on village life. Any actions taken to address alcohol problems examine the historical record and the sense of fatalism revealed by the wake of the inexorable tide of alcohol's destruction. (Brems and Sullivan, 1997) The US Native Health Service now operates out of a new hospital in Anchorage dedicated solely to the needs of the Native community. The new facility, which replaced a well weathered old TB sanitorium, was designed for the various cultural groups and with the recognition that the hospital also had to serve families that come in from villages for a member's stay. Such a facility goes far to show respect relative to the old facility and may be able to offer the long term infrastructure necessary to

address a problem 250 years in the making---a problem that began with a drink offered to a Chugach man, who, incidentally, spit out Bering's gin out of disgust.

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# HERCULES: A METAPHOR FOR ILLNESS

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## ABSTRACT

**Hercules is arguably ancient Greece's greatest hero; his feats of strength are amongst the most well known in Greek mythology. However, it is not widely known that Hercules had a bout of madness around the time of his legendary 12 labors. Different literary authors had different interpretations on what caused Hercules to go mad and kill his wife and three children. Prior to Hippocrates' book dealing with epilepsy, *On the Sacred Disease*, Greek writings by Apollodorus, Diodorus Siculus, and Euripides proclaim that divine intervention caused Hercules to go mad. In contrast, literature authored by Aristotle and Seneca following Hippocrates' writings suggest that no divine intervention was involved, but rather natural causes had made Hercules go mad. In other words, there was a change in the interpretation of the myth of Hercules that coincided with a change in how Greek society perceived the causation of illness.**

**This subtle change in ancient Greek literature illustrates the impact of Hippocrates' writings on the societal perception of illness. Before Hippocrates', it was generally believed that supernatural forces were responsible for uncontrolled seizures and attacks of madness. *On the Sacred Disease* introduced the concept of natural causation, particularly humoral theory, in disorders affecting the mind. The change in perception of Hercules' madness reflects this change in thinking about mental illness.**

## **Hercules: Greece's Greatest Hero**

The fictional character Hercules was the most famous hero of ancient times. Stories of his incredible strength and courage have been told from the times of ancient Greece to present day. It should be noted that different versions of the myth of Hercules exist because of the number of different authors. The following account is congruent with early Greek myth, considered to be the traditional story. Alcmena, who was the wife of Amphitryon, refused to sleep with her husband until he avenged her brothers, who had been killed in a cattle raid at Argos. The night before the successful Amphitryon returned, Alcmena slept with Zeus, under the impression that he was her husband. Zeus was the most powerful of gods, and therefore could do anything he pleased, including posing as Amphitryon. To complicate matters further, Zeus was married to Hera, the queen of the gods. Although she was extremely upset at Zeus for his affair with Alcmena, she knew that attempting revenge on Zeus would be futile because of his great powers.

Consequently, she decided to channel her jealous revenge towards Hercules, the mythical son of Alcmena and Zeus, by making his life as difficult as possible. For example, Hera sent two snakes to kill Hercules as an infant only to have Hercules destroy them with his incredible might!

### **Hercules' madness**

Perhaps one of Hercules' most famous myths was his twelve labors, some of which were the Nemean lion, Erymanthean boar, the Augean stables and the Lernean Hydra to name a few. It is less well known that Hercules suffered a bout of madness around the time of his twelve labors. Classic Greek myth, as recorded by Apollodorus and Diodorus Siculus, places Hercules' madness prior to his 12 labors. However, Greek plays written by Euripides and Seneca reverse this sequence of events by placing his madness after the 12 labors.

Euripides' *Heracles* provides the most detailed account of Hercules' madness. The initial phase was characterized by the following:

- Wild movement of the head and eyes (“wildly tossing his head...and rolling his eyes”)
- Loud moan or cry (“he bellows fearfully, calling on the goddesses of nether hell”)
- Increased body temperature (“my fevered breath in quick spasmodic gasps escape my lungs”)
- Impaired respiration (“nor can he control his panting breath”)
- Excessive salivation (“foam was oozing down his bearded cheek”)

Following this initial stage, Hercules proceeds to kill his wife and children. He then loses consciousness and enters a period of sleep. After some time, Hercules gradually regains consciousness but suffers from headache, extreme fatigue and mental confusion.

Some scholars have debated whether Hercules' madness was really a grand mal epileptic seizure. This controversy could be the subject of a manuscript by itself, and will not be explored any further in this discussion. However, it is important to note that whether Hercules' madness was due to epilepsy, mania or psychoses, ancient Greeks viewed epilepsy in the same light as other disorders of the mind (Simon 1978). In other words, the definitive diagnosis of Hercules' condition is not terribly significant for our purposes; the concept that Hercules experienced a sudden, violent episode affecting his mental control will suffice.

**Comment:** Omit?

### **Different interpretations in the etiology of madness**

Greek writers interpreted Hercules' madness in one of two ways: either the madness was caused by divine intervention or the episode was the result of a natural phenomenon. The predominant belief in ancient Greek culture was that the violent, uncontrolled attack that Hercules experienced must have been a form of punishment from a supernatural being, in this instance Hera. With regard to epilepsy, and other diseases of the mind for that matter, Hippocrates wrote, “Men regard its nature and wonder, because it is not at all like to other diseases. And this notion of its divinity is kept up by their inability to comprehend it.” However, it was Hippocrates' *On the Sacred Disease* that revolutionized how epilepsy and mental illness were perceived. After this treatise, several Greek writers postulated Hercules' madness to be a natural process. Thus, this change in interpretation is a direct consequence of the change in perception of mental illness.

In other words, the myth of Hercules is merely a literary representation of the shift in how Greeks thought of illness.

A divine cause of Hercules' madness can be explored in three major sources: Apollodorus' *Bibliotheca* (~150 BC), Diodorus Siculus' *History* (100 BC) and Euripides' *Herakles* (421-416 BC). At first glance, it may seem contradictory that *Bibliotheca* and *History* were both written after Hippocrates' *On the Sacred Disease*, which was written around 400 BC, and yet support a divine cause for Hercules' madness. How could literary works some 250 to 300 years after Hippocrates' revolutionary treatise still interpret Hercules to be supernaturally induced? Both Apollodorus and Diodorus Siculus used earlier works as sources for their writings, and therefore, their work represented the myths of early Greece (Shelton 1978). As well, both authors did not alter these early Greek myths with their own artistic interpretations. Subsequently, the influence of the Hippocratic writings would not be present in these texts. Contrast these two classical records of Greek myth with Euripides' *Herakles*, a Greek play that introduces artistic interpretation into the madness of Hercules. Perhaps one of the most significant alterations Euripides introduced was the timing of Hercules' madness. Early Greek myth contends that Hercules was sent mad by Hera and as a consequent punishment for killing his wife and children, he had to perform the 12 labors. On the other hand, Euripides places Hercules' madness after having completed the 12 labors when Hercules is at the height of his glory (Shelton 1978). Regardless of its timing, all three sources suggest that Hera, with the intent of punishing Hercules, is responsible for the fit of madness.

Now that we have examined the myth of Hercules prior to the Hippocratic writings, let's focus on how mental illness, particularly epilepsy, was perceived during the same period. Epilepsy was considered by many to be a 'sacred' disease; the catastrophic nature of the disease led people to believe that this must be a god-sent affliction. In other words, seizures were considered as punishment for a past wrongdoing (Temkin 1994). Why else would epileptic patients be subjected to such terrifying manifestations? In fact, epilepsy literally means 'seized' or 'captured' because of the dramatic and uncontrollable events that occur. As emphasized earlier, severe mental disturbances such as mania or psychoses were perceived in a similar fashion with epilepsy.

With Hippocrates' *On the Sacred Disease*, the notion that epilepsy and severe mental disturbances have natural causes was introduced. Hippocrates wrote, "It is thus with regard to the disease called Sacred: it appears to me to be nowise more divine nor more sacred than other diseases, but has a natural cause from which it originates like other affections." Hippocrates goes on to suggest that a reduced breath or pneuma to the brain, due to phlegm or bile blocking blood flow to the brain, is the cause of a seizure. Furthermore, the impact of the treatise on Greek society was amplified because it was addressed to laymen, not just scholars.

Following *On the Sacred Disease*, two works proposed a natural causation for Hercules' madness: Aristotle's *Problems* (384-322 BC) and Seneca's *Hercules Furens* (4 BC -65 AD). Aristotle added to Hippocrates' humoral theory of seizure causation by suggesting that an excess of black bile was responsible. He postulated that an excess of black bile characterized melancholic diseases, which include madness and epilepsy. In addition, Aristotle linked melancholic disease with geniuses that included Plato, Socrates and Hercules (Simon 1978;

Temkin 1994). On the other hand, Seneca's *Hercules Furens* was written as a play and, therefore, had an artistic interpretation of Hercules' madness. According to Seneca, the madness was not a sudden occurrence; instead, it was a gradual process (Shelton 1978). In fact, the madness originated within the individual and was an exaggeration of Hercules' personality features such as violence, success and reputation (Shelton 1978). In other words, Hercules' madness had a psychological origin. Another suggested explanation is the extreme exhaustion from completing the 12 labors triggering Hercules to become mad (Shelton 1978).

The contrast between Euripides and Seneca's artistic interpretations of Hercules' madness best illustrates how the perception of illness had changed. Because both of their texts include a fair degree of creative alteration, it is reasonable to assume that their work reflected societal beliefs during their respective times. Authors tend to draw from the culture that surrounds them in formulating ideas and concepts for their writing. In this light, Euripides conveyed the predominant thinking prior to the Hippocratic writings in his play, *Herakles*. By making Hera responsible for Hercules' madness and another goddess, Pallas Athene, the force behind Hercules' unconsciousness, Euripides has paralleled the societal belief that mental illness has an external cause. However, after the denunciation of such ignorance by Hippocrates, the concept that mental illness had natural causes spread throughout Greek culture. Seneca's *Hercules Furens* illustrates the impact of this revolutionary treatise: internal processes caused Hercules' madness and his unconsciousness was the result of exhaustion. Therefore, when comparing Euripides' play to Seneca's, the shift from an external causation to internal is evident.

## Conclusion

The significance of Hippocrates' *On the Sacred Disease* was that it was the first text to suggest a natural cause for epilepsy and associated psychological disorders. Consequently, the popular perception of mental illness in Greek society was altered. This change in perception influenced how Greek authors and scholars interpreted the myth of Hercules' madness. In other words, the myth of Hercules was a window to societies' view of illness. Hercules was a metaphor for illness.

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# METAPHORS THAT HEAL: MAGIC, MOON AND MILITARY METAPHORS OF ILLNESS

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## ABSTRACT

“Illness is the night-side of life, a more onerous citizenship. Everyone who is born holds dual citizenship, in the kingdom of the well and in the kingdom of the sick. Although we prefer to use only the good passport, sooner or later each of us is obliged, at least for a spell, to identify ourselves as citizens of that place....Yet it is hardly possible to take up one’s residence in the kingdom of the ill unprejudiced by the lurid metaphors with which it has been landscaped.” (Susan Sontag, *Illness as Metaphor*, (1978), p.7)

“The metaphor is perhaps one of man’s more fruitful potentialities. It’s efficacy verges on magic, and it seems a tool for creation which God forgot inside one of His creatures when He made him.” *Jose Ortega Y Gasset*

In the opening chapter of her famous essay, *Illness as a Metaphor*, Susan Sontag maintains that the "healthiest way of being ill" is by not viewing illness as a metaphor. In *AIDS and its Metaphors*, Sontag continued to argue how metaphors of illness, including metaphors of AIDS, perpetuate stereotypes of patients and promote a dialogue about disease with harmful language.

Sontag's mission, in *Illness as a Metaphor*, is towards a "liberation" of illness from metaphors. Sontag argues against the use of metaphors for a variety of reasons: the use of metaphors makes society’s ability to "come to terms with death" much more difficult and metaphors serve to distort and distance the experience of the illness.

Applying Sontag's analysis of metaphors to texts such as *Borrowed Time: An AIDS Memoir* (Paul Monette) reveals how metaphors can empower patients and their caregivers rather than alienate them. Monette deftly uses vivid metaphors to relay the devastating effects of AIDS in a manner that challenges Sontag’s argument.

Monette’s book, and other works of literature, suggest that when metaphors are intelligently controlled *by those who are ill* then metaphors are deflated of their harmful effects. Instead metaphors become a tool with which the ill, and those around them, can use to heal, manage, and describe their disease.

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Susan Sontag, in her book *Aids and its Metaphors*, argues how metaphors of illness, including metaphors of AIDS, are destructive since they perpetuate stereotypes of AIDS patients, their lifestyles, and promote a dialogue about AIDS with harmful language. In contrast, Paul Monette’s memoir is filled with magic, moon, and military metaphors that effectively convey the struggle of battling with AIDS in a vacuum of information and resources. Monette’s representation of AIDS considers Sontag’s argument of the dangers of metaphor; however, Monette’s intention, to make his personal experience with AIDS accessible, and empower both himself and Roger, requires the use of these metaphors. Applying Sontag’s analysis of metaphors to *Borrowed Time: An AIDS Memoir* reveals some damaging consequences, however throughout the memoir, Monette maintains control of the metaphors. By using metaphors to make the last months of Roger’s life tolerable, Monette’s memoir demonstrates how instead of alienating the ill, metaphors can empower them.

Monette, as a writer, feels the need to create a narrative that illuminates the AIDS struggle to his reader. For him, metaphors are educating tools and this value outweighs any detrimental effects. One of the metaphors Monette uses throughout *Borrowed Time*, a magic metaphor, reveals the alienation and panic he feels in the face of the AIDS apocalypse. Monette’s use of words such as totems, elixirs, mantra, magic, palmist, hex, shifting veils, and amulets tends to emphasise these fears. These words reinforce a somewhat child-like denial of the situation and Monette’s panicked wishful hope that there are omens in every act. These words also associate AIDS with mystery, and echo Monette’s anxiousness about dealing with such an unfamiliar disease. The magic metaphor helps him cope with the immensity of AIDS. For example, he writes of the first time he and Roger discuss AIDS:

“Merely to pose the question was by way of another shot of magic. Mention the unmentionable and it will go away, like shining a light around a child’s bedroom to shoo the monster.” (Monette, 1990, 9).

The magic metaphor is instructive, revealing to readers the contradictory emotions and intense upheavals Monette suffers. The magic metaphor also implies a “cult” of AIDS and describes the isolating experiences of having AIDS. Monette writes of the attempt gay men make to absolve themselves of past sexual experiences: “The magic circle my generation is trying to stay within the borders of is only as real as the random past.” (6). The metaphor shares with readers Monette’s sense of hopelessness—since there are no real cures, AIDS patients, and Monette, resort to something for magical for a cure. Even the vigilant search for symptoms is given in magical terms: “I read my tongue like a palmist before I went to bed at night” (32). Monette

relies on magic throughout the book to reassure himself, "... Cesar projected a glimmer of magic for my sake if not his own," (44). Many times throughout the book Monette yields to the impulse to have charms and "amulets" against the disease: "I uttered the words [AIDS] like a sort of reverse hex, as if by daring to speak I would neutralize its power" (63). Monette heavily uses magic and fantasy to comfort himself and project a possibility of being "home-free," or AIDS-free (88). The magic metaphor becomes a refuge for Monette and protects him from the harshness of AIDS.

With the use of magic metaphors, Monette sometimes presents a simplistic view of AIDS; a view, Sontag argues which does not represent AIDS accurately (*AIDS*, 135). Sontag also writes: "Thinking in terms of *stages* is essential to a discourse about AIDS" (*AIDS*, 109). However, Monette's constant use of the term "magic bullet" implies a one shot cure for Roger (185). Monette's tone even indicates that he believes the "elixirs" will magically, somehow, cure Roger: "Because he couldn't die, not with the drug just a week away. For this precisely what was so tantalizing in the rumours of AZT, that it was turning people around even from the verge of nothingness" (207). What is lost in provocative expressions, such as "magic bullet," are the varying degrees of sickness associated with AIDS. In this respect, Sontag is right: this metaphor deludes people into believing one simple, clean solution exists. But, Monette is able to neutralize the power of his magic metaphor by balancing it with objective, factual descriptions. He counters his use of elixirs and totems with reports of what is happening in Roger's body: "The white blood count was healthy, say, 3,000, but after a few weeks of AZT it would start to swing down" (228). He also uses these words (elixirs, totems), interchangeably with the real drugs: "By the beginning of May we had the four drugs straight in our minds. Besides HPA-23 you had suramin, foscarnet, and isoprinosine—I know these words now the way I know Alka-Seltzer and Bufferin" (109). The magic metaphor is not, by far, the strongest metaphor in the book. Monette acknowledges how his "guilt and doomsday magic were keeping [Roger and him] from reclaiming the fullest measure of life" (279). The magic metaphor provides readers with insight into Monette's battle of the unknown, a battle in which he requires magical protection. Monette justifies the use of his magic metaphor and phrases such as "magic bullet," by writing how it seemed a "...necessary lie people tell so they won't go mad from the horrors of war" (279).

At the very beginning of the memoir, Monette writes of his persistence in discovering new treatments: "Perhaps it is just very human to want to die with your boots on. I don't know if that's cowboy or combat metaphor, but both are perfectly apt" (28). Here, Monette displays two things: first, that he is using metaphors consciously, and furthermore, his admission that metaphors are appropriate. Sontag's mission, in *Illness as a Metaphor*, is towards a "liberation" of illness from metaphors (*Illness*, 4). Monette, however, with the use of his second metaphor, demonstrates the alienation Monette and Roger experience, "...March 12—the day of Robert's diagnosis in 1985, the day we began to live on the moon" (2). Monette, however, uses words such as "moonfolk" and "moontalk," the idea of the moon being "unpredictable," "moon appendages," and the "naked high-tech gear" Roger required, to described their distanced feeling from the rest of the world (70, 164, 175, 292). The moon metaphor also applied to the nurses who, "...with shaking hands, masked and gowned like astronauts, sweat beaded on their foreheads," added to the moon-aura (90). The moon metaphor reinforces to readers both people's fears of AIDS and Monette's own concern over infection and germs. He writes,

“Already I went out in public as if I were on the moon,” and “But we were on the moon, and they weren’t, and we usually declined their invitations” (69, 172). The moon metaphor provides the reader with the sense of loneliness and exclusivity AIDS imposes.

In one aspect, the moon metaphor works effectively to convey the sense of alienation Monette and Roger experience. However, the moon metaphor that accompanies descriptions of the hospital does present an intimidating portrait of AIDS treatment. Monette writes of a visit to the dentist where the dentist takes many precautions: “...I was staring at his white isolation mask, which seemed to clinch that I was as much on the moon as Roger was” (114). This recalls Sontag’s discussion of “metaphoric trappings” and their consequences: “they inhibit people from seeking treatment early enough, or from making a greater effort to get treatment. The metaphors and myths, I was convinced, kill” (*AIDS*, 102). Monette does describe hospitals as cold, distant, and isolating environments, yet he does not let this discourage him from tapping the “underground” for information and presenting it to Roger’s doctors (338). *Borrowed Time* is a testimony to how long Roger lived in spite of the moon-like sanitized environments of hospitals, and the lack of treatments and knowledge of AIDS. Monette displays a contempt for those friends who are afraid of that “nether place” of hospitals and he felt a “...kind of nuclear contempt for those who practiced it anywhere in Roger’s orbit” (70, 71). Monette thus does not expect his moon metaphor to scare people away from their duty to investigate AIDS and support AIDS patients. This book, even when it presents an intimidating portrait of hospitals, inspires because of the energy Monette puts into obtaining treatment, drugs, information on side effects, etc. Monette also deflates his own use of the moon metaphor by comparing it to the glittery Hollywood scene: “But who were the real moonfolk here—we or they?” (95). He effectively reduces the impact of his own metaphor by showing his readers who he thinks is really out of touch.

Interesting enough, what counteracts the fear projected from Monette’s alien/moon representation of hospitals is his use of military metaphor: “An offensive strategy began to emerge on the island of 1028, especially as I took an increasingly hands-on role, pestering all the doctors” (92). In the middle of the book, Monette describes how he and Roger were energized to struggle for so long, and attributes their survival to their view of themselves as an army:

“But if I have any sense at all of how we persevered for so long, I comes down to an equal measure: an unwavering goal to beat it, and the group of two for an army. In combat Roger had no choice but to battle the physical side, while I engaged on the metaphysical front. A simplistic formulation if you take it too far, I know, but it took us further than either of us could ever have gone alone” (101).

The third and main metaphor throughout Monette’s book is the military metaphor. Monette talks about his “fellow warriors,” a “bullet wound from the biopsy,” feeling “shell-shocked,” and being diagnosed pre-AIDS like “a fuse on a keg of powder” (18, 38, 75, 31). These references to battles, fronts, frontlines, bulletins, etc., all convey the drama of living with and trying to treat AIDS. Monette’s use of the military metaphor does not denigrate AIDS patients. Instead, HIV, the symptoms, the hospital, and ignorance become the enemies, not the AIDS patient/activist who remains a “hunter” and “warrior” (18, 106). By appropriating the empowering language of warfare, Monette uses the metaphor as a source of strength. Monette also acknowledges that a

danger of relying on metaphors is an oversimplification of reality (“A simplistic formulation if you take it too far, I know...”). But the beauty of metaphors, he seems to be arguing, is their ability to bestow power and determination (101). Monette uses the military metaphor to propel him and Roger forward and demonstrate their tenacity:

“At first you are equipped with a hundred different amulets to keep it far away. Then someone you know goes into the hospital, and suddenly you are at high noon in full battle gear. They have neglected to tell you that you will be issued no weapons of any sort. So you cobble together a weapon out of anything that lies at hand, like a prisoner honing a spoon handle into a stiletto. You fight tough, you fight dirty, but you cannot fight dirtier than it.” (2)

To relate to his readers, Monette must first allow them to understand AIDS—not in abstract, scientific terms—but with a simplicity that elevates AIDS into the personal lives of his readers. For example, Monette writes: “In this stark and hyperreal world of the war, I had to focus on our enduring love, for it was every bit as actual as the horror (178). In these small descriptions, Monette invites the reader in to the ‘war’ to help them comprehend the terms of living with the terror of AIDS (41). In another instance, Monette uses the military metaphor to celebrate Cesar’s recovery from an infection: “He had pushed the enemy back. The border was barely secured, the truce uneasy, but here was a man returned from the front lines” (42). AIDS patients and their activist lovers are not the only people presented as “warriors” by Monette; he even includes Roger’s parents as fighters, and places them in empowering roles: “They proved to be so heroic and so unflinching on the front lines that it’s hard to recall when they were just the parents, benign in twilight” (51). He also places friends and acquaintances with AIDS, like Bruce, into the role of soldiers who fight admirably: “...he fired the first shot in the battle for AZT...” (145). Monette, therefore uses the military metaphor to commemorate the AIDS patients, celebrate their treatment breakthroughs, and promote those around them into the struggle. In the same way Monette and Roger lived as if really in a battle, which gave them the strength to go “further,” the military metaphor carries the message of AIDS to Monette’s readers much further than otherwise possible (101).

It is, however, the “simplistic formulation” Monette mentions which Sontag warns can go too far (101). At the end of *AIDS and its Metaphors*, Sontag writes how society should give back the military metaphor since: “We—medicine, society—are not authorized to fight back by any means whatever...” (183). Sontag’s statement suggests an equally dangerous passivity towards illness and AIDS. When Sontag discusses the “language of warfare” debilitating those who have cancer, she neglects Monette’s interpretation of the military metaphor to empower himself and Roger against AIDS, to give them energy to keep up with the treatments in spite of the complications (64). Sontag’s main difficulty with the constant abuse of the military metaphor is the connection between the disease being “demonized” and the “inevitable” blame being put on the patient (*AIDS*, 99). Yet because Monette’s book is an elegy, Roger is never demonized but commemorated instead. The military metaphor makes Roger more of a war hero than a war victim, and provides a framework to help them both strategize AIDS, death and the hospitalizations. Sontag recognizes not all metaphors are “equally unsavory and distorting,” yet she asserts the military metaphor is the most “dangerous” (*AIDS*, 182). The military metaphor, she believes, provides not only a “...justification of authoritarian rule but implicitly suggests the

necessity of state-sponsored repression and violence” (*AIDS*, 182). Monette, in *Borrowed Time*, turns the metaphor around; in his book the military metaphor justifies a kind of militancy required by the sick to push for more treatments, to gather information. He writes: “...there is considerably more cooperation as people with AIDS dictate the agenda of the fight themselves” (227). Monette avoids placing blame on the AIDS patient by using the military metaphor as a weapon against the disease and not against the diseased.

Sontag writes how the use of metaphors makes society’s ability to “come to terms with death” much more difficult (*Illness*, 8). Monette’s book, however, reconstructs a process of dying and affirmation of hope through AIDS and refutes Sontag’s claims. Monette’s reasons for writing this memoir are complex and he addresses different layers of the controversy and issues surrounding AIDS. Monette battles gay stereotypes, reveals the belated response of the government and scientific community in response to AIDS, both the denial and activism of the gay community and more importantly, creates a tribute to his late spouse, Roger. All of these reasons for writing the book are effectively communicated through the metaphors Monette chooses. As the Boston Herald remarks in their review of his book, Monette captures the “human side of AIDS.” When Monette refers to Susan Sontag’s, *Illness as a Metaphor*, he gathers from it her warning of “the scapegoating and self-blame that attach to certain diseases” (278). Monette continues, however, to use metaphors to instruct his audience, to explain the horrors of AIDS, the struggle for new treatments, and the necessary urgency.

Finally, although Monette uses metaphors extensively, he distinguishes between metaphors constructed by the ill to empower themselves, and the comparisons made by others. Monette recognizes the validity of Sontag’s argument by emphasizing how metaphors need to be controlled by the ill, or those close to the ill, to avoid being harmful. Monette balks at comparisons made by friends who try to sympathize with their own tragedies. He rejects their comparisons since they have not experienced the suffering. He states: “If hunger compares, or Hamburger Hill or the carnal dying of Calcutta, that is for us to say” (83). Even in his comments on those who try to comfort, Monette clings to his military metaphor, as if to demonstrate:

“...I came to revile the comparisons of others. Is this how a Jew feels when he hears “holocaust” appropriated to some other calamity? Yet I was still so wounded by the news itself, desperate for allies, that I didn’t have the wit to slam out of his office” (85)

Sontag does not consider this important distinction, introduced by Monette, of the ownership of a metaphor, in her discussion of illnesses such as AIDS.

Monette by using controlled representations of AIDS throughout *Borrowed Time*, proves representations of AIDS do not have to be sanitized, or metaphor-free, but can play a significant role in stabilizing the world of the ill, and providing readers with a bridge into such a world. Monette, as well, realizes the dangers of using metaphors to blunt or substitute for the reality of AIDS; he specifically discusses the double-speak that can dangerously cloud issues. He writes, with a slightly sarcastic tone: “I remember in the wake of the Chernobyl disaster, or was it the Bhopal disaster, midlevel officials speaking of the situation turning stable. Euphemism, the twentieth century’s most important product” (20). In the opening chapter of *Illness as a*

*Metaphor*, Sontag maintains that the “healthiest way of being ill,” is by not viewing illness as a metaphor (3). In an ideal world she may be right; Monette, on the other hand, vividly shows his readers the easiest way he and Roger found to deal with AIDS, and stay alive, was through the courage obtained from metaphors.

#### References

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**BIRTH CONTROL AND THE PHYSICIAN:  
THE PHYSICIAN'S POSITION IN THE  
BEDROOMS OF THE NATION**

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**ABSTRACT**

Birth control and abortion were not medical issues for the nineteenth century physician. Physicians were just beginning to succeed in establishing the legitimacy of their profession with the middle class family against a background of other health professionals offering health services. Condoms were associated with prostitution and abortions with midwifery and quackery; by condemning birth control, physicians were displaying professional elitism. Physicians also were establishing a niche as moral leaders for the family. In this role, they went so far as to rebuke women for trying to shrink from their moral responsibilities of having children.

The birth control movement in Canada did not begin until the 1930s but made great strides quickly. The movement opened birth control clinics in major cities and pushed the legislation towards the legalization of abortion and birth control. Few, if any, doctors were involved in the initial developments, even though the leaders of the movement believed physicians should dispense birth control. By the late 1930s, birth control had become morally acceptable for the married woman, and legally condoned following the Palmer trial in 1937. As a result, physicians made a stunning turnaround in their position. There was mounting pressure from patients who wanted medical knowledge and techniques from physicians, and physicians feared losing their patients to midwives who would provide this information. Abortions, which were once shunned by physicians, could be performed under new legislation only after medical consultation.

The position of the nineteenth and early twentieth century physician on birth control and abortion directly reflected their attempts to gain footing in the medical hierarchy. Although physicians initially maintained a position of disapproval towards birth control and abortion to display their contempt of midwifery and quackery, their ultimate monopolization of the health care profession was made in part through their gaining control of these controversial issues.

The desire to control our fertility has been present since ancient times. Every civilization since antiquity has written descriptions of contraceptive and abortifacient practices. Birth control in the nineteenth century consisted of traditional methods which had been passed on for centuries, but also saw the advent of modern devices. A combination of new social and economic factors that resulted from the urbanization and industrialization of the century increased the desire for birth control. The increased demand for birth control, in combination with the development of new birth control methods and the advent of the birth control movement through propaganda and advertising all contributed to declining birth rates. In Canada, there was a 30% decrease in the birthrate between 1851-1891,<sup>1</sup> and the birthrate continued to fall until after World War I.<sup>2</sup> This decline cannot be attributed to legalization of birth control, which did not occur until 1969, or to a medical revolution. Abortion and birth control were not a part of the medical practice of the nineteenth century physician. The transition from a code of silence maintained in public to active participation in the birth control movement and legitimization of birth control as medical practice was associated with the establishment of physicians in first half of the twentieth century.

For centuries, women and physicians have recognized that there are often medical reasons a woman should avoid conception to avoid endangering her own life. As well, women often had personal reasons to avoid conception in order to provide better for their husband and existing children. However, social and economic reasons for birth control trace their roots to the 19th century. Increased urbanization and industrialization, decreased ecclesiastical influence and a greater freedom for women played a major role.<sup>3</sup> A decline in child labour and increase in compulsory education for children reduced the economic viability of having more children. There were increased opportunities for women in the workforce. Neo-Malthusean doctrine spread new concepts and argued that limiting births would decrease poverty and increase the standard of living. These arguments were pervasive in early birth control propaganda.

The traditional methods of birth control, abstinence, and coitus interruptus, as well as folk beliefs and folk medicine were known and practiced by couples, but the nineteenth century introduced new methods of contraception. Male continence, in which there is no ejaculation, was propagated by John Noyles and the Oneida community in the second half of the 19<sup>th</sup> century. The concept of a safe period was introduced in the 1840s to lead to the rhythm method. The idea of a safe period came after the association between ovulation and menstruation was made in the scientific community in the 1840s. It was first published by Pouchet in 1847.<sup>4</sup> He described days 8-10 as fertile, 10-12 as rarely leading to pregnancy and days 12 and onwards as safe. Various authors described different safe periods in the cycle until it was correctly described in the 1920s.

Barrier methods of contraception included the condom, cervical caps, sponges and pessaries, all of which were widely available by the second part of the 1800s. Condoms, invented in the 16<sup>th</sup> century as prophylaxis against venereal infection, were used for contraceptive purposes by the 18<sup>th</sup> century. The invention of vulcanized rubber in 1844 allowed for mass production and distribution. Cervical caps had been invented in 1838. The idea of douching began with Dr. Charles Knowlton in the 1840s. There were 4 theories of douching and douching agents: firstly, a simple water douche could wash away the sperm from the cervix, secondly, use of an astringent was thought to close the cervix to prevent entry of sperm, thirdly, various solutions such as baking soda, Lysol, Borax and vinegar were thought to act as spermicides and lastly,

violent douching in the first two months of pregnancy was used to procure a miscarriage. Other methods designed to bring upon an abortion were through ingestion of caustic substances, vigorous exercise or mechanical dilatation of the cervix by the insertion of foreign objects.<sup>5</sup> As a last resort, a woman could find an abortionist through word of mouth advertisements.

Although widely practiced, birth control and abortion were criminal offenses. Under the Criminal Code of Canada, which was based on English law, "Every one commits an offense who knowingly, without lawful justification or excuse, ... (c) offers to sell, advertise, publishes an advertisement of, or has for sale or disposal any means, instruction, medicine, drug or article intended or represented as a method of preventing conception or causing abortion or miscarriage."<sup>6</sup> Despite these laws, information reached the public. Handbills and publications, mostly from the United States, were found to circulate in Canada. Information could be found in women's magazines and the popular press through subtly worded advertisements which retailers used to allude to the contraceptive properties of their products.<sup>5</sup> Apothecaries, drug companies and retailers participated through the sale of mechanical barriers and female potions with abortifacient properties. One could even find an abortionist through advertisements for specialist in "sexual disorders" or female problems.<sup>5</sup> In fact, the only noticeable absence from this lucrative business were the physicians of the day.

Doctors maintained a code of silence with regards to birth control and fertility in Canada until 1937. Although a doctor might advise a woman to avoid having further children to protect her own health, he would not enlighten her as to how this could be avoided. Prior to the 20th century, birth control was not thought to be a medical issue. Doctors avoided having to respond to the growing societal pressure to educate the public about birth and fertility control. Doctors, consequently, were able to also avoid the associations of birth control with quackery and midwifery and maintain a distance between themselves and these groups. At the same time, they established a role as a moral leader for the family.

Preventative medicine was not a large component of a doctor's medical practice. Public health problems such as infanticide, maternal mortality, and alcoholism were not addressed by physicians and patient education was not part of a routine doctors visit.<sup>5</sup> The subject of birth control as well was avoided. The majority of physicians maintained a silence about the topic with a vocal minority opposed for reasons to be outlined.

Physicians of this time were trying to establish their profession against other health professionals available and advertising to the lay public. Birth control and abortion were associated with quackery and midwifery. Through their condemnation of birth control, physicians tried to distance themselves from as well as discredit these groups by establishing a professional elitism. Although physicians had begun to establish that a formal medical education and medical license were necessary for medical practitioners, they were still competing with other groups and were trying to establish their patient bases. Physicians not only attacked the concept of birth control, but also many of the specific means used.

Originally designed to protect a man from syphilis, condoms in the nineteenth century were associated with prostitution and venereal disease. They were available for purchase for the public, but were expensive and therefore not practical to be used by a married couple

consistently to prevent conception. They were more often used by men with prostitutes to prevent the transmission of venereal diseases to themselves and their wives. The condom, with its sordid connotations, could not have been sanctioned by doctors, trying to legitimize and endear their profession to the middle class family, as a method of birth control for a married couple.

Sponges or pessaries were devices known to the medical field but not for their contraceptive properties. Sponges had at one point been recommended to realign the angle of the uterus, but this was not widely practiced. However, doctors failed to recognize or advertise their contraceptive potential. Physicians publicly condemned sponges for this purpose and condemned quacks who recommended their use.<sup>5</sup>

Physicians even found fault with the withdrawal method. They described physical and psychological detriments suffered by men and women as a result of ‘conjugal onanism,’ which they used to describe coitus interruptus.<sup>5</sup> Physicians believed both men and women suffered because they were deprived of full satisfaction, leading to nervous disorders: “nervous prostration, paralysis, premature debility and decay.”<sup>7</sup>

Canadian physicians were opposed to abortion by moral standards and were supported by its illegality in Canadian law. Doctors could not claim abortions were unsafe; a safe method to perform abortions had been described in 1840.<sup>8</sup> However, it was only condoned when a woman’s life was in grave danger and full medical consultation had taken place. Even these situations often drew controversy. In fact, abortions were discussed in medical circles only to warn doctors not to be tricked by women into performing the operation.<sup>5</sup> Physicians were often approached to perform abortions before the quickening, when the woman can feel the fetus move. Physicians were angered at the common misunderstanding that pregnancy did not begin until the quickening and that women made these requests without guilt or shame. Although morally opposed to abortion, many physicians did not realize that if they were to provide their patients with reliable options for birth control, their patients would not have to resort to abortions when their own methods failed.

Physicians did recognize the need of families to space their births and could recommend some natural means to limit conception: abstinence, prolonged nursing and the rhythm method. The idea behind the rhythm method is to avoid intercourse during the periods in which the woman can become pregnant and that intercourse can be safely carried out during certain ‘safe periods’. This method would only be reliable, however, if the ‘safe period’ was calculated properly. As mentioned above, many physician’s publications claimed the ‘safe period’ was mid-month<sup>9</sup>, which can actually be the most fertile point of a woman’s cycle. Unlike condoms, female potions and abortion which were associated with prostitution, medical quacks and retail commercialism, doctors could promote the rhythm method because it was scientific. The ‘safe period’ had been determined by science (albeit incorrectly) and therefore, the medical profession could lay claim to their expertise of the method.

In trying to establish their niche, physicians attempted to fill a role as medical advisor and moral leader for the family. To maintain this higher role and discredit other health providers required a condemnation of most birth control methods, their associations, and abortion. It was felt that the

role of the family, especially the middle-class family, was to produce children and to practice birth control was to shrink from this duty. Physicians went so far as to feel it was their role to rebuke women who sought to control their own fertility.<sup>7</sup>

The birth control movements in Britain and the United States predated those in Canada. The acceptance of medical and scientific involvement in these countries may have helped Canadian physicians accept their role in the birth control movement in Canada. Francis Place, (1771-1854) can be credited as the founder of the birth control movement in Britain.<sup>3</sup> He distributed birth control propaganda in the form of handbills and led the way for the public distribution of contraceptive advice. His work influenced the United States where Robert Owen and Dr. Charles Knowlton published works on contraception in the 1830s. There were a noticeable number of physicians in the United States who published handbooks or distributed materials publically on birth control through the 1800s, many of which found their way illegally north of the border.

Although there is evidence that physicians began to disseminate information on birth control in the early 1900s due to public pressures and demand, the medical profession in Canada did not officially take its position until 1937. The Canadian Medical Association Journal declared that “properly controlled contraception has become part of preventive medicine”.<sup>9</sup> The consensus that physicians should move into the realm of medicine came from increasing pressure from the public and the newly formed birth control movement, as well as a pressure within the medical profession to maintain their own patient populations. The physician’s role was most influenced by social factors reflecting a change in the public and scientific perception of birth control, not a medical revolution in birth control technology.

Physicians were beginning to recognize the need of families not only to space apart their births but to limit the number of children in the family due to economic and social limitations. Women were increasingly pressuring physicians to share information on how to decrease their fertility. The proponents of the birth control movement encouraged women to pressure their own doctors hoping to influence physicians to join the birth control movement with pressure from the ground up. The growing pressure felt by the medical society to disseminate information and perform abortions also exerted financial pressure on physicians, who realized that they were losing a large section of the population. Women who went to midwives for birth control advice might also return to those midwives for their deliveries.

There was mounting pressure from the newly formed birth control movement that physicians become involved. Mary Hawkins, who started one of the earliest birth control clinics in Canada, believed that physicians should be the ones to teach the public about birth control, but because of their hesitancy to assume this role, it was left to educated women like herself to take on these responsibilities.<sup>5</sup> The early birth control clinics tried not to compete with hospitals, but to work with them in the hopes that doctors would ultimately become associated with these clinics.

The second reason physicians began to increase their interest was the birth control movement. Led by Stopes and Sanger, the movement was increasingly trying to encourage scientific research in the field of fertility and reproduction. As it became more of a science, physicians

were able to embrace the field as its own. The publication of the above statement by the CMAJ coincided with the release of scientific research on birth control in Britain and the States.<sup>5</sup>

Thirdly, birth control was becoming legitimized through the court system and public opinion. The Palmer trial in 1937 was a major step in legitimizing birth control from the legal front. Dorothea Palmer went door to door in Eastview, a small town on the Ontario-Quebec border discussing birth control with those behind the doors she knocked on. Palmer was arrested and charged for disseminating information on birth control. However, through the support of A. R. Kaufman, a philanthropist who had been enlisted to support the birth control movement, Palmer won her case by using the pro bono publico clause. The judge ruled that the law did not reflect current public opinion and that Palmer was serving public good through educating families on family planning.<sup>10</sup> The Palmer trial allowed the legitimization (if not yet the legalization) of birth control, showed that public opinion no longer thought birth control was morally reprehensible, and through its proceedings had allowed for open discussion of birth control by the medical profession.

By the end of the 1930s, physicians had not only jumped onto the birth control bandwagon, but had become an integral part of the dissemination of birth control advice to the public. The early birth control clinics developed in the 1930s became staffed by doctors, as their founders had originally wanted. By the 1960s, physicians were active in the birth control movement, and the CMA played an integral part in abortion legislation reform through their recommendations to the General Council.<sup>11</sup> Because of CMA recommendations, abortion reform revoked the power of a hospital therapeutics committee. The procurement of an abortion, once condemned by physicians as the realm of quacks and midwives, now lies entirely within the medical profession: an agreement between a woman and her doctor. As well, many birth control methods, such as diaphragms, cervical caps, and oral contraceptive pills are only available from a doctor's office.

At the turn of the 20<sup>th</sup> century, birth control methods were available and sought after. However, physicians distanced themselves from the early birth control devices and movement because of its associations with quackery, retailers and midwives. In trying to establish the medical profession in Canada, physicians took a moral stance against birth control. Physicians maintained their position through a code of silence regarding the topic or through public condemnation of birth control devices, abortion and its practitioners. Only when birth control became legitimized through scientific acknowledgment, public acceptance and legal condonement did physicians feel that birth control was respectable enough that it could be addressed. It was due to changes in the social climate, not any medical breakthroughs, that contraception entered the realm of the physician. Birth control and abortion, once dismissed by physicians as non-medical issues, are now strongly entwined with the medical practice.

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# **THE ETHICS OF AIDS RESEARCH IN THE DEVELOPING WORLD AND THE TRANSFORMATION OF SCIENCE IN MODERN MEDICINE**

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## **ABSTRACT**

**In November 1994, the results of AIDS Clinical Trials Group (ACTG) Study 076 were published in the New England Journal of Medicine. The purpose of this randomized, double-blind, placebo-controlled trial was to determine the efficacy of a regimen of the antiretroviral drug zidovudine (AZT) in reducing the risk of maternal-infant transmission of HIV-1. The regimen consisted of antepartum zidovudine, intrapartum zidovudine, and zidovudine for the newborn, and was shown to decrease the relative risk of transmission by 67%. Within two months of the announcement of these results, the U.S. Public Health Service recommended that the ACTG Study 076 regimen should be the standard of care for all HIV-positive pregnant women.**

**Since the first modern randomized clinical trial (RCT) was conducted in 1946, ethical issues have plagued this “gold standard” of evidence in clinical medicine, prompting the international medical community to agree upon strict guidelines for investigators using the study design. Following the Public Health Service recommendation, a storm of controversy began in 1997 when a number of U.S. government-funded studies were initiated in developing African and Asian nations to find a more cost-effective antiretroviral regimen than the one in the ACTG study. In the vast majority of these studies, not all the enrolled HIV-positive pregnant women would receive antiretroviral prophylaxis for maternal-infant transmission of HIV. Indeed, some women would not receive any active treatment at all, despite the well-established ethical guideline that placebos shall not be administered in an RCT when there is an existing, effective treatment available. To many, U.S. health officials seemed in clear violation of standards set by the World Health Organization.**

The situation, however, is not so straightforward. It is a complex ethical dilemma that can be better understood when seen as part of an ongoing transformation occurring in clinical research. What constitutes “good science” in medicine has come from being based on a physician’s clinical judgment and a patient’s reflections, to being based on sound experimental methodology and quantitative outcome measurement. The ethical and scientific problems of AIDS research in developing countries are now forcing medical scientists and clinicians to again rethink what “good science” really means. On November 3, 1994, about three-and-a-half years after its

initiation, the results of the National Institutes of Health's AIDS Clinical Trials Group protocol 076 (ACTG 076) appeared in the *New England Journal of Medicine* (Connor et al. 1997). In this landmark trial, the antiretroviral drug zidovudine (also known as azidothymidine or AZT) was administered orally to HIV-1 infected women during pregnancy, administered to them intravenously during delivery, and administered to their newborns for six weeks following birth. The regime was demonstrated to be capable of reducing the relative risk of maternal-infant transmission of HIV-1 by approximately two-thirds.

Because of these dramatic findings, the trial gained much media attention and was halted at its first interim analysis in February 1994 (Altman 1994). Two months later, the United States Public Health Service convened and concluded that the ACTG 076 regimen should be recommended as the standard of care for all HIV-positive pregnant women in the United States (Lurie and Wolfe 1997). An international group of researchers convened by the World Health Organization agreed with this conclusion after a general meeting in June 1994, but also recognized that at a cost of more than \$800 US per patient, the ACTG 076 regimen was far too expensive to be used as standard care in the majority of developing countries, where the problem of maternal-infant HIV transmission is greatest (DHHS 1997). It is estimated that there are currently more than six million pregnant women, predominantly in Asia and sub-Saharan Africa, infected with HIV (DHHS 1997). Unfortunately, the average annual health care spending per capita in many of these nations does not exceed \$10 US, rendering them economically incapable of combating the problem with drugs developed and used in industrialized nations (Morris et al. 1998).

### **The Ethical Problem**

The World Health Organization subsequently called for the exploration of alternative regimens to ACTG 076 that could more feasibly be implemented en masse in developing countries. Following the publication of the ACTG 076 results, eighteen randomized controlled trials were initiated in the United States prior to 1997 to explore the possibility of cheaper, yet as effective, antiretroviral drug regimes (DHHS 1997). Two of these trials were equivalency trials to be conducted in the United States, which would compare ACTG 076 to an experimental regimen. All the infected women in these trials would receive some form of antiretroviral prophylaxis.

In contrast, fifteen of the other sixteen trials were designed as randomized placebo-controlled clinical trials to be conducted in various developing countries, including Malawi, Uganda, and Thailand. Some of the infected pregnant mothers enrolled in these trials would be randomized to placebo groups and would receive no active antiretroviral therapy. The others would receive the non-ACTG 076 experimental regimen, which would typically be a short-course regimen of zidovudine.

Many critics of these placebo-controlled trials have vehemently argued that guidelines for the conduct of ethical research, including the Declaration of Helsinki and other guidelines more recently drawn by the World Health Organization, make it clear that control groups in any randomized clinical trial must be offered the best current treatment or the standard of care (Angell 1997). In this case, the best current treatment, and the standard of care in the United States, is clearly the ACTG 076 protocol. Critics argue that placebo arms cannot be justified on

the basis of a high-cost best current treatment, nor can they be justified on the basis that these trials in fact provide the “local” standard of care, since the standard of care for HIV-positive pregnant women in developing countries is, in the vast majority of cases, no treatment at all. To support their arguments, they cite guidelines drawn by the World Health Organization in 1993, which state that “The ethical standards applied should be no less exacting than they would be in the case of research carried out in [the sponsoring] country” (WHO 1993).

Despite strong criticism from members of the medical research community, the United States government has continued to provide support for these placebo-controlled trials. Furthermore, results from these trials have been published in a number of highly respected, internationally distributed journals. One placebo-controlled trial for short-course zidovudine, conducted in Thailand, was published in *Lancet* in March 1999 (Shaffer 1999).

How do the U.S. government, and the scores of investigators involved in these trials, justify placebo controls for studying the maternal-infant transmission of HIV? The debate between the critics of the trials, and the trials’ sponsoring institutions and lead investigators, can best be understood when placed in an historical context – in the context of an ongoing transformation in the science of Western medicine that began more than two hundred years ago. What constitutes “good science” in medical research and at the bedside has changed dramatically on at least two different levels. The remainder of this paper briefly explores this change, and demonstrates how the ethical problem of placebo-controlled trials in developing countries for AIDS research exemplifies it.

#### **Four Senses of Objectivity**

The manner in which physicians seek “truth” is central to how “good science” in medicine has been defined throughout history. Ways of arriving at truth include faith, deductive reasoning, discussion, measurement, observation, and experimentation. This list is by no means inclusive. In medicine, truth seeking can be seen to exist at two fundamental levels: at the level of clinical research, and at the level of clinical practice. At the level of clinical research, or at the level of the medical research community, physicians seek answers to questions such as “What is the best treatment for condition X?” and “What is the etiology of condition X?” In contrast, at the level of clinical practice, or at the level of the physician-patient interaction, physicians seek answers to questions such as “What is the correct diagnosis for this patient?” and “What is the state of health of this patient?”

The way physicians have gone about answering these two types of questions has undergone considerable change over the past two centuries, and accordingly, physicians’ approaches to the critical appraisal of scientific evidence, their approaches to diagnosis and treatment, and their approaches to ethical problems, have also undergone considerable change. To simplify things, we can view change at each of the two fundamental levels as one-dimensional, fluctuating in time from one extreme to another (the nature of these extremes will be explained shortly). Put together, change at the two levels can be represented on a simple Cartesian plane, with the two axes of the plane representative of the two levels, and with any given event in the history of truth seeking in medicine capable of being plotted, in theory, as a point on the plane.

In answering questions such as “What is the best treatment for condition X?”, physicians and medical researchers have gone from relying completely on their schooling, personal experience, and experiences of their colleagues, to relying on accepted standards of evidence, such as multicentre randomized controlled trials and systematic reviews. This represents a shift from the *disciplinary* approach to truth seeking, to the *procedural* approach to truth seeking. Thus, on our plane, *disciplinary* is one extreme of the clinical research axis, and *procedural* the other.

Paralleling this, the two approaches for answering questions such as “What is the correct diagnosis for this patient?” and “What is the state of health of this patient?” are the *dialectical* and *absolutist* approaches. Using a purely dialectical approach, a physician would rely on carefully discussing the patient’s illness, allowing the patient to explain symptoms in a qualitative manner. On the other hand, using a purely absolutist approach, a physician would arrive at a diagnosis by quantifying symptoms through tests, measurements, and physical examination techniques. Thus, referring to our plane again, *dialectical* is one extreme of the clinical practice axis, and *absolutist* the other.

These four extreme approaches to truth seeking, also known as the four senses of objectivity (Megill 1994), collectively make up the corners and edges of the Cartesian plane. In reality, actual approaches physicians and researchers have taken in the past exist somewhere between the boundaries of the plane, loosely clustered into four quadrants. Each quadrant, or era, is characterized by two of the four different approaches: one at the clinical research level, and one at the clinical practice level. Over the past two hundred years, we have witnessed approaches to truth seeking that have fallen into three of the four possible quadrants. In other words, three distinct eras have passed. I claim here that the aforementioned ethical problem is an event that marks the transition to the fourth era, which is now just beginning.

### **Towards the Disciplinary-Absolutist Era**

Prior to the 19<sup>th</sup> century, science in medicine, as we know it today, was still in its infancy. I call this vast period of time the disciplinary-dialectical era. As the name implies, the approach to finding effective treatments for disease conditions during this era depended largely on keen observations made by independent physicians on isolated patient cases. The approach to diagnosing and determining the health status of the patient consisted of discussing the patient’s symptoms and qualitatively evaluating the signs of illness. A number of schools of thought on how to arrive at medical knowledge and make clinical decisions came into existence, especially during the 17<sup>th</sup> and 18<sup>th</sup> centuries, and there were physicians of all sorts, practicing everything from Hippocrates’ age-old system of straightforward clinical observation, to phrenology and mesmerism.

At the beginning of the 19<sup>th</sup> century, with the rise of the basic sciences of pathology, physiology, and anatomy, diagnosis gradually became more focused on physical examination of the patient, with particular attention paid to abnormal structure and function (Davis 1981). Out of this, there arose the need to classify findings as normal or abnormal, and to place findings on a solid physiological and anatomical grounding. Johannes Müller’s seminal 1833 work, the *Handbuch der Physiologie des Menschen* (“Manual of Human Physiology”), facilitated the process of

classification enormously by providing the first comprehensive account of normal physiology based on the most up-to-date anatomical knowledge available at the time.

With equally rapid progress occurring in engineering technology, the next natural step was to develop instruments to quantify symptoms of disease. Throughout the nineteenth century, numerous instruments began to gain acceptance by physicians, ushering in a new absolutist era of objectivity where concrete diagnostic tests would come to prevail. Among these instruments were the thermometer, the stethoscope, and various devices to time the pulse.

Staying true to a theme that pervades virtually all of human history, the sweeping changes these technological advances brought on were not always welcomed by those at the mercy of this change. Members of the medical community were no exception, with the history of the medical thermometer worthy of particular attention because of the great number of physicians who initially resisted using the instrument in the clinic, and its ubiquity today (Davis 1981). Although thermometers have existed since the beginning of the 17<sup>th</sup> century, they did not become widely used by physicians until the end of the 19<sup>th</sup> century. F. W. Gibson, a British physician, wrote presciently in 1866: “the day is not, I think, very far distant when the physician will consider the thermometer not less indispensable to him than the stethoscope and microscope, and when the surgeon will not neglect the observations of the temperature” (Gibson 1866).

Physicians complained that the thermometer was cumbersome, bothersome to maintain, and the readings difficult to interpret and apply to patient care. Moreover, diagnosis in the latter part of the 19<sup>th</sup> century was more focused on local abnormalities of structure and function than on systemic signs and symptoms of disease. It was not until Carl Wunderlich (1815-1877) published his important monograph on clinical thermometry in 1868 that physicians’ opinions began to be swayed. With the monograph, Wunderlich provided the most systematic analysis to date of how to perform thermometry, and demonstrated the correlation between body temperature and the course of the disease process (Davis 1981).

### **From Disciplinary-Absolutist to Procedural-Absolutist**

Change from a disciplinary to a procedural approach to truth seeking in clinical research evolved much more slowly than the change from a dialectical to an absolutist approach in clinical practice. The fervent pace of technological advancement during the 19<sup>th</sup> century fueled the latter, whereas the former was dependent on the willingness of the medical community to adopt a new mode of thinking.

Many historians credit the Parisian physician Pierre-Charles-Alexandre Louis (1787-1872) for being one of the main instigators of the century-long debate that would eventually lead to the dawn of the procedural-absolutist era in the mid twentieth century. Controversy in the Parisian medical and scientific communities stemmed from Louis’s use of his “numerical method” to arrive at decisions concerning the efficacy of medical therapies. Although there were many others in the Parisian medical world of the late eighteenth and early nineteenth centuries who used similar methodology, Louis is of unusual historical importance because of his deeply-held belief that the physician could become scientific without leaving the clinic (Matthews 1995). Prior to this, science had little place in a physician’s day-to-day work with patients.

To a large extent, Louis used his quantitative approach to medical decision-making to test the efficacy of popular but untested therapies, and he is probably best known for casting doubt in the 1820s and 1830s on the benefits of bloodletting. To test the value of bloodletting in the treatment of angina tonsillaris, for example, Louis bled 13 out of 23 patients who had presented to him with the problem. He determined that the average duration of the disease for those not bled was 9 days, compared to 10-1/4 days for those who were bled, and subsequently concluded that the difference could only be attributed to the detrimental effect of the intervention (Lambert 1978).

The simple empirical methods illustrated by this approach foreshadowed the basic principles of present-day research methods by demonstrating for the first time how aggregative thinking about a population of sick patients, rather than just consideration of the abnormalities present within a single patient, could provide valuable information about therapeutics. Louis attracted scores of followers during the first half of the nineteenth century, among them other physicians, statisticians, and mathematicians. At the same time, many critics of Louis's approach made certain their voices were heard, and this sparked a vigorous debate in the Parisian Academies of Science and Medicine during the 1830s.

Among these critics were François Double (1776-1842), a clinical physician, and Benigno Juan Isidoro Risueño d'Amador (1802-1849), a professor of pathology, both of whom argued that the risk of descriptive statistics was overgeneralization. D'Amador once stated that the calculus of mathematicians "cannot be used to forecast a determined event, but only to establish the probability of a certain numerical proportion between two classes of possible events. But it is precisely this fact that makes it completely useless in medicine" (Matthews 1995).

Over the latter half of the nineteenth century, descriptive and inferential statistics gained wider support from physicians. Paradoxically, Louis's methods became unfashionable by the 1850s and 1860s because descriptive statistics had become so essential to clinical research that many leaders in the field came to believe that the science of medicine could be much more than empirical number-crunching. Louis had introduced his numerical method as the "science" of medicine, and now it was criticized precisely because of that, despite the method's widespread acceptance and use. The numerical method was now considered more a tool for the practicing physician than what constituted the basis of medicine's scientific foundation (Matthews 1995).

Friedrich Oesterlen (1812-1877), a German physiologist and physician, and Armand Trousseau (1801-1867), a disciple of Louis's, were two of the strongest advocates of a shift from description to causation as the primary focus of medical research. This provided the impetus for many researchers to embark on careers in laboratory-based research in physiology. Unfortunately, the great problem with this, as pointed out by the German mathematician and physicist Gustav Radicke (1810-1883), was that many of these researchers continued to employ something similar to Louis's numerical method. Descriptive statistics was clearly an inadequate tool to allow the physiologists to draw the inferences their experiments were designed to make, and many, according to Radicke, were practicing bad science because they lacked an appropriate knowledge of inferential statistics (Matthews 1995).

Francis Galton (1822-1911) and Karl Pearson (1857-1936), both British scientists, continued the push toward greater quantification in medical science by further demonstrating the need for inferential statistics in the interpretation of experimental data. Galton is best known in the world of biostatistics for pioneering the concept of the correlation coefficient, and Pearson established the first department of modern statistics at University College London to advance the study of genetic heredity.

In the early part of the twentieth century, a student of Pearson's, Major Greenwood (1880-1949), and Greenwood's American counterpart, Raymond Pearl (1879-1940), worked tirelessly to see the efforts of their predecessors come to fruition. Together, they attempted to bring advanced statistical methods closer to the domain of laboratory-based and clinical medical research by stressing that statistics should be a category of professional expertise, and that all physician-researchers should receive formal training in statistical methods. They wrote textbooks, trained students, published numerous articles, and documented the history of statistics, making considerable progress in raising the profile of biostatistics as a profession unto itself. By the time of Greenwood's death, the first randomized clinical trial had been performed, and opinion among medical professionals was rapidly shifting. Greenwood once said to Pearson: "I shall not live to see medicine quantified, but perhaps my baby will; in the meanwhile we must fight hard for the ideal" (Matthews 1995).

### **The Birth of the Procedural-Absolutist Era**

The ideal that Greenwood spoke of so longingly began to take shape through the work of Sir Austin Bradford Hill (1897-1991), the British epidemiologist who conducted the first modern randomized clinical trial. Hill was educated in statistical methods by Karl Pearson at University College and became Reader in Epidemiology and Vital Statistics at the London School of Hygiene and Tropical Medicine in 1933. Like his teacher, Hill firmly believed that "the worker in medical problems, in the field of clinical as well as preventive medicine, must himself know something of statistical technique, both in experimental arrangements and in the interpretation of figures" (Hill 1966).

In 1946, relying on concepts developed by R. A. Fisher in his work *The Design of Experiments* (1935) and his background in statistical methods, Hill designed a randomized clinical trial for the Medical Research Council to study the effect of the antibiotic streptomycin on tuberculosis. A total of 107 patients were randomized into two groups: 55 to a treatment group, which would receive the antibiotic, and the remaining 52 to a control group, which would receive only bed rest. The subjects were followed for six months, after which it was concluded that streptomycin significantly reduced the risk of mortality from tuberculosis.

Throughout the 1950s, Hill took it upon himself to promote the use of randomized clinical trials as a way of generating the highest standard of scientific evidence in medicine. However, despite the successes of the streptomycin trial, and the high ethical standards he had worked hard to maintain during the trial (the study was not blinded to minimize the hardship experienced by the patients), Hill was met with considerable opposition. Critics commented that RCTs lead to "the replacement of humanistic and clinical values by mathematical formulae," the degradation of patients "from human beings to bricks in a column, dots in a field, or tadpoles in a pool," and

“the eventual elimination of the responsibility of the doctor to get the individual back to health” (Matthews 1995).

Much of this criticism stemmed from the horrors of the barbarous, inhumane, and often-unscientific experiments carried out by Nazi physicians on human subjects during the Second World War, all of which were still in the limelight of the media with the start of the Doctors’ Trial in November 1946 (Annas and Grodin 1992). Hill and his supporters in the British medical community responded by suggesting rules of conduct and codes of ethics formulated specifically for clinical trials. These reflected the values expressed in broader, international codes of ethics such as the Nuremburg Code of 1947.

Although Hill’s work in Great Britain laid the foundation for the dawn of a new era of objectivity in the medical community, the triumph of the randomized clinical trial was ultimately due to a growing belief among policy-makers and the general public that the medical profession had to be more highly regulated. The thalidomide tragedy in Europe during the late 1950s was the key, highly publicized issue that ignited public outrage worldwide, and eventually led to the institutionalization of the RCT as part of public policy in most industrialized nations by the end of the 1960s.

The pharmaceutical thalidomide was originally sold under the trade name Contergan in West Germany beginning in 1956, and was marketed as a safe, effective sedative. By October 1961, case reports of an extremely rare birth defect called phocomelia (flipper-like limbs) began surfacing in medical journals, and a link was eventually drawn between these cases and women who had taken the drug during pregnancy. When the Merrell Company applied to the United States’ Federal Food and Drug Administration in September 1960 for the purpose of registering thalidomide for sale on the U.S. market, suspicions had already begun to arise concerning the safety of the drug. Approval of thalidomide was repeatedly and intentionally delayed so that investigations could be conducted, and when the drug was withdrawn from the West German market in November 1961, the Merrell Company voluntarily withdrew its application from the FDA the following March (Lambert 1978).

It was subsequently discovered that almost four thousand women of childbearing age had been prescribed the drug, raising the question around the world of whether the medical research community could still be trusted to make therapeutic decisions involving pharmaceuticals without government supervision. The American public answered this question with an overwhelming “no,” and passed the Drug Amendments of 1962 through Congress. Now, by law, there had to be proof of efficacy in the form of a double-blind randomized clinical trial before any drug could be sold in the United States, and labels had to disclose all contraindications, precautions, and harmful side effects. Furthermore, comprehensive regulations were imposed on the clinical testing of all new pharmaceuticals. The U.S. government now had final say about what experimental protocols for testing were necessary and appropriate before a therapeutic agent could be deemed safe and effective (Matthews 1995). The procedural-absolutist era of truth seeking had come to full force.

### **The Evolution of Equipoise**

Along with new laws in most industrialized nations around the world, the procedural age of objectivity in clinical research spawned numerous updated guidelines for ethical scientific investigation. To answer the question “What is the best treatment for condition X?”, medical researchers not only had to base their experimental designs on accepted models approved by institutions, but also had to adhere to strict rules of ethical conduct when their research involved animals and human beings as subjects. A very important ethical concept relevant to randomized clinical trials, and indeed, relevant to the ethical problem in AIDS research presented above, is the concept of *equipoise*.

Although the term “equipoise” originated in the mid-1970s, medical researchers have understood the underlying concept since the Second World War at the latest. The classical form of equipoise, synonymous with *theoretical* or *individual* equipoise, states that when “testing a new treatment B on a defined patient population P for which the current accepted treatment is A, it is necessary that the clinical investigator be in a state of genuine uncertainty regarding the comparative merits of treatments A and B for population P” (Freedman 1987). This concept is expressed in point 3 in the Clinical Research section of the Declaration of Helsinki, which states: “In any medical study, every patient – including those of a control group, if any – should be assured of the best proven diagnostic and therapeutic method” (WMA 1964).

The difficulty in using theoretical equipoise as an *a priori* condition for clinical research is that uncertainty about the treatments being compared must lie within each individual investigator. In his influential article entitled “Equipoise and the Ethics of Clinical Research,” Benjamin Freedman illustrates the limitations of this form of equipoise by describing the 1976 National Surgical Adjuvant Breast and Bowel Project (NSABP) trial that attempted to compare various surgical treatments for breast cancer. The three treatments being compared were segmental lumpectomy with radiation, segmental lumpectomy alone, and total mastectomy (Taylor et al. 1984).

The NSABP study ultimately failed to enroll enough subjects and was terminated. Later investigation revealed that a significant proportion of the 94 principal investigators involved in the trial found themselves uncomfortable telling their patients, as part of the process of informed consent, that they were uncertain of what the best therapy was for their cancer. Other surgeons felt very certain about which treatment was best, and were unable to justify randomizing patients into therapies they considered substandard in good conscience (Taylor et al. 1984). In essence, theoretical equipoise allowed the possibility for too much variation in the level of uncertainty among investigators. One investigator might be in equipoise about a therapy while another might not, making large-scale multicentre studies impossible to conduct.

In response to these problems, Freedman, in his 1987 paper, redefined equipoise to refer to a state of uncertainty about the efficacy of a treatment within the entire medical community, rather than within single clinical investigators. This definition came to be known as *clinical* equipoise, and is the definition most widely used today. Although in retrospect, this revised definition probably would have greatly improved the enrollment problem of the NSABP study, current clinical trials still face procedural difficulties because of a failure to satisfy the requirement of equipoise.

Three recent multicentre breast cancer treatment trials initiated by the National Cancer Institute (NCI) in the early 1990s provide a relevant and very recent example (Karlavish and Lantos 1997). Like the NSABP trial twenty-five years earlier, these trials failed to enroll a sufficient number of patients. Unlike the NSABP trials, however, the investigators in these trials probably did achieve a state of clinical equipoise. The key issue was that many prospective patients preferred one experimental treatment to the others, and were consequently unwilling to be randomized to other study groups despite investigators' assurances that nothing could yet be concluded about the relative effectiveness of any of the therapies. On the basis of this, Jason Karlavish and John Lantos, in their 1997 article appearing in the *Cambridge Quarterly of Healthcare Ethics*, conclude that clinical equipoise should be expanded into *community* equipoise, in order to include patients and local communities in the decision-making process behind clinical trials. This definition, they claim, reflects current trends and policy changes in the governments of industrialized nations, especially with regard to AIDS research and research in emergency medicine.

### **The Ethical Problem Revisited**

It is now possible for us to return to the controversy over placebo-controlled trials for HIV in developing countries, and reexamine the arguments in the context of our historical framework. By arguing that these trials are unethical because they fail to provide all subjects with the best proven treatment, critics of the NIH and CDC contend that investigators have failed to achieve clinical equipoise. An investigator can be reasonably confident that placebo treatment will not be as effective as an antiretroviral regime similar to that used in the ACTG 076 protocol and, for that reason, the investigator should not proceed with the trial.

In response, NIH and CDC investigators bring up a number of issues. First, they state that because the ACTG 076 protocol was carried out on an American subpopulation of women, the results cannot be applied to women living in developing countries where, for example, anemia, malaria, and perinatal mortality are much more common, and patterns of breast-feeding differ (Simonds et al. 1997). Without a placebo arm, any adverse maternal, delivery-related, or neonatal outcome could erroneously be attributed to zidovudine.

Second, and perhaps more importantly, NIH and CDC investigators claim that placebo-controlled trials take into account the social environment in which the research is being conducted. As mentioned above, the major priority of these trials is to find, as rapidly as possible, a less costly yet comparably effective alternative to ACTG 076. Investigators running these trials argue that results from placebo-controlled trials can be interpreted more easily, and would be more rapidly conclusive. For example, results of an equivalency trial comparing short-course zidovudine to ACTG 076 would only be beneficial to the population if the short-course regime were found as effective as ACTG 076 (something they consider to be a relatively unlikely outcome). If the short-course regime were to be found significantly less effective than ACTG 076, the regime could not subsequently be implemented because it would not be known whether the regime was beneficial compared to the local standard of care (no active treatment) since there was no placebo arm (Simonds et al. 1997).

Furthermore, NIH investigators point out that many of these trials have been designed in collaboration with investigators native to the developing countries where the trials are being conducted. Indeed, one Ugandan trial has sought and gained support from local government, and has consulted local patient communities to ascertain their interests and concerns (Mbidde 1997). If these trials are not allowed to proceed because of a failure to meet certain ethical criteria, despite approval from local authorities, and despite approval from patients and their communities, many of those who fear the consequences of an uncontrolled AIDS epidemic find questioning the validity of the ethical criteria a necessary task.

### **A New Procedural-Dialectical Era?**

To summarize the debate, we see that advocates of the placebo-controlled trials justify themselves by claiming that community equipoise has been satisfied, even though clinical equipoise might not be. This reliance on the social context of clinical research suggests that, at least in the realm of AIDS research, investigators are now more actively pursuing a dialectical relationship with their research subjects, and are striving to acknowledge and address the needs of the communities their research impacts. Is this sufficient evidence to conclude that the medical profession is now in the midst of a transition to a new procedural-dialectical era of truth seeking?

As mentioned, this pursuit of a new dialectic is not limited simply to AIDS research in developing countries; it is becoming more and more evident in other areas, such as emergency medicine research in the United States, where experimental design information is being disclosed in an effort to ensure that the risks and benefits of research are deemed appropriate by the general public. Moreover, this new dialectic has not arisen simply because it is a convenient way to achieve community equipoise. Community equipoise is just one manifestation. In a broader sense, the new dialectic can be viewed as arising out of a growing social awareness on the part of investigators who, since the Drug Amendments of 1962 and the institutionalization of the randomized clinical trial, have been forced into an intimate relationship with public policy makers.

This relationship is poignantly reflected in the FDA Modernization Act of 1997, which stipulates that the NIH will “establish, maintain, and operate a data bank of information on clinical trials for drugs for serious or life-threatening diseases and conditions” and will “disseminate such information through information systems, which shall include toll-free telephone communications, available to individuals with serious or life-threatening diseases and conditions, to other members of the public, to health care providers, and to researchers” (FDA 1997). With this mass dissemination of information, it will now be difficult for investigators to ignore a dimension of their research that has, up to now, been unstaged by the welfare and interests of the individual patient: the welfare and interests of the greater community.

As a reaction to the atrocities of the Second World War, the procedural-absolutist era of truth seeking in medicine naturally came into being with a mandate to protect the rights of human subjects of medical research. I envision the procedural-dialectical era as now building on that mandate, making investigators not only accountable to the patients they treat, but accountable to the publics their research will ultimately serve.

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# THE WAR ON AIDS: A JUSTIFIED BATTLE?

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## ABSTRACT

**The AIDS virus, first discovered in the United States in 1983, has become one of the deadliest yet most intriguing diseases in history. Each year, governments around the world funnel immense funds into AIDS research, prevention and treatment programs, touting it as a top health priority for society. However, while the disease does not claim as many lives as a number of other, more prevalent diseases, it receives more government financial attention than any other illness. In North America, a strong foundation of support for AIDS programs was the result of a public outcry in the late 1980's, fueled by the media portrayal of the disease as a widespread killer. Moreover, an assessment of the public's impact on government decision-making at that time demonstrates that the media and various public officials played key manipulative roles. Such an exploration punctuates the effect of increasing fiscal demands and politicization of funding on the financing of biomedical research in general. Through an historical examination of the landmark decisions surrounding the funding of AIDS strategies, a clearer understanding of the complex social control mechanisms for the dissemination of scientific knowledge and choices for health funding can be achieved.**

*AIDS inflicts tragedy on too many families. But ultimately, it is a disease; one we can defeat just as we have defeated polio, many forms of cancer, and other scourges in the history of our nation. How can we do it? With commitment and courage and constancy, and with vocal and responsible leadership from our nation's government* - United States President Bill Clinton

## Introduction

The AIDS virus, discovered by the United States National Cancer Institute (NCI) in the spring of 1983 (Culliton 1984), has become the "trademark disease" of the 1980s and 1990s. Billions of dollars of government funding has been channelled into AIDS programs around the world, and the disease receives tremendous public attention. Since the time of the Reagan Administration, AIDS has been the number one health priority in the United States and Canada (Norman 1985), and has consequently received more financial sponsorship for federal programs than any other disease. However, it sits at the bottom of the list of top fatal pathologic diseases, well below such giants as cancer and heart disease. Lobby groups, researchers, and physicians representing these larger diseases have openly complained about the disproportionately high funding received by AIDS, claiming that it contravenes the obligation of the government to serve the majority. This inquiry will explore the factors that have contributed to the rising concern about AIDS and

the subsequent funding for AIDS research, prevention, and treatment. These factors range from the nature of the disease to the types of strategies contained within the federal AIDS budget and their impact on federal health programs. The role of public pressure in this debate will be considered in addition to an analysis of the implications for biomedical research in North America in general. Through an assessment of these issues, the notion of social control of research funding and information will be visited, in an attempt to understand the causative agents in the AIDS funding controversy.

## **Background**

A significant part of the debate surrounding federal AIDS funding pertains to the nature of the disease. Acquired Immune Deficiency Syndrome (AIDS) is a virus that attacks the immune system. It has three modes of transmission: through sexual intercourse, blood-to-blood contact, or from mother to child transplacentally, during the birthing process, or through breast milk (Campbell 1996). Initially a disease strictly attributed to homosexuals and needle-sharing intravenous drug users, their sexual partners and children, AIDS has found its way into the heterosexual community, and is now labelled a mainstream societal problem rather than a threat to these high risk groups only (Bennett and Sharpe 1996). While the increasing incidence of the disease has ranked it among the top pathological killers in the United States, AIDS continues to receive more federal funding per death than those diseases with a higher number of annual deaths. Cancer, for instance, claims 505,000 lives each year and received two billion dollars in research funding in 1996, while heart disease annually kills 720,000 and was granted 1.3 billion dollars in federal support in 1996; AIDS, by contrast, which accounts for 35,000 deaths yearly, received 1.65 billion dollars in the same fiscal year (Ashcroft 1997; Bennett and Sharpe 1996).

AIDS activists, however, have pointed to the fact that heart disease and cancer, each with a significant genetic basis and non-infectious nature, have occurred at fairly stable rates over time, whereas AIDS' infectious character has caused it to spread rapidly throughout the population (Freundlich 1990). As a result, the epidemic caused by the disease is highly avoidable; thus, millions of dollars of funding has targeted prevention programs in addition to clinical research and drug trials (Derbyshire 1996). Furthermore, the argument has been made that while cancer and heart disease, among others, mostly strike the ageing population, AIDS is a disease of the young; in 1990, it was estimated that 82% of AIDS victims were under the age of 44 (Freundlich 1990). The fact that AIDS does not discriminate by age perhaps magnifies the danger to society on the whole since individuals of any age are equally at risk; however, the allocation of government funds to a disease that affects the entire population appears to be a moral judgement that devalues geriatric care. In any case, if an individual is more likely to fall prey to cancer or heart disease later in life than to acquire AIDS while middle aged, then the provision of research funding for the former will ultimately affect a larger portion of the population. A contradiction in government thinking becomes apparent here, since the needs of one social interest group, the geriatric population, are circumvented in order to combat a problem of a small group of AIDS patients. Clearly, the question of funding allocation is contentious when considering the nature of the AIDS virus - the differing perspectives and interests surrounding the problem require a further exploration of the issue.

## **A Comparison of Strategies**

The biological and pathological differences between AIDS and many other maladies are reflected in the varied allocation of funding for the war on AIDS. Like most other diseases, much of the stipend goes towards curative measures such as biochemical and immunologic research on the disease and drug trials. In addition, however, the preventative aspect of AIDS results in the channelling of significant funds to powerful education and testing programs. For instance, of the 1.65 billion dollars spent by the United States National Institutes of Health (NIH) on AIDS research in 1996, 584 million were allocated for prevention; from this amount, roughly 136 million dollars were spent on AIDS testing (Bennett and Sharpe 1996). It can thus be seen that while more money is spent per AIDS casualty than any other disease, this budget is diversified among a variety of strategies. It is important to note that any education or advertising campaigns advocating AIDS awareness are funded by the NIH; similar programs for heart disease and cancer are often indirect, such as legislated warnings on cigarette packages or health and fitness advertisements. Thus, the funding of AIDS programs requires additional considerations that do not apply to other, more common diseases.

While many critics create an adversarial relationship between AIDS programs and those of other diseases, the arguments against increased AIDS funding often fail to recognise the positive implications of AIDS research for other diseases. The NCI discovery of the virus in 1983 (Culliton 1984) was accompanied by the finding that immunosuppression resulting from advanced disease is characterised by the development of malignant tumours. Thus, much of the knowledge pertaining to the development of AIDS positively affects the progress of cancer research. Furthermore, AIDS research has been tremendously enlightening to the scientific community with respect to other medical processes and conditions. Anthony Fauci, director of the United States National Institute of Allergy and Infectious Diseases (NIAID) in 1990, has contended that "the benefits of AIDS research have 'transcended interdisciplinary lines'" (Concar 1990), pointing to advances in virology, immunology, molecular biology, and the knowledge of the brain and immune system.

While diversity and overlap have boosted support for AIDS funding, however, it seems weak to implicate such attributes as the sole motivation for fiscal research backing; it is probable that a number of diseases could have the same impact on biomedical research if given the financial means to do so. Rather, a consideration of other motives of the scientific community and the government in deciding to fund this particular illness is necessary. AIDS is clearly the newest and thus most mysterious of the top ten mortal diseases, and has consequently become the hot topic for North American scientists. Additionally, the notion of prevention as a means of keeping the disease from spreading gives the scientific world a conceivable, more immediate goal to strive for; that is, if scientists can envision the problem being solved, they will be more inclined to continue to tackle it. By this line of argument, then, as long as new dilemmas surface, research into the mainstays such as cancer and heart disease will continually be neglected. In this respect, the utilitarian value of science is limited, since researchers will pursue projects that satiate intellectual desires rather than social necessity. Historically, this idea of new problems circumventing older ones is precedented; when cancer research had begun to enter mainstream science in the 1970s, the government received similar complaints from other disease research teams regarding disproportionately high funding (Beck, Springen, Hager and Starr 1989). As more novel projects such as AIDS presented themselves, cancer research underwent a transition

from the envied centre of biomedical research to the jealous outcast fighting for the attention of the scientific community.

### **The Public Influence**

A crucial factor in the war against AIDS has been the impact of the public on government policy and funding strategies. While AIDS was initially attributed primarily to high risk groups such as homosexuals and intravenous drug users who shared syringes, increased public awareness of the virus has aided fundraising campaigns and lobbying efforts for federal support. This consciousness, however, is the result of carefully crafted advertising and education programs by the United States government and its health research regulation bodies. In 1987, looking to attack the problem of AIDS within these high-risk populations, the Centers for Disease Control (CDC) "made the fateful decision to bombard the public with a terrifying message: 'Anyone could get AIDS'" (Bennett and Sharpe 1996). The decision to make such a global public statement was rooted in the premise that if AIDS could become a national concern rather than the problem of an isolated group, the government could overcome strong political and social resistance to increased funding while simultaneously heightening awareness of the risks of the disease. The public announcement, however, misrepresented and continues to exaggerate the risks for heterosexuals and non-drug-users. In fact, at the time of the advertising campaign's inception, the likelihood of contracting AIDS from an unprotected heterosexual encounter was one in five million (Bennett and Sharpe 1996). While the virus has trickled into the heterosexual community, the risks are still minute compared to the highly endangered groups.

Furthermore, the "everyone-gets-AIDS" message relayed by the CDC has adversely affected the allocation of AIDS prevention funding. While the initial aim was to benefit the high risk groups, much of the prevention budget has been directed towards programs for heterosexual women and college students, who represent low risk populations; compounding the problem, federal stipends have not been earmarked for homosexual AIDS prevention. Moreover, needle exchange programs, seen as the best preventative measure among drug users, have been denied federal support completely (Des Jarlais and Stepherson 1991). This lack of special attention has been attributed to the continued resistance of the same social and political groups that caused the inclusion of the entire population in the education campaign. Additionally, the mass hysteria caused by the CDC's announcement has backfired, in that millions of dollars are used each year on excessive AIDS testing for low risk groups. While heterosexuals and non-drug-users are indeed susceptible, the low extent to which they dominate the fight against AIDS results in the use of immense funds that would otherwise be targeted to high-risk prevention programs (Derbyshire 1996). Studies have shown, however, that public concern about AIDS has resulted in reduced sexual promiscuity. On the whole, it appears that the government's attempt to sway public social control to support AIDS research and prevention has been more of a liability than an asset. Further complicating the issue, "the same forces that shaped public policy in 1987 are making it difficult for the government to change directions, even now" (Bennett and Sharpe 1996). It is evident that the misdirection of the public in 1987 has resulted in a seemingly irreversible push for more AIDS funding.

An influential player in creating the AIDS hype is the media; through a number of broadcasting decisions and highly publicised cases, the media has had tremendous control over the messages

delivered to the public. Initial attempts to introduce AIDS to the public in 1987 were foiled by the refusal of television networks to air commercials advocating condom use. Furthermore, brochures and other awareness strategies were rejected by the Reagan government's moral objection to the promotion of safe sex (Bennett and Sharpe 1996). Finally, Dr. Walter Dowdle, a CDC AIDS activist, and his team developed a new plan: to simply inform the public that everyone was at risk of contracting AIDS, without any implicit or explicit sexual references. The campaign cleared the government restrictions and almost immediately pervaded millions of American households (Bennett and Sharpe 1996). Clearly, the Reagan Administration's allowance of the new brochures and the television and radio companies' decision to air the public-service announcements had a profound impact on the dissemination of information regarding the disease. The risk for heterosexuals to contract the virus was boosted in the public eye in 1991, when Earvin "Magic" Johnson revealed to the world that he had contracted the human immunodeficiency virus (HIV), which leads to AIDS (Bennett and Sharpe 1996). Suddenly, a real-life example of a heterosexual getting the disease had presented itself, and the public concern continued to grow. More recent cases, such as the media reports of the Canadian Red Cross tainted blood scandal, have perpetuated the public's fear, warranted or not, that AIDS is a universally infectious disease.

The notion of public control over funding allocation lies at the centre of the AIDS debate; many of the decisions that were made were dependent upon public opinion. It appears that an informed public can sway policy-making through overt concern or participation in government programs. In the case of AIDS, public outcry was clearly influential in controlling the implementation of AIDS awareness programs and prevention strategies. But the question remains as to where the social control of technology really stood with respect to the battle against the deadly virus. The national obsession with AIDS was a product of the CDC's public announcement, which was misleading to the population. Had another message been intended from the government, an entirely different hysteria might have resulted. Thus, democracy is compromised if the government makes judgements that are not based on the opinions of the constituency. Furthermore, the media played a critical role in the blocking or relaying of this information to the public, based on both its own perception of the public morality and, to a lesser extent, government regulation. Its own decisions to publicise or withhold AIDS-related cases, such as the Magic Johnson announcement or a series of discrimination cases throughout the 1980s and 1990s, have determined the state of public knowledge about AIDS. The question of the media's role in the dissemination of information has historically come under scrutiny: is the media responsible to report information objectively or to protect the public by making moral judgements on their behalf? Judging the media's actions during the AIDS campaign, the latter is clearly the case.

Moreover, it is interesting to understand the motivation for resistance to the CDC's initial requests. On the surface it is apparent that condoning such a campaign could be construed as support for homosexuality and intravenous drug use. In the 1980s, when homosexuals faced overt discrimination, it is not surprising that certain government officials objected to what was at the time deemed an unorthodox sexual preference. The argument surrounding intravenous drugs, which continues into the 1990s, is similarly founded; a promotion of syringe exchange programs, which allow drug users to trade used needles for sterile ones, could be considered a defeatist stance on the war against drugs. In the 1980s and 1990s, there has been a tendency to place

blame for illness: if someone contracts a disease, it is probably because that person did something wrong. This medical model of morality also applies to the AIDS epidemic; the social and political forces opposing AIDS funding and publicity were no doubt rooted in the condemnation of an abnormal lifestyle, creating a popular belief that homosexuals and drug users deserved the disease they had contracted. While the concern has been somewhat ameliorated for homosexuals, the debate surrounding drug use rages on. Consequently, the objective judgement of the need for AIDS funding has been impeded severely, and will remain so unless a definitive policy regarding the political treatment of such issues is established.

### **Implications for Government Research Funding**

The debate regarding AIDS research funding has raised some larger issues for biomedical research and funding in general. A study conducted by the United States Office of Technology Assessment (OTA) in 1990 concluded that roughly half of 148 American biomedical researchers surveyed felt that AIDS research received too much funding (Concar 1990). Furthermore, a number of private research agencies have selected AIDS-related projects over other proposals, strictly motivated by a higher likelihood of funding (Concar 1990). The real concern expressed, however, was not that the AIDS piece of the research funding pie was too large, but rather that the pie itself was too small to support the demands of biomedical science (Johnsson 1990). Thus, the solution for researchers of other diseases is to collaborate with each other and with AIDS researchers to lobby for increased federal research grants. The private sector has also been postulated as a potential source of research support. In order to commandeer corporate backing for AIDS research, though, there is an "overarching need to make the consequences of HIV transmission a societal problem, not the problem of discrete groups" (Gelb 1990). Given that this goal has in part been accomplished by the questionable tactic of the CDC, private companies have public support and economic incentives, such as tax credits and potential marketing revenue, driving them to get involved in AIDS programs (Gelb 1990). Other diseases could capitalise on such external sources for AIDS funding by lobbying to utilise the freed up government stipends as well as by searching for alternative corporate sponsorship.

The political element to funding has also surfaced as a concern for AIDS and other biomedical research. The politicisation of research results primarily from strong public concern over a particular issue. Seeking to satisfy their constituents, government officials often direct funding and policy towards diseases that the public feels are most dangerous. It was through this politicisation that the CDC mobilised funds for AIDS research and prevention in the late 1980s and early 1990s. Political influence on research funding is especially relevant given the limited financial resources available for biomedical research; as a result, the funding decisions become socially and politically motivated rather than scientifically and epidemiologically based. Revisiting the notion of short-term gain as a motive for research allocation, the theme of socio-political determinism of research funding resurfaces in the secondary consideration of diseases with longer time frames for progress compared to publicly prominent illnesses (Johnsson 1990). Another aspect of political influence over research programs pertains to planning. In early 1997, groups such as AIDS Vancouver, home of the longest running Canadian AIDS study, began pressuring the government to renew the National AIDS Strategy, which has funded all Canadian AIDS research and treatment programs since 1993. Pending Health Minister David Dingwall's announcement, unsure funding prevented all prospective research ideas from being explored.

While Dingwall proposed an extension of the Strategy into the next millennium, the issue of absolute government control over biomedical research stipends remains unaddressed. Since the control is significantly political in nature, concern will repeatedly arise around the fact that research programs often outlast budget allocation terms and span a number of changes of office.

## Conclusion

The debate surrounding the AIDS epidemic is certainly precarious. Questions abound as to who is at risk, why public interest has skyrocketed, and where government stipends are allocated. At the heart of these concerns is the issue of who truly controls the decisions pertaining to the AIDS funding problem. Further analysis reveals an intricate network of control structures involving the public, the government and the media; the financial choices made by these socio-political groups are rooted in their perception of the disease. Public opinion, based on the democratic collection of individual concerns, heavily depends on the available information. The government, which plays a role in disseminating the facts, bases its policy on the individual beliefs of its officials in conjunction with social pressure through lobbying and the duty to serve the majority interest. This apparent cyclical relationship between government decision-making and public sway is further convoluted by the media's presence. The media, often acting as the go-between for these other social and political forces, controls information release based on government regulations and its perception of public morality; however, the media also depends on government choices regarding public knowledge. Clearly, then, the attribution of increased funding for AIDS research, treatment and prevention to one controlling group is complicated, as a number of players factor into the equation. The task for researchers and practitioners seeking financial support, then, is to attack this infrastructure at multiple levels, and to approach the private sector for further sponsorship. Once a disease of homosexuals and drug-users, AIDS has clearly escalated to much larger proportions; whether this escalation is epidemiological or merely unfounded public hysteria compounds the budgeting problem for government officials and experts.

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***“Oh Me Nerves are Acting up Some Aweful”***  
**HOW DO BELIEFS SHAPE ATTITUDES**  
**TOWARDS WOMEN’S HEALTH?**

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**ABSTRACT**

Newfoundland, as places elsewhere, has used “nerves” to label a spectrum of ill-defined symptoms ranging from emotional and social distress, restlessness, irresolution, languor and low spirits. In so doing, a clear connection is made between nerves and women’s health. The link between nerves and “women’s problems,” particularly noticeable during the first half of the twentieth century, did as much as anything to underscore the concept of women’s limitations.

Our particular concern is how belief systems have shaped and continue to shape attitudes towards women’s health. To further illustrate this point, examples are taken from records of the Newfoundland oral and written tradition, that reveal three main sociocultural links between nerves and women’s health. Firstly, commercial promotions of over-the-counter medicines focused on the link between the so-called nerves and the character of women. For instance, around the early 1900s, Dr. Pierce’s Favorite Prescription (“makes weak women strong,” stated one Newfoundland advertisement), and Dodd’s Kidney Pills were for “female weakness.” Secondly, the religious attitudes, especially with respect to the Catholic Church, shaped the beliefs towards women’s bodies. And thirdly, the medical diagnosis of neurasthenia, which centred on the vulnerability of women, had a long influence in the province.

Our examples will show the historical record has much relevance to current attitudes towards women’s health.

**Nerves and Weak Women**

Not long ago, Ruth, a middle aged women from Grey Rock harbor, a Newfoundland fishing outport, visits the doctor at a local medical clinic. The doctor asks her what is wrong. She hates herself for it but simply replies that her nerves “are acting-up some aweful.” Without further

ado, the doctor writes her a prescription for nerve pills, which will help her relax. (Davis, 1984, 277)

Nerves, a term with multiple shades of meaning has long served, as perhaps it still does, to characterize many women. Indeed, in the second half of the nineteenth century, women were often defined by the state of their nerves. Women were predisposed to problems with nerves, a term used to describe their overall state of being: worrying, losing their temper, headaches, tiredness and minor digestive complaints. (Davis, 274-276). The female nervous system was believed to have derived its characteristic traits from both the limitations of the woman's brain and from the excesses of her reproductive organs. It was a medical truism that female nerves were highly unstable.

This presentation looks at the way "nerves," embracing neurosis, neurasthenia, and hysteria, was sustained, until well into the twentieth century by over-the-counter medicines and medical diagnosis. We conclude by asking whether "nerves" remains an issue today, particularly in Newfoundland. Unfortunately, we have no time to consider social factors that also sustained the sense of women's weak bodies, such as the way the Church reinforced the domestic role of women. We should also add that nerves was not the only concept that defined women by their bodies. Sexual surgery for instance, was a well known issue we will not be considering.

### **Commercial Treatments of Nerves**

Among the constant factors emphasizing the bodily weakness of women were over-the-counter preparations. Among the hundreds emerging in North America in the last decades of the nineteenth century were the widely promoted Lydia Pinkham's Vegetable Compound for "women and women's troubles" and "Dr. Pierce's Favorite Prescription" on which we add a few notes.

### **Lydia Pinkham's Vegetable Compound**

"Women should remember that a cure for all female diseases actually exists and the cure is Lydia Pinkham's Vegetable Compound. Take no Substitute" proclaimed one advertisement. Pinkham was regarded as a feminist and enlightened sex educator who developed her "domestic medical skill." Her ideas were indeed thought to be progressive for her time. (Davis, 95-99) However, her original purposes of demystifying reproductive processes and putting women in control of their own health, was undermined by Pinkham advertisements. Vegetable Compound ads, for instance, were as concerned with legitimizing nervous complaints as with curing them. (Davis, 107-108)

### **Dr. Pierce's Favorite Prescription**

An advertisement for Dr. Pierce's Medicine went:

*"Dr. Pierce's Favorite Prescription is a most superior Restorative Tonic and Nervine, especially adapted for the cure of those Chronic Weaknesses and Complaints peculiar to Females. A Remedy for debilitated females. Price \$1.50,*

or three bottles for \$4.00, by Express to any address." Like Longfellow's maiden who is-

*"Standing with reluctant feet,  
Where the brooks and river meet,  
Woman hood and childhood fleet!"*

*"Our girls need the tenderest care and the aid of Dr. Pierce's Favorite Prescription."*

As a practicing physician Dr. Pierce won a reputation, early in his career, for curing difficult cases. He saw the great need in the masses of people for home remedies as the commercial possibilities of medicine appealed to the young physician in the 1860's. One that became popular was the "Favorite prescription." (Holcombe, 400) Testimonials (which, of course, must be taken with a pinch of salt) at least reinforce an association with nerves and weakness.

### **Over-the-Counter products in Newfoundland**

These two products even found their way into Newfoundland, in the middle of the North Atlantic. However, others were perhaps more popular in the island also helping to shape or reinforce views about the women's body. One local favorite was cod liver oil. Although used for everyone in the family, one advertisement (St. John's *Evening Telegram* dated November 19<sup>th</sup>, 1900), stated:

"If you are nervous and irritable, you may only need more fat to cushion your nerves-you are probably thin-and Scott's Emulsion of Cod Liver Oil will give you the fat to begin with."

Another intensively advertised product some years later was Chase's Nerve Food that became very much part of the Newfoundland folk lore. A typical advertisement stated,

"If there is anyone whose nerves are put to a severe test it is the mother in the home with all the cares and worries of house work and a family of lively, rollicking children to look after, once the nerves fail to get their full supply of nutrition from your blood you find yourself worried and sleepless and irritable and headed for a complete nervous collapse." (A 1937 *Evening Telegram* advertisement).

### **The Medical Diagnosis of Neuresthenia**

Perhaps just as significant, if not more so, in defining women by their bodies was the role of the physician. A physician's diagnosis frequently made in women toward the end of the nineteenth century, which overlapped with others, was "neuresthenia," meaning nerve weakness. The term covered a syndrome of symptoms that included sick headache, noises in the ear, atonic voice, deficient mental control, bad dreams, insomnia and nervous dyspepsia (Crellin, 149).

Neuresthenia was first described in *American Nervousness* by physician George Beard in 1868 (Beard 1868). Beard described five factors that he believed accounted for the rise of neuresthenia in civilized intellectual communities: steam power, the telegraph, science, the press, and an increase in mental activity in women. The condition, often associated with the “new [or modern] woman” as well as the traditional Victorian woman, was thought to be definitely more respectable than hysteria. Neurasthenia was believed to be found specially among the more highly cultured communities, among those living in big towns and busy centers rather than rural districts, among the imaginative and those who worked with their head rather than their hands. Its chief incidence was believed to be among the age groups in which work and responsibility are undertaken.

Alcott, (c. 1890) a Boston physician and author of several books on women’s health, estimated that one half of American women suffered from “the real disease of nervousness.” Psychiatrists, neurologists, and gynecologists were all treating different, or sometimes the same, aspect of the same condition, and all with the prevailing perceptions about femininity and what women should be like (Dally, 100-102). Thus we see a medical imprimatur, a medical label for a vague collection of symptoms. The sick role was validated.

### **Nerves Today**

Interestingly, everyone living in Newfoundland today knows the expression, “Oh me nerves.” It is not always appreciated however, even by physicians and other health care workers—that on the island (as in many other cultures) the term covers more than the conditions described by professionals as depression, anxiety, and other mental problems. In Newfoundland “nerves” has commonly been a self-diagnosis for behavior that was outside a woman’s normal pattern, as well as an explanation for various vague symptoms. The term was used, albeit not exclusively, to describe female problems: in some instances the term referred to menopause or a “run down condition.” (Crellin,190).

Does the usage of the term “nerves” today still imply that women are inheritantly weaker? Does the legacy of the past still shape attitudes towards women? Does “nerves” still validate a sick role? Davis has argued that women, today, continue to seek “nerve” pills as a general cure-all. (See opening quote) The high incidence of requests for nerve pills is due to a tendency of women to diagnose their problems as nerves before they visit the doctor. There is an expectation that doctors will prescribe nerve pills (Valium, Texatrene) for general complaints, including for menopause. In addition, women often go to the doctor and complain of worry when what they actually need is financial or legal advice (Davis, 277).

Supposedly in our era of gender sensitivity and equal rights, women should no longer be defined by their body parts from reproductive organs to nerves. However, there is much to suggest otherwise. Moreover, does the introduction of courses on Women’s Health solely respond to perceptions that women’s health care was inferior to that of men? Or do they reinforce notions that women have special problems and hence are less suitable for the stresses and strains of professional and business life?

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**“I’m Gonna Slap Those Doctors”**  
**THE PATIENT IN THE POETRY OF PHYSICIANS OF THE**  
**TWENTIETH CENTURY AND THE VALUE OF POETRY TO MEDICAL**  
**HISTORIANS**

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**ABSTRACT**

**This paper explores the extent to which poems written by physician-poets from the twentieth century serve as historical documents. Particular attention will be focused on the role of the poet-physician in documenting the history of modern patient-physical interactions. This relationship is examined using the hypothesis that poet-physicians offer unique perspectives on the historical record through their sensitivities to the values of physicians and patients. The study follows the work of Lilian Furst (*Between Doctors and Patients: The Changing Balance of Power*, Charlottesville: University Press of Virginia, 1998), who explores the nineteenth- and twentieth-century history of physician-patient relationships through fiction. She is concerned with how literary testimony confirms or modifies the history of medicine written from traditional sources.**

**Although poems are usually neither written nor interpreted as historical texts, I turn to the poet-physician as medical expert, as prophet and soothsayer, and as a resource for the historian of twentieth-century medicine. The poetry of Ron Charach, William Carlos Williams, Dannie Abse, and Gottfried Benn, for example, will be used to offer physician perspectives on the patients of the modern era.**

Although historians have traditionally mined literary texts, the move to more fully incorporate the two disciplines in order to obtain a deeper, clearer picture of the past has recently been gaining momentum. Of course, this movement has left quite an impression on the medical historian as plays, poems, movies, art, fiction, etc. are more and more frequently treated as historical documents. The poetry of physicians of the modern period, in particular, is particularly engaging in this regard.

In *Defence of Poetry* (1821), Percy Bysshe Shelley argues that poets

...measure the circumference and sound the depths of human nature with a comprehensive and all penetrating spirit, and they are themselves perhaps

the most sincerely astonished at its manifestations, for it is less their spirit than *the spirit of the age* (340).

The key word here is *age*. Shelley is arguing that poetry is less an individual creation and more the essence of an historical era. In other words, the poet is a vehicle, a medium for the tensions operating within an historical framework. The theory seems to reduce the role of the poet to that of a mere “channel”, a problem encountered by German poet-physician Gottfried Benn: “Like all poets he [Benn] did not like to think of himself as merely a part of a historical movement and preferred the image of himself as the heroic individual crying in the wilderness” (Ritchie 1972, 26). The image of the “heroic individual crying in the wilderness” alludes to John the Baptist prophesying the coming of Jesus. The comparison attributes to the poet the abilities of the prophet, who may still be considered a vehicle, channel, or messenger. More importantly, however, a prophet is one who is enlightened, who perceives the truth and is entrusted with its delivery. For this quality, poetry is invaluable to the historians.

Poetry is a way of “reading between the lines”, a way of supplementing an historical account with *what it was really like*. Consider “MRI” by Canadian poet-psychiatrist Ron Charach:

“You’ll hear knocking noises, then a drilling sound  
that will last one to four minutes.  
There will be knocks like premonitions,  
then an electoshock *vibrando* will shake you to your core  
and redefine ‘heart-throb’, ‘incessant’ and ‘compelling.’  
You’ll breathe at ever-higher volumes  
without daring to move, waiting for the  
hovering craft to leave.  
Think of your body as a tooth encountering a five-story drill.

We *experience* Charach’s “MRI” intimately, though perhaps we have never had one, and poetry is perhaps the best way to understand an experience we may never have. Beyond its historical applications, poetry can be used as an educational tool to promote the development of empathy in a profession where it is most needed. Poetry is immediate – we enter into the world of the poet, see what he sees, wear his shoes for a while. When we return, we are enriched by the vision we have witnessed, and we are empowered to cause positive change, if that is what is needed. Poetry is superior to other literary forms because it speaks to the *soul*. Rather than provide “food for thought”, it provides another realm of experience. For physicians particularly, poetry provides an opportunity to experience in another dimension what his/her patient is experiencing. In other words, it provides a *common ground* for physician and patient, a safe place where the conventional impediments to real interaction are resolved, a place where the very separate worlds of patient and physician eclipse. In *Between Doctors and Patients*, Lilian Furst argues that literary testimony can actually restore the lost voice of the patient, acting as a “corrective to the one-sidedness of medical histories” (1998, 14). Poetry is a way of *reliving* what we have never experienced, whether that it is an historical event or what is occurring simultaneously in the lives of our patients. So poetry is a way of revisiting the past, making it real and intimate and personal. The process reinstates the patient because in literature, the patient often appears as the central protagonist whose “words and actions are as prominent as those of the physician” (14).

If we are to revisit the (medical) past through poetry, perhaps for our purposes it should be most interesting to examine the physician-poets, those with unique sensitivities to both the values of doctors and patients, and to the medical world as a whole. It is not that physician poetry is superior, it is simply that the potential value of poetry in this particular profession is so much greater. With the exception of some poems, such as Alice Jones' "Anorexia", physician-poets are for the most part mediocre poets expressing an inferior form of the truth, but the truth nonetheless, crucial and fascinating and beautiful.

Physician poetry records a very unique history – the history of patient-physician encounters. For the full complement, of course, we would analyze poetry written by patients. The very existence of the physician-poet, coupled with recent increases in the volume of "medical poetry" implies several important changes in the medical world. First of all, it implies that the physician's world is "opening up", that the physician is more willing to share his/her experiences with the public. Second of all, it implies that more and more physicians are recognizing the poet-prophet within. This inevitably leads to doctors who are more empathetic and more sensitive to the privilege and uniqueness of their experiences. We will examine the poetry of a select number of physicians writing at variable times during the twentieth century, extracting historically relevant detail pertinent to the physician-patient relationship through close attention and critical analysis.

Gottfried Benn was a German venereal disease specialist. His writings were first considered obscene by a public not prepared to accept poetry as a form of social commentary. His "Man and Woman Walk Through Cancer Ward", which appeared in 1912, comments on the tendency of physicians at that time to see their patients only in terms of their diseased parts: "This row here is made up of collapsed wombs./and this row is made up of collapsed breasts ... Observe, this knot of fat and fetid pus ...". Doctors have historically categorized and labeled patients according to their broken, rotting parts: "Please see to the kidney in room 205". As an historical document, "Man and Woman Walk Through Cancer Ward" critiques the way patients are perceived and treated. It is almost as if Benn visualizes the ward as a garden, pointing out the varieties of vegetation growing there. At the end of the poem, the patient seems to sink back into the soil, into her place in the natural world: "Flesh subsides to soil .../Sap starts to trickle. The earth is calling". By 1912, the medical technology and new language associated with the stethoscope, the analysis of blood and urine, the measurement of blood pressure, X-rays, and much more continued to change the face of medical care. Communication between physicians and patients had become more difficult and Benn joins a select number of other physicians publicly expressing their concerns.

Jack Coulehan's "I'm Gonna Slap Those Doctors" and William Carlos Williams' "Portrait of a Woman in Bed" (1917) are both monologues dealing with patients who are *angry*, who are difficult patients to treat. Both physicians become the patient in these two poems, actively experiencing what a patient might experience in each scenario. They portray the patients as angry and dissatisfied with their doctors, whom they deem incompetent. Again, the sentiment expressed is the physician's irrelevant involvement in the personal suffering they are experiencing.

In William Carlos Williams' "Portrait of a Woman in Bed" (1917), the patient/speaker is directing her speech to a physician present in the room. Although we know that the physician is present, he is voiceless. This implies that the physician may be intimidated by Robitza, the speaker, whom he is visiting at home. He is certainly overpowered by her, and perhaps a little in awe of her. This poem refutes the common assumption that physicians are intimidating, that they are the ones who always wield the power. The patient is challenging here, perhaps both sexually and otherwise. Robitza instructs the doctor to "Lift the covers/if you want me", and exclaims later that "Corsets/can go to the devil-/and drawers along with them-". Sexual power is a powerful tool, a powerful hold over a physician who is supposed to practice *Aequanimitas*. Again the anger and the inadequacy of the physician is illustrated. Robitza relies on shock value in an attempt to "scare" the physician away. Physicians are seen as quite delicate creatures – those with no experience in the gross dialectic of real life, while patients, for all their vulgarity, possess worldliness and a sort of rough wisdom. Robitza assumes that she is the winner here:

Try to help me  
if you want trouble  
or leave me alone –  
that ends trouble.

The county physician  
is a damned fool  
and you  
can go to hell!

You could have closed the door  
when you came in;  
do it when you go out.  
I'm tired.

The match is won – Robitza silences her doctor and sends him politely on his way.

In Coulehan's "I'm Gonna Slap Those Doctors", an extremely disgruntled patient raves about "those slick bastards", i.e. the team of doctors 'caring' for him. He declares he has been "writ[ten] off as a boozier and snow[ed] with drugs". The speaker fantasizes about taking over the role of the doctor and treating his medical team:

... They'll be spinning around  
drunk as skunks, head screwed on backwards,  
and then Doctor Big Nose is gonna smell  
*their* breaths, wrinkle *his* forehead, and spin  
down the hall in his wheelchair  
on the way to the goddamn heavenly choir.

The poem envisions the role of the physician as empowering; the physician is one who wields power and delivers punishment to patients, who are passive, misunderstood, and at his mercy.

This patient, more than anything else, detests the power his physicians have, and fantasizes about exploiting that power himself in order to punish them. Coulehan perceives this patient as extremely sensitive to the use of power and patronization in the medical profession: “they’re the/goddamn angels doing a bit/of social work.”

Eugene Hirsch’s “Two Suffering Men” documents the inability of doctor and patient to reach a “common ground”. In this poem, both physician and patient fail to understand how the other “suffers”. Hirsch is an American retired cardiologist/geriatrician; his “Two Suffering Men” describes the interaction between the speaker and his patient, assumed by the speaker to be an alcoholic. Upon announcing his suspicion, the patient responds with

“You’re telling me  
I’m alcoholic? How in hell  
would you know, in your  
‘pretty’ white picturebook  
middle-class hospital coat?”

It is not until the end of the poem, after the patient exits, that we discover that the physician is an alcoholic himself:

I longed to lower my eyes and cry.  
But, from the bottom drawer  
of my desk, just one small glass  
of vodka and a chlorophyll candy  
taste so damn good in the morning.

The revelation is shocking to the reader: it is the *doctor* that is most responsible for the failed communication, for the projection of his own illness upon the patient, who may or may not be an alcoholic. It is the patient here who is rational, but at the same time blind to the possibility that a physician may not have a “picturebook” life. Although possibly an expression of the doctor’s improper handling of the situation, the patient is not willing to discuss his personal life with the doctor. He tells the doctor to “Stay out of [his] head”. The patient believes that the doctor, in his “middle-class hospital coat”, would have no understanding of the ugliness of the real world. The interaction fails miserably, but the poem succeeds in reestablishing the credibility of the patient, while alerting the public to the possibility that a doctor may too be a helpless victim to the same afflictions tormenting his/her patients. “Two Suffering Men” also raises the question of whether modern patients want their physicians to approach them on a personal level, and if not, if this is due to a common perception that physicians are living in a sort of glass bubble, protected from the real world. Dannie Abse’s “The Doctor” also deals with patient expectations:

... the patient expects  
the unjudged lie: “Your symptoms are familiar  
and benign” – someone to be cheerfully sure,  
to transform tremblings, gigantic unease,  
by naming like a pet some small disease  
with a known aetiology, certain cure.

Abse's poem implies that the patient is the one who is living in the 'glass bubble', who does not want to deal with reality.

Canadian Ron Charach, a psychiatrist-poet, carries Abse's point forward. His poem "Labour and Delivery" implies that one patient is oblivious to the next's suffering. Consider the following passage:

When you wind up with a girl  
to add to the boy  
you already have,  
... when the labour's gone well, as smoothly  
as such monumental strainings ever go  
... then the fact that the couple  
next curtain over  
in the semi-private suite  
- who only speak Ukrainian well  
had a baby with a "prolapse of the cord,"  
now doing badly  
in Intensive Care,  
-is just another fact.  
No cause to cut into your joy  
except for momentary twinges  
when you pass them by  
on visits.

The very curt tone of the last four lines indicates that the speaker-doctor is bitter - bitter perhaps because his patients have "no cause to cut into [their] joy" if their newborn is born healthy. The physician here seems to see the patient as privileged - if all goes well the patient need not concern herself with the 'other' cases. The parents of the healthy baby can be totally oblivious to the parents of the sick baby, but the doctor cannot. Charach seems to portray the physician as envious of the patients who can easily dissociate themselves from the pain experienced by other patients. He is accusing this happy couple of not being empathetic, of being able to be lost in their joy at the same time a couple nearby is suffering such intense grief. The poem echoes the notion of patient naivete and obliviousness seen in Abse's "The Doctor".

This paper follows the more extensive work of Lilian Furst, who examines how literary testimony (fiction) confirms or modifies medical history. While Furst deals with fiction, the focus of this paper is on poetry. Poetry is a more direct form of communication if we are only willing to attempt to access it; its message need not be twisted to fit the demands of a conventional fictional plot. Furst's study merits closer attention. She begins her treatise by declaring that she makes "no attempt at the sort of complete, consecutive coverage to which historical scholarship aspires" (18). Earlier she comments that historians frequently cite literary texts, though often without the proper critical analysis of "aesthetic factors" (13). Is it fair for Furst to assume that historical scholarship is more precise than literary examination? And, at the same time, is it fair to assume that historians are not as sensitive to "aesthetic factors" as the

literary scholars? Of course, each approach has its particular strengths. While it is important to incorporate the two disciplines in order to more completely understand the medical past, it is just as important to recognize that literature is not equivalent to history. Recognizing this, we must also work towards maintaining the integrity of both disciplines without falling into the danger of making assumptions about their respective functions.

From studying only a handful of poems, several themes have emerged concerning the patient in the poetry of physicians of the twentieth century. For the most part, the patients are angry, even enraged. This is essential for the modern physician to understand. Even more crucial for the modern physician to understand is *why* patients of the last century are angry. Again we turn to the physician-poets, gifted with insight into the medical context of the period, who explain that patients have traditionally only received treatment for the physicality of their diseased *part*, seen in Benn's "Man and Woman Walk Through Cancer Ward". They explain that patients perceive physicians as irrelevant and incapable of providing treatment to them in a context that is personally meaningful. This is most clearly illustrated when the patient is further down the social hierarchy, for example, when the patient is an alcoholic (Coulehan's "I'm Gonna Slap Those Doctors"), when he/she is poor, or when there are ethnic differences (Williams' Robitza). The physician-poets also tell us that doctors often perceive their patients as hopelessly naïve, willing to deal in lies rather than face the truth ("The Doctor") and oblivious to the suffering of others. Knowledge of medical history, made more complete through integration with literary elements, is essential for the practicing physician. He/She must be aware of the fallibility of his own profession; he/she must not overestimate her own powers. The physician learned in medical history is perhaps more reflective, more cautious, and less likely to repeat the mistakes of his/her predecessors. This becomes particularly relevant where patient-physician interactions are concerned.

Like Keats' epitaph supposes, is it possible that the words of his fellow physician-poets are "writ in water", diluted and vulnerable - never to be installed into mainstream medical history? Certainly Keats' poetry never met that prophesied fate. To maintain the past, to hold onto it, and intimately experience and learn from it, it is essential to recognize the poetry.

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# **FROM DR. JAMES KILDARE TO DR. JOHN CARTER: THE HISTORY OF MEDICINE ON TELEVISION OVER THE PAST 50 YEARS**

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## **ABSTRACT**

**Medical dramas have had a significant impact on popular perceptions of physicians over the past 50 years. From the earliest shows such as “Doctor Kildare”, “Ben Casey”, and “Marcus Welby M.D.” to the recent “E.R.”, “Chicago Hope”, and “Trauma: Life in the E.R.”, television viewing audiences have been captivated by the medical profession. This essay will discuss the history of medical dramas and the effects of television on society’s view of physicians and medicine.**

**The earliest medical dramas offered an idealized portrayal of the medical profession, inspiring young viewers to become the caring physicians portrayed by doctors such as Welby and Kildare. Television shows offered patients a sense of comfort in the belief that their physicians were knowledgeable, compassionate, and competent professionals. Today, realism has become the prevailing theme of medical dramas and the vulnerabilities of doctors and the medical system are exposed for viewers to examine. However, the accuracy of television medical shows remains highly suspect. Despite drama producers’ promises to offer authentic hospital footage, television has remained a source of inaccurate information and false expectations about the role of medical professionals. Both the beneficial and detrimental effects of the changing role of medicine on television will be examined.**

Medical dramas have had a significant impact on popular perceptions of physicians over the past fifty years. From the earliest shows such as “Dr. Kildare,” “Ben Casey,” and “Marcus Welby, M.D.” to the recent “E.R.,” “Chicago Hope,” and “Trauma: Life in the E.R.,” television viewing audiences have been captivated by the medical profession. This paper will discuss the history of medical dramas and the effects of television on society’s view of physicians and medicine.

The earliest medical dramas offered an idealized portrayal of the medical profession, inspiring young viewers to become the caring physicians portrayed by Welby and Kildare. Television shows offered patients a sense of comfort in the belief that their physicians were knowledgeable, compassionate, and competent professionals. Today, realism has become the prevailing theme and the vulnerabilities of doctors and the medical system are exposed for viewers to examine. However, the accuracy of television medical shows remains highly suspect. Despite drama

producers' promises to offer authentic hospital footage, television has remained a source of inaccurate information and false expectations about the role of medical professionals. Both the beneficial and detrimental effects of the changing role of medicine on television will be examined.

One of the first doctor-centered television dramas was "Medic," which aired from September 1954 to November 1956. It starred Richard Boone and was filmed in cooperation with the Los Angeles County Medical Association (VII 1998). This early program only whetted society's appetite for the presentation of classical and contemporary medical topics in television drama.

The sixties brought two new shows that captured the imagination of the television-watching world. "Dr. Kildare" was first aired in 1961 on NBC. It starred Richard Chamberlain as Dr. James Kildare, a young internal medicine intern, and Raymond Massey as his mentor, Dr. Gillespie, at Blair General Hospital. This series showed the struggles of a young professional in coping with patients, senior doctors, and the realities of hospital life. The show was a huge success, leading in television ratings, and playing until 1966 with 132 episodes (von Pein 2000).

Vince Edwards played the lead in "Ben Casey," a program that aired on October 2, 1961. The first words of the County General Hospital's neurosurgeon were, "What the hell are you using for brains?" (Spooner 1999) Dr. Casey was a devoted but difficult physician who fought with hospital staff, other doctors, the medical establishment, and patients. It "accurately captures the feeling of sleepless intensity in a metropolitan hospital," concluded a *Time* magazine review of "Ben Casey." The show trailed "Dr. Kildare" in ratings during its first season, but soon became a top-ten show for ABC and remained so until its cancellation in 1966 (Associated Press 1996).

Ratings eventually dropped for both "Dr. Kildare" and "Ben Casey," but television producers realized that medicine remained an attractive theme for entertainment. A new generation of productions, "Marcus Welby, M.D.," "Medical Center," and "M\*A\*S\*H" all played successfully in the seventies. "Marcus Welby, M.D." was featured on ABC from 1969 to 1976. It was the top-rated show in its first year and was in the top fifteen for four more. Robert Young played Dr. Welby, a compassionate family physician who always had enough time for patients. His name, "Well-be," even suggested compassion. Welby had offices in his Santa Monica, California, home as well as at the Family Practice Center at Lang Memorial Hospital. Dr. Welby was immensely popular among viewers and many physicians today still consider him one of their mentors (VII 1998).

"Medical Center" debuted in 1969 on CBS and featured Dr. Joe Gannon, played by Chad Everett, described as the "doc with the dimples to die for" by fans (Weiskind and Vancheri 1996). The show was set in Los Angeles on an unnamed university campus. Dr. Gannon was a surgeon and guided the progress of Dr. Paul Lochner. The show was well received, running like "Marcus Welby, M.D." until 1976 (von Pein 2000).

"M\*A\*S\*H" was a medical drama like no other, beginning as a comedy, but gradually adopting a more dramatic tone. Like "Dr. Kildare," "M\*A\*S\*H" was based on a successful movie. It was set in wartime Korea and featured army physicians of the 4077<sup>th</sup> Mobile Army Surgical Hospital (M\*A\*S\*H) unit. Debuting in 1972 on CBS, it starred Gary Burghoff as Radar, Alan

Alda as Hawkeye, and Loretta Swift as the vivacious Major Houlihan. “M\*A\*S\*H” ran until September 19, 1983. Its final episode was the most widely watched television program of all time (VII 1998).

During the 1980s and early 1990s, new shows replaced the highly popular medical dramas of the 1970s. “Trapper John, M.D.” and “St. Elsewhere” both became successful in their own right. “Trapper John, M.D.” was set at San Francisco Memorial Hospital and featured Dr. John (Trapper) McIntyre, based on a character from “M\*A\*S\*H” and played by Pernell Roberts. The show ran on CBS from 1979 to 1986. Focused much on the experiences of patients, the drama was relatively successful (VII 1998).

“St. Elsewhere” was set in a poor area of Boston and was based on the hospital St. Eligius. It premiered on October 26, 1982, on NBC and ran for five seasons. The program had a large number of characters including Dr. Mark Craig, an arrogant heart surgeon, and Dr. Victor Ehrlich, an inept resident. This show won eight Emmy Awards and a loyal fan base, but did not receive good ratings (VII 1998).

“Doogie Howser, M.D.,” starring Neil Patrick Harris as sixteen-year-old Douglas Howser, was introduced to ABC audiences on September 19, 1989. Doogie was a Princeton graduate and the youngest physician in the country, practicing as a second-year resident at Eastman Medical Center, along with older colleagues Dr. Canfield and Dr. McGuire. This series sparked considerable controversy regarding at what age it might be suitable for a physician to be practicing. The far-fetched comedy-drama lasted only until 1993 (von Pein 2000).

Today a new breed of medical programming, more realistic than ever before, has come to television. The premiere of “E.R.” on NBC on September 19, 1994, was the first of many successful shows of this sort. With a large cast, including Anthony Edwards as Dr. Mark Green, George Clooney as Dr. Doug Ross, Eriq LaSalle as Dr. Peter Benton, and Noah Wyle as Dr. John Carter, “E.R.” has become a household name. Set in the emergency room of Chicago’s County General Hospital, the scene is one of almost constant fast-paced panic as doctors battle to save lives. The show has seen the coming and going of many leading characters, but throughout has retained its high popularity (von Pein 2000).

Another program in the “E.R.” genre is “Chicago Hope,” first aired in 1994 as an hour-long drama set in a busy urban medical center, Chicago Hope Hospital. Characters include surgeon Dr. Aaron Shutt (Adam Arkin), Dr. Kathryn Austin (Christine Lahti), and E.G. Marshall plays Dr. Arthur Thurmond (VII 1998).

Innovating yet another approach to realism in medical shows, The Learning Channel, TLC, has produced “Trauma: Life in the E.R.” Now in its fourth season, the show provides a view of some of the most dramatic cases in real-life emergency rooms across the United States, featuring a different hospital each week (DCI 1999).

Over the years, medical dramas have changed their settings. The original shows took place in metropolitan hospitals. “M\*A\*S\*H” first attempted to bring drama to medicine by moving it to a war zone. Later programs have sustained this dramatization, but now the “war zone” is the

big-city hospital emergency room. Although some emergency rooms may at times match the frenetic pace shown in television dramas, these fictionalized depictions are often far from accurate. In fact, it might well be argued that the original settings of “Ben Casey” and “Dr. Kildare” were more faithful to life in their depiction of medicine.

The male leading characters on television medical dramas have always been sex symbols. Ben Casey was a dark and handsome physician. Fans could buy Casey shirts, jewelry, equipment, and other memorabilia. Richard Chamberlain as Dr. Kildare received 3500 letters a week from fans (Turow 1989, 69). There was even a pop song inspired by the heartthrob stars: “Dr. Kildare! Dr. Casey! You Are Wanted For Consultation” (Associated Press 1996). The doctors of today’s dramas do not look exceptionally attractive with their tired expressions and five-o’clock shadows. Nonetheless, their undeniable sex appeal draws thousands of women to the shows every week (Zoglin 1994). Doug Ross, formerly of “E.R.,” portrayed a “playboy pediatrician” and was even voted “Sexiest Man Alive” by *People* magazine in 1997 (Wallace).

The sexiness of television’s male doctors has not diminished their performance and competence as physicians; perhaps, in fact, their competence is part of what makes them sexy. In contrast, the shows’ female characters have often been portrayed as sexy – but not as competent. Dr. Casey showed the prevailing attitude toward women when he asked a female colleague on the first episode of the series: “Why did you become a doctor? I don’t much care for female MDs – they’re too unstable” (Karpf 1988, 207). It was obvious that any woman in the early medical series was there simply as an object of attraction for the male physician. Today, more women are portrayed as good physicians, but there are few who are both sexy and competent. Dr. Cary Weaver on “E.R.” is an excellent doctor, but is portrayed as bossy and demanding. This is also true of Dr. Kathryn Austin on “Chicago Hope.” The prevalence of these stereotypes in medical dramas may contribute to some of the negative attitudes that are still present in colleagues and patients alike against women as physicians.

Medical dramas have traditionally featured a father-son relationship: Dr. Kildare and Dr. Gillespie; Dr. Casey and Dr. Zorba; Dr. Welby and Dr. Kiley; and Dr. Trapper and Dr. Gonzo. These relationships were built on the premise that the younger physician would make occasional mistakes, while it was the duty of the older physician, with his great wisdom and experience, to teach invaluable lessons. The textbook, *The Literature of Television*, describes the relationship: “The ‘sons’ are protected from their mistakes because these father/mentor figures hold positions of authority. . . . [The younger doctors’] development intrigues us and provides the series’ dramatic focus” (Hall 2000). In current-day medical dramas there are few such simple relationships. The older, more experienced physicians, such as Dr. Romano (“E.R.”), have failures and are often mocked or treated with disrespect. Says the actor who portrays Dr. Romano about his character, “. . . you can really hate him, but there’s something that’s sort of attractive in how much you want to strangle the guy” (Carnes 2000). The younger doctors do not always “learn their lesson” and, frequently, they are portrayed as even gaining from their impetuous and often careless actions.

In an effort to increase the excitement conveyed to viewing audiences, the specialties of TV’s physician-heroes have also changed over the years. Residents are still popular as leading characters, but family physicians such as the famous Marcus Welby have all but disappeared

from television screens. This development correlates with societies' diminished respect for family physicians, expressed in the attitude that someone is "just a family doctor." Because of their interaction with trauma, dramatic specialists such as surgeons, as on "Chicago Hope" and "M\*A\*S\*H," and emergency physicians, on both "E.R." and "Trauma: Life in the E.R.," are now popular with patients and the public. Some physicians would prefer that television writers explore other facets of medical practice. Proponents of reality-based shows claim that it is impossible to portray other medical procedures without sacrificing drama. In a letter to *the New England Journal of Medicine*, one North Carolina physician responded:

"Imagine a program about a six-month-old baby brought to the emergency room apneic and pulseless. A vigorous resuscitation restores heartbeat and circulation, but the baby's pupils are fixed and dilated. A heated discussion ensues among the doctors and family about futile treatment, criteria for brain death, and the possibility of organ donation. Or, a 79-year-old man is brought to the emergency room from a nursing home with suspected urosepsis. He seems to have dementia, but little history is available. No family member can be reached. He is rapidly decompensating. The physicians debate whether to intubate" (Diem 1996, 1607).

By television portraying health care's ethical dilemmas, the public understanding of medicine could be enhanced and informed discussion of medical issues might be encouraged. Exciting trauma, after all, is only one aspect of medicine, and not always the most dramatic.

The character and personality traits of television's medical heroes have altered over the years. As a model of the medical profession, Dr. Welby offered a sense of security and protection. His patients rarely died and if they did so, Dr. Welby was at their side. His practice knew no class or racial boundaries. In essence, Dr. Welby was the ideal compassionate physician, a role model for physicians and medical students alike (Murphy 1997). "Marcus Welby understood the individual nature of illness and the degree of flexibility it requires of healers," says an editorial in the *Family Practice Management* (Scherger 1997).

"Dr. Kildare" and "Ben Casey" showed the "human frailties, inner strengths, and personal hardships of the medical profession" says *Clinician's Reviews* (Murphy 1997). A newspaper article from the 1960's concludes that Dr. Kildare "... is infallible. No awkward patient ever dies in his hands, at least not without a smile. . . .He amputates anxiety, stitches together the holes in one's happiness, and applies a thick layer of balm to nagging reality. Dr. Kildare is a cure for all ills"(Smith 2000). Dr. Casey was a model of competency, who always found the brain tumor that everyone else had missed. He was portrayed as a fighter -- but never with his patients, rather on their behalf, and often against health-care administration (Murphy 1997). The character development of "M\*A\*S\*H's" lead physicians was similar. The military doctors saved lives among soldiers, civilians, and even "the enemy."

The doctor-heroes in medical dramas were all compassionate, skilled, and intelligent. Their humanity was shown in their tireless dedication to their patients and their willingness to break rules, even in the face of negative personal consequences, if that meant easing suffering.

“St. Elsewhere” marked the beginning of a changing portrayal of doctors by television. While the show’s physicians are shown as compassionate practitioners whose paramount concern is their patient’s well being, they are not infrequently portrayed as egotistical, inexperienced, or lacking confidence. Again, compassion is a main characteristic of doctors portrayed in “Chicago Hope” and “E.R.”; however, these doctors can also be cynical, authoritarian, and demanding. There are more physician errors on television, allowing the public to glimpse the vulnerabilities of the medical profession. The patient is not always the number-one concern. Economics, politics, and personal agendas frequently take precedence over patient care (Weiskind and Vancheri 1996).

The public’s lack of trust in the medical system is growing, as is now being realized by both the medical profession itself and by politicians. In Hillary Clinton’s speech on healthcare on April 20, 1999, she stated:

“ . . . when people talk longingly about the Golden Age of medicine, they really do not want to take a trip back in time – with all the drawbacks that we can remember – but they do want to once again feel that sense of trust. Trust that life or death decisions are being made with their best interest in mind; trust that their doctors are equipped and enabled to make those decisions that really meet the needs of the individuals; trust that when they go into a hospital they will get the nursing care that they need and deserve.”

Undoubtedly, today’s television programs often foster a lack of trust in physicians and the health-care system among the public. Perhaps television’s return to the more “idealized” version of medicine shown in the first generation of medical dramas would serve the public better than the reality-based medicine portrayed today. David Victor, the creator of “Marcus Welby, M.D.” and producer of “Dr. Kildare” poses the question, “Why not show what a good doctor *should* be?” (Karpf 1988, 186)

However, the evolution of medical drama cannot be seen as entirely negative. Welby was always shown to be essentially perfect. As one sociologist of health and illness notes, “He was almost always on call, yet never looked tired after a long night of making house calls, sitting at the hospital bedside of a critically ill patient, or being on the telephone answering patients’ questions” (Murphy 1997). Unbelievably, Dr. Welby’s twenty-four hour patient vigils were rarely interrupted and, in fact, in only 14 percent of episodes was there an indication of other patients to see. Only one death on the operating table occurred in fifty episodes, although operations occurred in more than one third of “Marcus Welby, M.D.” shows. Patients were also fictitiously invented. Only 8 percent were working class, 2 percent were over sixty years old, and 90 percent were white. Somewhat enviably, 82 percent of episodes showed Dr. Welby making house calls (Karpf 1988, 184-185). On “Marcus Welby, M.D.” patients were always satisfied and doctors never made mistakes. It was the sum and substance of paternalism.

In contrast, it might be argued, the new generation of medical shows encourages patients to adopt more realistic expectations of doctors and to take more responsibility for their own health care. Plots deliberately expose the vulnerabilities and inadequacies of medical practice,

including the individual personality flaws of physicians. Although some may argue for paternalism as an ideal medical relationship, most agree that a partnership between physicians and patients is ideal. And the more informed the patient, the better the partner he or she will be. One doctor is quoted as saying, "People see 'Marcus Welby' and the other shows and then expect miracles of us" (Karpf 1988, 189). Perhaps this statement best emphasizes the need for some basis in reality for medical dramas. Doctors on television were once the doctors the public wanted in real life. Now, the doctors on television are the doctors society does not want.

Medical shows have always been a place for "firsts" on television. "Medic" depicted the first birth on television in 1955 (Turow 1989, 35). "Dr. Kildare" brought the pager to public attention in the early 1960s (UKPia 1998). "Ben Casey" discussed male impotence without being allowed to use the word "impotence" and mastectomy without using the word "breast," while "Marcus Welby, M.D." and "Medical Center" raised issues such as teenage pregnancy, sexually transmitted diseases, rape, and impaired practitioners (Karpf 1988, 191-193). A less prestigious "first" was when Dr. Westphall mooned an administrator on "St. Elsewhere" (VII 1998). However, actors on the same show were never permitted to demonstrate breast self-examination or allowed to mention the word "testicle" (Karpf 1988, 192). Medical dramas have sometimes expanded the public's perception of what is acceptable on television and in real life, and frequently, as well, reinforced taboos.

Some medical show "firsts" have been beneficial for educational purposes. However, "E.R.'s" portrayal of ultrarapid opiate detoxification as a way to eliminate drug withdrawal symptoms, still considered controversial and experimental by many doctors, was not well received (Jaroff 1988). The British medical journal, *The Lancet*, stated that companies that offer this treatment are "deplorable since the hopes and fears of opioid addicts and their families are easily exploited . . . [by] unvalidated claims" (Brewer and Williams 1998, 218).

Accuracy in portraying treatments and procedures has become a big issue for medical dramas. It was reported in *The New England Journal of Medicine* in 1996 that "the portrayal of CPR on television may lead the viewing public to have an unrealistic impression of CPR and its chances for success." In a review of ninety-seven episodes of "E.R.," "Chicago Hope," and "Rescue 911" it was found that usually cardiac arrest was caused by trauma. Sixty-five percent of cases occurred in children, teenagers, or young adults. And, amazingly, 75 percent of patients survived the immediate arrest, while 67 percent survived to leave the hospital (Diem, Lantos, and Tulskey 1996, 1578-1582). This compares with the long-term survival rate among in-hospital CPR cases of 15.2 percent – a reflection of the reality that the vast number of patients who undergo CPR are chronically ill, elderly persons who have limited life expectancy (Markhert and Saklager 1996, 1605). Thus, it can be concluded that even when television dramas are "technically" accurate, they often do not present the whole picture in terms of medical care.

At the same time, medical dramas' portrayal of procedures has often been beneficial. Throughout the history of television, rare diseases have been highlighted and thousands of unknowing people helped through recognition of their ailment. As well, programs encourage people to take health care initiatives they would not normally have considered. On "E.R.," Dr. Delamico initially matched to the U.S. National Marrow Donor Program (NMDP). She ultimately failed to match, but the pain and joy she felt when she realized she could help

someone caused amazing results. At the Texas Tech University School of Medicine, a bone marrow drive was initiated after this episode generating more than a hundred donations to the NMDP and also blood for the blood bank (Moghanaski 1999). This illustrates the powerful effects that television can have on society – for good or bad.

At the University of Saskatchewan, as at many other medical schools, Thursday nights are often quiet at the library. Students are beckoned to a “night off” to take in the fantasy world of “ER,” which is undoubtedly having an effect on the future of medicine. For example, the number of residents entering emergency medicine has increased. In 1999, data from the match of the Canadian Resident Matching Service indicated that the percentage of students who matched to their first choice of emergency medicine was a mere 52 percent. Only ophthalmology, dermatology, and plastic surgery had a lower success rate (CaRMS 2000). At the Indiana University School of Medicine, the number of fourth-year students enrolling in emergency medicine residency programs doubled between 1994 and 1996. This coincides with the introduction of the show “E.R.” (Bingle and Wallack 1996). Even in the *Canadian Medical Association Journal*, emergency physicians are questioning television’s role in sparking interest in emergency medicine: “Could the dynamism and compassion of the physicians we see on ‘ER’ . . . be a factor in encouraging its popularity as a preferred career choice?” (Gerace and McCauley 1997, 1683-1684) Whether real life in the emergency room produces a new generation of physicians disappointed with their choice of specialties remains to be seen.

Michael O’Connor at the University of Washington School of Medicine believes that, “Medical students’ reactions to television medical dramas like ‘E.R.’ suggest that they may incorporate the attitudes and beliefs of physicians on television in much the same way they acquire the qualities and behaviors of physicians through their experiences in patient care” (1998). And although “E.R.” doctors and medical students show compassion, they are also competitive, manipulative, and aggressive, in dramatic contrast to Marcus Welby, “Southern California’s kindest physician” (VII 1998). Regardless of whether television is seen as a force for change or a reflection of reality, the changing face of medicine on television can be worrisome for current and future physicians.

Essentially, however, the more true to real life a medical show is, the better. And although individuals who embody medicine’s good and desirable aspects are needed as role models, perhaps we can still find them inside the characters portrayed today. Moreover, physicians must themselves be careful in the drama of real life to recognize the great influence they have on public perceptions of the practice of medicine. One medical journal comments: “If medicine lends itself readily to television fiction, it is perhaps because the medical profession itself is built on social fictions surrounding the authority and functions of doctors” (O’Connor 1998).

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# **THE CAUSE –STORY OF THE INDOMITABLE FIRST CANADIAN WOMAN DOCTOR EMILY STOWE (1831-1903)**

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## **ABSTRACT**

**Emily Stowe is a true Canadian heroine. She pioneered the struggle for woman's equality in Canada as the first woman school principal (1852) and physician (1867).**

**Fortunate to be born into a Quaker community that accepted women as equals, she received a good education and constant encouragement from her family. In her first career as a teacher, she succeeded in her role as the first female principal. It was not until her marriage to John Stowe and having had three children before she decided to become a doctor. On her first attempt, Emily Stowe was refused entry to the University of Toronto on account of her sex. She returned to Toronto in 1867, after having studied homeopathic medicine at the New York Medical College for Women, to practice medicine in the face of fines, threats of imprisonment and opposition from the Ontario College of Physicians and Surgeons. In 1871, in order to meet licensing requirements, Emily and Jenny Trout became the first women to attend lectures at the Toronto School of Medicine. This was a difficult period for both of them as both students and faculty went out of their way to embarrass and humiliate them. Emily failed and continued to practice without a license. It was not until 1880 before Dr Emily Stowe was finally granted a license.**

**The difficulties she had faced and the obstacles she had overcome would have overwhelmed most people for a lifetime, but not Emily Stowe. She also became one of Canada's leading suffragists. She founded one of the earliest female suffrage groups, The Toronto Women's Literary Club which was later called the Toronto Women's Suffrage Club. She help found the Women's Medical College in Toronto in 1883 and died in 1903, fourteen years before women got the vote in Canada.**

**Her daughter, Dr. Augusta Stowe Gullen, continued along her mother's extraordinary path, becoming the first woman to study medicine and graduate from a Canadian university in 1883. Following her mother's death, Augusta became president of the final incarnation of the Toronto Women's Literary Club, the Canadian Suffrage Association, and then vice president of the National Council of Women.**

**Emily Stowe was an extraordinary person for her time. To win her battle, she had to prove that women could be wives, mothers as well as physicians at the same time. She had to prove that women had the strength, intelligence and determination to succeed. And succeed she did.**

Emily Stowe was an extraordinary person for her time. She pioneered the struggle for woman's equality in Canada as the first woman school principal (1852), first woman physician (1867), and as one of Canada's leading suffragists. The difficulties she faced and the obstacles she overcame would have overwhelmed most people for a lifetime, but not Emily Stowe. After she had acquired the education and skills necessary to qualify herself as a doctor, she set out to make it easier for other women who would follow her, and to fight the discrimination and blind prejudice that had faced her at every turn. To win her battle, she had to prove that women could be wives, mothers as well as physicians at the same time. She had to prove that women had the strength, intelligence and determination to succeed.

There are many components to Emily Stowe's life that shaped her stalwart, fearless and persistent personality – her Quaker background, teaching career, role as a wife and mother, and being a female medical student and physician.

The story of this remarkable woman's life began long before she became involved in the field of medicine or in the struggle for the vote. It began in 1831, the year Emily Howard Jennings was born to Hannah and Solomon Jennings (Hacker, 1974). She was the first of six daughters (of Emily's five sisters, two also studied medicine in the United States). The family lived in the village of Norwich in Ontario. It was in this small community that the six girls grew up and developed the strong beliefs that were to be so important in Emily's life. Emily's parents were Methodists, but they had originally been Quakers. This Quaker background had a very strong influence on the young Emily. Quakers believed that women were equal to men. Among the Quakers, women shared equally in the conduct of their meetings and in every aspect of daily life. The Quaker understanding of equality was well expressed many years later by William Greenwood Brown, a member of the Toronto Central Meeting of Friends:

The General attitude of the Quaker is that the State should be modeled after the constitution and the spirit of the home; that the husband and wife have a partnership voice in the government of the home, in the church (so far as Quakers are concerned) and should have in the State (Ray, 1990).

In addition, the Quakers believed that a good education was vitally important for everyone. This was instilled through the education Hannah Jennings gave to her daughters, which took precedence over the demand of work on the farm. The Quaker setting contributed to the six daughters' determination to extend equality beyond the meeting house and the Quaker-oriented home.

Emily Stowe grew up in the early 1800's, during a time when medical practice was in a backward state. Throughout Upper Canada medical practitioners were very few and

opportunities to become qualified were almost non-existent (Ray, 1990). Nevertheless, unqualified people were forbidden to practice. Under these circumstances, many people were treated by women at home. Like most frontier wives and mothers, Hannah Jennings had a vast knowledge of herbal remedies. Pioneer settlements had a long tradition of woman healers, and attendance at birth was usually a woman's business. Growing up among healers like her mother undoubtedly convinced Emily that women naturally made good physicians.

Emily's education and constant encouragement from her family played strong roles in her first career as a teacher in a small rural school near the town of Norwich (Ray, 1978). As the only teacher she was responsible for all grade levels. Despite the great amount of work involved in teaching a rural school, Emily enjoyed the challenge of opening the doors to knowledge. After a few years of teaching she wanted to improve her own education, so when she was in her early twenties Emily made up her mind to go to university.

This was easier said than done. Her family gave her support and encouragement because of the Quaker's belief in the importance of education, but the universities at the time did not share that sentiment. Emily must have known this (Fryer, 1990), but she applied anyway to the University of Toronto. She thought it was silly that the university would refuse a good student only on the ground that she is a woman. Nevertheless her application was turned down. This did not stop Emily. Instead, she decided to attend the Normal School in Toronto, which was a school specifically for teachers (Ray, 1978). When Emily Stowe graduated at the end of the two-year program, she had done such a good job that not only did she earn a First Class Teacher's Certificate, but she was also offered the position of principal at the Brantford public school. Emily accepted and became the first woman principal in Canada. At the age of twenty-three, Emily Stowe had already notched up the first of her "firsts".

When Emily went to Brantford to take up her new position as principal, more changed than just her job. Most of that change was caused by a young man named John Stowe. In 1856 Emily Jennings and John Stowe were married and Emily left the teaching profession to become a homemaker as was the custom at that time (Fryer, 1990). Emily's life became full over the next few years with their three children. Augusta came first, in July, 1857 (Ray, 1978). Then in February, 1861, Augusta's first brother, John Howard, was born, and Frank Jennings arrived two years later in February, 1863. Emily Stowe had always thought that the role of wife and mother was very important, and she felt that women could make a great contribution to Canada by providing good, loving homes. She said,

I believe homemaking, of all occupations that fall to women's lot, the one most important and far reaching in its effects upon humanity (Hacker, 1974).

However, Emily's homemaking career did not last very long because John was diagnosed with tuberculosis shortly after their third child, Frank, was born. This meant that he would have to enter a sanatorium in order to regain his health. Emily soon realized that she had to return to teaching to support the family and pay the medical bills.

It must have been hard for Emily to raise her family on the low salary that women teachers were given, which was half of that of men holding the same position, but she did it. She also made a

decision that would make her life even harder, for it was while her husband was in the sanatorium that she resolved to become a doctor (Fryer, 1990). It may have been partly John's illness that made Emily want to become a doctor, but she had also been aware for a long time of the great need for women doctors. Women would often go for years bearing the pain and inconvenience of infections and ailments because they were too shy and modest to go to a male doctor. There were many incidents where a minor problem developed into a major problem just because a woman did not want a male doctor to look after her. Emily thought that this was completely wrong. All that was needed was some women doctors who would understand women and their ailments. In addition, because Emily had grown up with women healers, such as her mother, it was obvious to her that women were naturally capable of being doctors.

To train as a doctor, Emily had to save enough money to pay for her training and to support her family at the same time. She carefully saved all she could from her teaching salary. When Emily had set her mind to something, nothing would stop her.

Emily soon realized she needed more than just determination to become a doctor. Professions such as medicine, law or politics were considered far too demanding and coarse for women at the time (Hacker, 1974). Women were considered so delicate that they would not have the physical or mental strength to deal with the challenges of these careers, even though bearing children and caring for home in the nineteenth century took as much, if not more, strength than any other professions. By applying for permission to study medicine, Emily Stowe was fighting deep-rooted public opinion.

After Emily succeeded in saving up enough money, she chose the University of Toronto and applied for admission to its medical school. After waiting anxiously for what seemed like a very long time, the answer finally arrived. Once again, her application had been refused, based on the fact that she was a woman. Despite her bitter disappointment, she was not really surprised. Emily soon applied to the New York Medical College for Women, which was a homeopathic medical collage founded by Dr. Clemence Sophia Lozier (Ray, 1978). Although American women were in the throes of a struggle to establish their right to a medical education, they were years ahead of their Canadian sisters. This was mainly due to the earlier work lead by America's first woman doctor, Elizabeth Blackwell.

Finally in 1867, Emily Stowe succeeded in her deepest desire and graduated as a doctor. Upon her return to Canada, there was still another barrier she had to overcome to establish herself in her chosen profession. Shortly after Emily's graduation from the New York Medical College for Woman, an Act of Parliament was passed. According to this Act all doctors who had trained in the United States had to take a matriculation examination before a Council of the College of Physicians and Surgeons of Ontario in order to get a license to practice medicine in Canada. They were required to take at least one session of lectures at an Ontario medical institution. The obvious problem for Emily was that no Ontario medical school would admit women. There was also a fine for practicing without a license. It was impossible and preposterous, but there was no way out of the dilemma. So, despite the fines, Emily went ahead and practiced without a license until she could find a solution. Although Emily regularly and persistently applied to the University of Toronto to be admitted to the Medical School, the university just regularly refused

to admit women, even for one session. And she kept on applying. In one of her replies to the university, she said,

Your senate may refuse to admit women now, but the day will come when these doors will swing open to every female who chooses to apply (Ray, 1978).

Finally, in 1870, the university relented and allowed Dr. Stowe and another woman, Jennie Trout, to attend. This university session was one of the most unpleasant times in Emily's life. Both the lecturers and the male students did their best to make life as miserable as possible for the two women. One of Jennie Trout's friends recalled that while the two women were attending the Toronto's School of Medicine, "playful activities of some members of the school were in the way of obnoxious sketches on the wall. There were so many artists, or at least sketches, that the walls of a classroom had to be whitewashed four times during the session (Fryer, 1990)." While male students delighted in leaving objects intended to shock on chairs, the professors were no better. Finally, Emily told a lecturer that if he didn't clean up his language she would tell his wife. That worked wonders; afterwards the heckling became subdued and was easier to tolerate. With the ending of the miserable session, Emily refused to take the oral and written examination before the Council of the College of Physicians and Surgeons for many years. This was mainly because she felt the Council would be reluctant to pass her since she had disturbed their sedate profession with her determination to break into the field, and the publicity that she was attracting (Ray, 1978). It was not until July 16, 1880, that Emily Stowe finally obtained her license to practice medicine in Ontario, thirteen years after she had graduated from medical school (Fryer, 1990). It had been a long and wearisome battle but now the Stowe family was filled with celebration. One of the greatest contributions she made to the field of medicine was the establishment of the Ontario Medical College for Women on October 1, 1883 (Ray, 1978). Once again, Emily Stowe had helped make one of her dreams become a reality.

Not only did Emily Stowe win most of her battles in her war with the medical professions which had lasted for more than a decade, she had also been extremely active in other even more disreputable schemes (Hacker, 1974). When Emily was in New York studying medicine, she was painfully aware of the desperate need to improve the lot of women. Emily soon heard about the women in the United States who had been working for a number of years to achieve the same rights as men. When Emily returned to Canada, her licensing problems made her realize that women's situation in Canada was very similar to that of the women in the United States (Ray, 1978). She became so concerned over women's lack of rights that soon after she returned to Canada she began travelling all over southern Ontario giving talks to women, even while she carried a full medical practice. She felt it was important to let women know how many rights they didn't have. In 1877 she had organized the Toronto Women's Literary Club which was, in effect, a suffragette society (Hacker, 1974). The literary society came out into the open in 1883 and called itself the Toronto Women's Suffrage Club. It grew to become the Dominion Women's Enfranchisement Association (1889) and, finally, the Canadian Suffrage Association (1907). By then Emily Stowe had died, but on the great day in 1918 when Canadian women were finally given the federal vote, her name was honored as one of our greatest suffragettes.

After Emily Stowe's death another woman stepped in to fill her shoes and provided a vital and strong leadership for the suffrage movement. That woman was Dr. Augusta Stowe Gullen,

Emily's daughter. Inspired by her mother, Augusta was the first woman doctor to graduate from a Canadian medical school. Life at the University of Toronto Medical School was not much better for Augusta. However, like her mother, she was a fighter. She had not only earned her medical degree, but she also so convinced her fellow students of her dedication and determination that they changed their attitude towards this woman who wanted to be a doctor. So strongly did she influence one classmate that he asked her to marry her shortly after their graduation in 1883. Like her mother she also possessed boundless energy. Not only did Augusta run a private clinic at home and organized the Women's Board of Western Hospital, she had interests outside the field of medicine. For many years, she had worked along side her mother in the suffrage movement. After her mother's death, Augusta became president of the Dominion Women's Enfranchisement Association and vice president of the National Council of Women. In 1910, she was appointed to the University of Toronto Senate as the medical profession representative. It is ironic because it was an earlier senate from the same university that had denied her mother the right to study medicine and had fought so hard against allowing women into the University of Toronto Medical School. It must have been with a great deal of satisfaction that Augusta accepted the appointment.

As we march into the twenty-first century approximately half the students that attend university in medicine are women. Woman doctors have come a long way since Emily Stowe was first refused admission to the University of Toronto. We have come a long way because she has taken the first step for us. She blazed the trail with courage, integrity, faith, but above all, with dedication. Emily Stowe is a true Canadian heroine.

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## Virginia Apgar and the Apgar Scores

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### ABSTRACT

**The Apgar score was developed in 1949 by anesthesiologist Virginia Apgar. Dr. Apgar was approached by a medical student at the time and asked how a newborn should be assessed. In response to this enquiry Dr. Apgar developed the Apgar scoring system as she felt that there was a need for a quick, objective, and reproducible means for determining whether a neonate required medical intervention. Dr. Apgar felt that if the mother could be observed for nine months the newborn could be given at least one minute of assessment. Today the Apgar Score is used worldwide to assess the condition of the newborn following the birth process. Virginia Apgar is one of the most well known anesthesiologists, although a career in anaesthesiology was not always her primary goal. Virginia Apgar graduated from Mt. Holyoke College in 1929, after which she entered the Columbia University College of Physicians and Surgeons. She graduated fourth in her class and received a prestigious surgical residency position. After two very successful years in surgery she was persuaded to leave surgery and pursue a career in the relatively new medical specialty of anaesthesia. She excelled in this new field both in practice and in research and became the first female full professor at Columbia in 1949. She left Columbia to pursue a Master's in Public Health from Johns Hopkins University and later became the Director of the National Foundation's Congenital Defects Division (formerly the March of Dimes) where she promoted public awareness and research on birth defects. Dr. Apgar's impact on medicine was diverse, however it was her development of the Apgar scores for which she is most remembered. It is true that "Every baby born in a modern hospital anywhere in the world is looked at first through the eyes of Virginia Apgar."**

Virginia Apgar was born in Westfield, New Jersey in 1909 into an odd, but interesting, family. Her father supported the family by a number of different sales jobs, but his passion in life was for science. He had a well equipped scientific laboratory in the basement home which included a homemade telescope. Virginia Apgar was the only girl in her family which included a brother who died from tuberculosis at the age of three and another brother who was chronically ill throughout his childhood. This brother made frequent trips to the family physician, and it is believed that these early experiences, coupled with her early exposure to science may have led to Virginia Apgar's interest in medicine (Calmes, 1984). She attended Mount Holyoke College in 1925. Her family was not a wealthy family and she supported herself and her education through scholarships and a number of

odd jobs. One such job included catching stray cats for the anatomy laboratory (Calmes, 1994). Apgar was accepted into Columbia University's College of Physicians and Surgeons in 1929, although her first choice had been Harvard. At the time, however, Harvard was not admitting women to its medical school. Following her start at Columbia the stock market crash of 1929 occurred. Her family's already precarious financial situation worsened as a result and Apgar had to borrow money from a family friend whose finances had survived the crash. Virginia Apgar graduated from Columbia in 1933, fourth in her class of 73 (69 men and 4 women). Upon her graduation Apgar owed nearly \$4000, a considerable amount of money for the time (Calmes, 1984; 1994).

Following graduation Virginia Apgar was awarded a prestigious surgical residency position at Columbia Presbyterian. After excelling in her chosen field and after nearly two years in the programme the Chairman of Surgery, Dr. Alan Whipple discouraged her from continuing in this field. He did this for two reasons. First, she was a female and Whipple had already trained four female surgeons who were having a difficult time establishing a practice. Surgery was an already overcrowded specialty in New York City at the time and patients were not willing to have a female surgeon. In light of this, Dr. Whipple recognized that Dr. Apgar did not come from a wealthy family, was in considerable debt already, and was not married so would be forced to support herself alone. The second reason for which Dr. Whipple urged Apgar to change specialties was that there was a need for better anesthesia. Whipple recognized that Virginia Apgar excelled in every field she chose to pursue, and being interested in the development of surgery himself realized that in order for surgery to advance anesthesia would also have to progress (Humphreys, 1998).

As was typical for the time Dr. Apgar's anesthesia training began by spending nearly a year with the nurse anesthetists at Columbia. This was followed by six months in Madison Wisconsin under the direction of Dr. Ralph Waters. The first department of anesthesia in the United States was at the University of Wisconsin and it was a well-known centre of excellence for anesthesia training. After training in Madison, Apgar continued her training at the Bellevue Hospital in New York with Dr. Emery Rovenstine (Calmes, 1992). Following completion of her anesthesia training in 1938 Apgar returned to Columbia and was named Director of the Division of Anesthesia. The Division of Anesthesia faced a number of problems in the early years. The surgeons had a hard time accepting anesthesiologists as their equals in the operating room and there was a problem of inadequate financial compensation. In fact, it was at the surgeons' discretion whether the anesthesiologists would be paid for their services. Apgar felt that one of hallmarks of any professional was the ability to charge for their services. In October 1940 Virginia Apgar threatened to resign over this controversy and followed through in December of the same year (Anesthesia Report, 1940). Although the details pertaining to the resolution of this conflict are not well documented, a compromise apparently occurred because Apgar returned to Columbia (Calmes, 1984).

In 1949 the Division of Anesthesia was made into a Department. Evidence indicates that Dr. Apgar expected to be made chair; instead she was named the first woman full professor at Columbia while the chair was awarded to Dr. EM Papper, an anesthesiologist with more research experience (Calmes, 1992). Freed from her administrative responsibilities Apgar was able to focus on the new field of obstetrical anesthesia where she made what were perhaps her most important contributions to medicine.

The Apgar scoring system was developed by Virginia Apgar one morning in the hospital cafeteria in 1949. Apgar was having breakfast with some medical students when one of the students asked how she would evaluate a newborn (Calmes, 1992). Apgar replied "That's easy, you'd do it like this." She grabbed the nearest piece of paper which happened to be a "Please bus your own trays" sign and jotted down her scoring system (Calmes, 1985; P&S Journal, 1994). Recognizing what she had done Apgar rushed to the delivery room to try it out (Calmes, 1992).

The scores were originally designed to be used by health care workers who were *not* intimately involved in the mother's care. It was felt that a more objective assessment of the newborn could be provided by those not directly involved in the mother's care (Cohen et al, 1993). Current medical care focused for the most part on the mother with little attention being given to the baby. Apgar stated that after nine months of maternal care health care workers could spare at least one minute on newborn assessment (Apgar, 1966).

To determine a neonate's Apgar score the baby is assigned a score of zero to two for each of five signs determined by the observer, with a maximum score being ten. The five signs are the heart rate, respiratory effort, muscle tone, reflex irritability, and color (see Table 1).

Table 1. The Apgar Scoring System

SIGN	0	1	2
Heart Rate	Absent	<100	>100
Respiratory Effort	Absent	Weak Cry: Hypoventilation	Good Strong Cry
Muscle Tone	Limp	Some Flexion of the Extremities	Well Flexed
Reflex Irritability	No Response	Some Motion	Cry
Color	Blue: Pale	Body Pink: Extremities Blue	Completely Pink

Apgar did not have a name for her scoring system when she developed it. Dr. Butterfield, a pediatrician, was the first to use the letters of Apgar's last name as a mnemonic to teach the technique to medical students: A: appearance (color); P: pulse (heart rate); G: grimace (reflex irritability); A: activity (muscle tone); R: respiration (respiratory effort). Apgar was pleased to see her name being used to teach students this scoring system but emphasized that she did not really care what the score was called, as long as someone was observing the newborn immediately after delivery (Apgar, 1962).

Although not all criteria are of equal importance in the Apgar scoring system it has remained the same as described in the original paper. Apgar herself recognized that heart rate and respiratory effort were perhaps the most important factors to monitor while color was the least reliable measure of the score (Apgar et al, 1953). However, the simplicity and reproducibility of the Apgar scores have maintained its popularity and widespread use. Apgar realized that the use of relative weighting of each variable would result in complicated and time consuming calculations and consequently less attention would be paid to the baby.

There are many advantages to using the Apgar scoring system to identify newborns who may require further intervention. It provides a quantitative and comparable measure of how the baby is adapting to extrauterine life. As well, it is a convenient, rapid and easily learned method that can be performed by many different health care professionals. The widespread use of the Apgar scores for over fifty years testifies to its value in neonatal care.

The Apgar scores were developed to allow for an objective assessment of how the neonate fared through the delivery. However, the scores have often been used inappropriately. A recent policy statement made by the American Academy of Pediatrics (1996) states that misuse of the Apgar scoring system has led to an erroneous definition of asphyxia. Standard Apgar scores alone at one and five minutes following delivery correlate poorly with either cause or outcome, and as a result should not be considered evidence or consequence of asphyxiation (Nelson and Ellenberg, 1981; Stanley, 1994; AAP, 1996). Furthermore, low Apgar scores have been used as evidence to establish an hypoxic insult leading to cerebral palsy or other neurologic damage. While the incidence of low Apgar scores is higher among infants with cerebral palsy (CP) the vast majority of CP patients (73%) are born with Apgar scores above 7 (Nelson and Ellenberg, 1981). A neonate that has suffered severe enough asphyxia to cause acute neurologic injury must demonstrate each of the following: 1) Profound metabolic or mixed acidemia on umbilical arterial blood sample, 2) an Apgar score of 0 to 3 for greater than five minutes, 3) neurologic manifestations, and 4) multisystem organ dysfunction. The factors measured in the Apgar scores are also affected by physiologic immaturity, medications, the presence of congenital malformations, and other factors (AAP, 1996). Therefore, in these settings the scores should be regarded with appropriate relevance. The Apgar scores are useful in assessing

the condition of the neonate following delivery and for determining which infants require intervention. However, their use in other settings is inappropriate.

Virginia Apgar contributed to medicine in a number of important ways, although it is the development of the Apgar scoring system for which she is best known. After publishing the scoring system she continued in the field of obstetrical anesthesia, both clinically and scientifically. She formed a collaborative effort with pediatrician Stanley James, and academic anesthesiologist Duncan Holaday. They formed a strong team and made many contributions to the field of obstetrical anesthesia. Their research led to the realization that acidotic and hypoxic newborns were not normal, as previously believed, and should be treated immediately (Apgar et al, 1958). In addition, they demonstrated that cyclopropane was more depressant on the newborn than other anesthetics available, changing the use of this once popular anesthetic in obstetrics (Apgar et al, 1957). Apgar was the first person to successfully catheterize the umbilical artery of a newborn, albeit by accident. Recognizing the significance of what Apgar had done she and her colleagues began to teach the technique to visiting neonatologists and it has since become a standard of neonatology care (Calmes, 1984).

In 1959 Apgar pursued a Master's degree in Public Health (MPH) from Johns Hopkins University. Apgar hoped that this would improve her knowledge of biostatistics to help with her research in obstetrical anesthesia. Upon completion of her MPH, however, she was offered the position of Director of the Division of Congenital Defects at the National Foundation (formerly the March of Dimes; Calmes, 1997). Seeing this position as a unique opportunity to further research and increase the public awareness of birth defects, she accepted the position and stayed there until her death in 1974. She was later named Vice-President of Medical Affairs and was responsible for fund raising for the foundation. During her tenure there the funding increased from \$19 000 000 to \$45 000 000 (Calmes, 1994).

Outside of medicine Virginia Apgar was also a fascinating person. She was an accomplished musician and built her own stringed instruments. She had an impressive stamp collection, was an avid baseball fan, and started flying lessons a few years before her death (Enocha, 1994).

Apgar was the recipient of numerous awards and distinctions, including the Silver and Gold medals for distinguished achievement in medicine from Columbia University and a distinguished service award from the American Society of Anesthesiologists (Sicherman, et al, 1980). In October of 1994 a United States Postal Service 20-cent stamp was released in honor of Virginia Apgar as part of the Great American Series. She was only the second American anesthesiologist bestowed this honor. In 1995 she was elected to the National Women's Hall of Fame (Calmes, 1994). Virginia Apgar's contributions to medicine were great in both the fields of obstetrical anesthesia and perinatology. Apgar's contributions to obstetrical anesthesia are perhaps the best known and the importance of these are made clear by the following statement made by an anonymous physician "Every baby born in a modern hospital anywhere in the world is looked at first through the eyes of Virginia Apgar."

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# **COTTON MATHER: A PORTRAIT OF RELIGION AND MEDICINE IN 18<sup>TH</sup> CENTURY NEW ENGLAND**

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## **ABSTRACT**

**One of the great Colonial contributions to medicine was the practice of inoculation by the Reverend Doctor Cotton Mather D.D., FRS (1663-1728). As the firstborn son of Massachusetts's preeminent minister, Cotton Mather inherited the role as the standard bearer of the puritan religion. But, Mather also developed an early appreciation for medicine and its potential for helping those in need. Driven by these two great passions, Mather served both as a minister and an amateur physician in Boston. As a puritan scientist, Mather sought to integrate his religious philosophy with modern medicine.**

**Mather spent much of his energy theorizing about the nature of disease. The root of all sickness was the fall of Adam, "First, remember, that the sin of our First Parents, was the First Parent of all our Sickness". This doctrine led him to believe that both the body and the soul played a role in disease and healing. Thus, he embraced psychosomatic treatments such as prayers and sermons to help patients to overcome physical disease. Conversely, for cases of hysteria Mather would prescribe soothing baths to let the body help heal the soul.**

**Mather's concern for the poor led him to promote public health measures. The key to public health was "moderate Abstinence (including smoking)... convenient Exercise... an Holy and easy mind". When epidemics did threaten, Mather was quick to disseminate simple disease-education pamphlets throughout the New England community. But, his great contribution came through his role in proving the value of inoculation against smallpox in the English-speaking world. In 1721, against the near unanimous opposition of the professional physicians, Mather and Dr. Zabdiel Boylston successfully inoculated over 200 people in Boston.**

In his essay on the history of medicine in Massachusetts, Oliver Wendell Holmes wrote "The state of medicine is an index of a civilization of an age and country- one of the best, perhaps, by which it can be judged."<sup>2</sup> In this quote Holmes recognizes the old adage 'ideas have consequences'. In particular, the ideas or presuppositions of a given individual or society determine its practice of medicine. The Reverend Doctor Cotton Mather, D.D. FRS, (1663-1728) was meticulous about practicing a style of medicine based upon his religious principles. Mather was a committed Puritan. All of his life was a conscious extension of his devotion to God. His

religious convictions determined his view of the scientific method, medical anthropology, and public health. This paper will examine how some of Mather's religious principles influenced his practice of medicine.

Cotton Mather was born the birth prince of the Puritan Religion in Massachusetts. His two grandfathers, John Cotton and Richard Mather, were leading Ministers in the first generation of Bostonians. His father, Increase Mather, was the Minister of the popular 2<sup>nd</sup> Church in Boston, and President of Harvard College. When Increase married the daughter of John Cotton, there were great expectations for their first born son, Cotton Mather, to become the next great Puritan leader. Cotton Mather felt this pressure at an early age and didn't shy away from it. To that end, he entered Harvard College to study to become a Minister. But, Mather had a significant stutter, a great impediment to any budding preacher. In case he would be physically unable to enter the ministry, Mather studied medicine at Harvard. Harvard didn't have a medical program at that time, so Mather's education consisted of reading popular medical works. However, after graduating from college, Mather was able to overcome his impediment and he joined his father as a minister in 2<sup>nd</sup> Church of Boston.

Mather continued to serve as minister in 2<sup>nd</sup> Church till his death. However, his interest in science and medicine continued to express itself throughout Mather's life. He wrote several books on science, a large medical work entitled 'the Angel of Bethesda', and sent numerous scientific communications to many societies. For his work in the realm of science, Cotton Mather was elected a Fellow of the Royal Society (of London) in 1713. Mather was one of the first North American members elected to that prestigious scientific body.

Mather's understanding of the scientific method was shaped by his religion. Mather understood God to be the Creator of the world, and so he did not fear that science would be in contradiction to his beliefs. Rather, in a series of sermons in the 1690s he encouraged people to study nature, because nature, he argued, shows God's greatness as Creator. Nature was an incentive to religion, and equally, religion was an incentive to study nature, 'It is an interest highly becoming of the Christian Philosopher, to fetch lessons of piety from the whole Creation of God and hear what Maxims of Piety all the Creature would, in the way of Reflection and Similitude mind us of.'<sup>7</sup> Mather's Creator was a God of order. Consequently in his use of science he expected to find order and the relation between cause and effect in medicine and in nature. And in an age when medical theory was lacking, Mather was especially dependent on his powers of observation. Mather's scientific skills allowed him to discern the ill effects of smoking. In his historical work, *Magnalia Christi Americana*, he writes of a Mr. Rogers who died from a "flood of rheum, occasioned partly by his disuse of tobacco."<sup>6</sup> In *The Angel of Bethesda*, he hypothesizes the pathophysiology of this disease, "the caustic salt... communicated unto the mass of blood... in the smoke of tobacco may lay the Foundations for Diseases in Millions of unadvised people."<sup>5</sup> This theory is widely accepted today.

The Bible defined for Mather the nature of illness. Sickness, decay and death alike were the direct result of original sin. Thus, for Mather the theologian, sickness is but one aspect of the greater problem of evil in the world. The physical and spiritual weakness of Adam was inherited by all his descendants, "Remember, that the sin of our first parents, was the first parent of all our sickness."<sup>5</sup>

The idea of the human body consisting of a complex of chemical reactions was considered and rejected by the Bostonian metaphysician, “There are indeed many things in the human body, that cannot be solved by the rule of mechanism.”<sup>5</sup> Rather Cotton Mather believed that man has both a body and a soul that are integrated together by an intermediary vital principle. This vital principle, or Nishmath Chajim as he often called it, served to communicate between the two human components. It is not reason but “the life by which the several parts have their faculties maintained in exercise.”<sup>5</sup>

This anthropology had a practical implication for disease. A weakness in the body or soul would naturally be communicated through the vital principle to the other. Or in Mather’s words “Hence for the sins of the one, there come sufferings on the other.”<sup>5</sup> Poor diet, poor rest, little exercise would promote an unsteady mind. Likewise, an unstable mind would also make one prone to physical illness.

This also had implications for medical practice. Because of the vital principle, illness could be treated by medications for soul and for the body. Mental patients, including those who Mather thought were bewitched, were treated humanely by the puritan priest. His treatment for the soul was primarily psychological. For example, depressive patients were to be endured, humored and encouraged with the hope of the Gospel message. In conjunction, Mather would prescribe physical treatments such as cold drinks, bathing, exercise, and judicious leeching to let the body help heal the soul. This moderation is in stark contrast to his contemporaries’ and his own book on witchcraft written during the Salem trials.

Bodily illness would be treated with both spiritual and physical remedies. Top on Mather’s list of medicines was piety. Occasionally Mather would preach a homily to his patients on the wickedness of their soul with the goal of producing a sense of piety within a patient which in turn would lead to a psychosomatic cure. Mather was not taking pleasure in inflicting a sense of guilt and despair on the patient. Rather it was his experience, both personally and as a pastor, that the relief and joy that comes from believing that your sins are forgiven was unparalleled, and would encourage the weakened body and mind. And while we today may find it comical and dangerous, no doubt his parishioners, having adopted his same worldview, would be more receptive to this medicine.

Next on his shelf would be prayer, the ‘universal medicine’ for any disease. When his own daughter Nanny fell sick with fever and seizures till she was near death, he set aside a day for fasting and prayer for her health. Of which he writes in his diary,

“Now, behold the effect of prayer and faith! On this very day, the Child began to recover. A sensible and marvelous change this day came upon the child; and from this very time, its recovery went on most comfortably.”<sup>3</sup>

Mather’s greatest contributions to medicine came through his efforts in the field of public health. His special interest to this neglected field was motivated by his religious ethic.

Cotton Mather wrote his own book on ethics, *Bonifacius. An Essay upon the Good*.<sup>4</sup> In this book, he explains how Calvinistic Theology leads to doing good works. According to his religion, all men are condemned to eternal damnation because of their sin. Man's guilt is so great that he cannot make himself righteous or acceptable by doing good works. Instead, salvation only comes through the grace of God by believing in Jesus Christ. Man cannot do any good works to help his salvation. Out of gratitude for God's grace man ought to respond by seeking to do good works. The man who has a desire for God will perform good works. Mather's motive for doing good was also influenced by extensive reading of conservative German pietism. Pietism stressed the importance of the motivation of the heart in doing good works. For Mather, it was not enough to do good works, he must also have right heart motivation, the desire to do good born out of love. And there was no greater opportunity to do good in medicine than during epidemics.

In 1713, an outbreak of measles threatened the city of Boston. Mather was concerned for two reasons. First, the serious nature of the disease from which he lost one wife and three children. Second, the lack of physicians in the area. In response, Mather wrote to the medical community soliciting one of their members to write a public health pamphlet so that the poor, who could not afford a physician, would know how to act. When no one responded, Mather himself wrote a pamphlet on the disease. He was especially careful to make clear that he was not meddling with the profession but only trying to help those without health care,

“I am sure, nothing but a pure Act of Charity to the Poor, where Physicians are wanting, is now intended; nor anything offered, but what a Number of our most Eminent physicians have approved of ... and the helping, tho' of but one or two Miserables, weighs down, against all that may be said, against the Freedom which this Letter has taken. I am satisfied, The Angel of Bethseda would esteem it so.”<sup>1</sup>

In 1721, another epidemic struck Boston, and through this experience Cotton Mather's place in medical history would be enshrined. The most feared disease of the early 18<sup>th</sup> century was the small pox. This disease was highly contagious, highly fatal, and often those who survived were disfigured. At the turn of the 18<sup>th</sup> Century, reports from Africa and Asia began circulating in Western Europe about an immunization program through inoculating healthy people with pus from an infected individual (variolation). However, the process was deemed far too dangerous in England and considered a possible source for starting an epidemic. After a failed experiment in London, inoculation was discredited in the popular society.

Cotton Mather had followed these reports carefully and had decided to start his own experiment when small pox hit Boston again. This next epidemic began in May, 1721. Mather wrote a letter to the medical community encouraging them to begin inoculation. Only one physician, Dr. Zabdiel Boylston, responded. Boylston began the experiment with his own son and continued with other volunteers. Soon public pressure began to sway against the experiment. The rest of the medical community led by Dr. William Douglass wrote an article in the Boston Gazette charging Boylston with negligence, and criminal behavior, and arguing that it was irreligious to interfere with God's providence through variolation. In the next edition, Cotton Mather and five other Ministers wrote an article defending Boylston's character and countering the religious charge. In the second argument, the tension between Mather's faith and science is made manifest. Mather believed that God alone is responsible for healing disease, with or without the help of a

physician. Yet, at the same time man is obligated before God to use all reasonable means available to further the cause of health. Often it is through man's efforts that God chooses to bring healing. In the article the Ministers wrote,

“Cannot they give into the method or practice without having their devotion and subjection to the All-wise Providence of God Almighty call'd in question?... Do we not in the use of all means depend on GOD's blessing?... For, what hand or art of Man is there in this Operation more than in bleeding, blistering and a Score more things in Medical use? which are all consistent with a humble trust in our Great preserver, and a due Subjection to His All-wise Providence.”<sup>1</sup>

Elsewhere, Mather would write of this tension,

“O thou afflicted... go to physicians, in obedience to God, who has commanded the use of means. But place thy dependence on God alone to direct and prosper them. And know, that they are all physicians of no value, if He do not do so.”<sup>5</sup>

Mather and Boylston were able to continue their experiment through the epidemic. Of the 242 people treated only 6 died (2.5%)<sup>1</sup>. This was in comparison to the 15% mortality rate amongst those who contracted the disease naturally (844 deaths out of 5,889 cases). Mather and Boylston published their results, and their experiment gave credibility to the process of inoculation throughout the Western World.

This controversy would seem ironic to much of today's 20<sup>th</sup> century culture. In 1721, it was the secular profession that was stagnant and opposed the progress of the new science. On the other hand, the clergy were courageous, open-minded, and progressive. But, these events would not be ironic to Cotton Mather, to his theological interpretation of medicine, or to his many accomplishments.

Cotton Mather dedicated his life to the service of his God. All of his thoughts and activities were submitted to this one great aim. It is unlikely that Cotton Mather would have participated in medicine without his religious motivation to help the needy. The opportunities to do good through medicine were too apparent for this philanthropist to ignore. His religion also gave him a solid intellectual framework through which to understand and foster the new science.

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# The Human Cost of Building the Panama Canal

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## ABSTRACT

*“The creation of a water passage across Panama was one of the supreme human achievements of all time, the culmination of a heroic dream of over four hundred years and of more than twenty years of phenomenal effort and sacrifice.”*

-David McCullough in The Path Between the Seas

Today, the Panama Canal is recognized as an engineering triumph, a famous trade route, and a symbol of international relations. Few recognize, however, the great medical advances made during its construction and their vital role in its completion. Because of extensive health problems, the cost was measured not only in francs and dollars but also in thousands of unnecessary deaths.

Due to poor sanitation and deficient medical knowledge, outsiders came to Panama and its “Fever Coast” only to die from diseases thought to be caused by “miasmatic mists” from the local swamps. These diseases were primarily yellow fever and malaria. The rising death toll, which affected all ranks from the humblest labourers to prominent businessmen, was largely responsible for rising costs and the failure of the French to complete a canal. When the Americans took over in 1903, medical researchers had already proven that malaria and yellow fever were transmitted by mosquitoes. This idea was met by ridicule and skepticism, few realizing its significance. Through a mosquito eradication program under the leadership of Colonel William C. Gorgas, the death rate dramatically declined, thus greatly improving chances of final success.

With its recent transfer into Panamanian hands, the Canal has again caught our interest. From its history we should appreciate not only the impact of lethal diseases on human endeavour but also the reluctance of the majority to accept a new concept.

The Panama Canal has taken a place in history as a symbol of human achievement. It stands as a remarkable engineering triumph, a precarious but successful business venture, and even today a hot spot for international relations. Few recognize, however, the great medical advances made during its construction and their vital role in its completion. Because of extensive health problems, the cost of building the Panama Canal was measured not only in dollars but also in thousands of unnecessary deaths.

In 1513 the Spanish conquistador Vasco Nuñez de Balboa, discovered a fifty-mile-wide strip of land that separated the Atlantic and Pacific oceans and now known to us as the Panama Isthmus. It was named after a native settlement, the word meaning “Place of Many Fishes”. The Isthmus was characterized by mountains, impenetrable jungle, deep swamp, torrential rains, hot sun, debilitating humidity, pestilence and the some of the most geologically complex formations in the world. This hostile terrain presented many challenges to the construction of a canal. The dream of uniting the oceans dates from the time of Charles I of Spain who ordered the first survey in 1534. Not surprisingly, a passage across the Isthmus was declared impossible.

However, the unrealizable dream became reality through the successive efforts of France and the United States. In the latter half of the 19<sup>th</sup> century, the French Government signed a treaty with Colombia, to which country the Panama Isthmus then belonged, to build a canal closely paralleling the Panama Railroad. The French, led by Ferdinand de Lesseps, and after the exploratory work of French Navy Lieutenant, Lucien N. B. Wyse, decided to construct a sea-level canal after the fashion of the Suez Canal that had been supervised by de Lesseps and completed in 1869.

It proved a massive undertaking and perhaps doomed the French effort from the beginning. Lack of thorough investigation and charting of the proposed route resulted in underestimation of both difficulties and costs. Investors became increasingly reluctant to contribute further. Organization was poor from the start, for de Lesseps was an entrepreneur, not a trained engineer. The existing U.S.-owned railroad, purchased at a costly 25 million dollars, was poorly utilized; there were shortages of equipment and labour. By 1889, lack of funds had caused all activity on the Isthmus to cease. After desultory attempts by individual companies, the French abandoned the project in 1898.

American interest was aroused in 1869 during the presidency of Ulysses S. Grant. The Californian gold rush had highlighted the need for easier and faster transportation from the eastern States to the West. Through the initiative of President Theodore Roosevelt, in 1902 the Senate approved the Panamanian route for a canal. Roosevelt felt strongly that it would prove to be an important asset for the US, which kept navies in both oceans and could only transfer vessels via the long route round Cape Horn. After purchasing the project from the French for 40 million dollars, Roosevelt was left with one obstacle – rejection by Colombia of the US proposal to build the canal in the province of Panama. Roosevelt therefore moved quickly to support Panama’s independence movement and signed the Hay-Bunau-Varilla treaty for rights to a ten-mile-wide canal zone. As Roosevelt said himself: “...I took the Isthmus, started the canal and then left Congress not to debate the canal, but to debate me.”<sup>2</sup> The monumental project was completed at a total cost of 387 million dollars and was formally opened to traffic on August 15, 1914.

In addition to the financial costs, there was a considerable cost in human lives. According to hospital records, 5,609 died from diseases and accidents during the American work. If deaths from the French era are added the total is approximately 25,000.<sup>2</sup> This is likely an underestimate as the French only recorded in-patient deaths.

Major obstacles to French success related to health and sanitation. Endemic diseases such as malaria and yellow fever took many lives, both of labourers and engineers. During the French construction, nothing was known about the true mode of spread of these diseases. Outsiders named Panama the “Fever Coast” and thought that “miasmatic mists” from swamps and marshes were responsible:

“Then the trade winds die out and the hot sultry air of the Isthmus ceases to move, a white mist will sometimes rise out of the swelling ocean and hover like a fog over land and sea. The white mist is the precursor of fever and sickness, and those of the Isthmus who know remain within doors, unwilling to meet the ghost of the ocean halfway ...the white mist rose from the disturbed soil and ...carried with it from its underground prison all the poison of putrefaction, and wherever it enclosed its victims, there fever and death followed...”<sup>5</sup>

Those with yellow fever presented with a very high temperature [fulminating fever] and bloody or coffee-ground vomit; jaundice followed and death from “brain fever” commonly resulted. Survivors of the disease were immune to further attacks. The first-recorded death was in June 1881, soon after the beginning of the wet season. It was noted at first that yellow fever was prevalent primarily during the wet season but this seasonal cycle soon disappeared as infections began to occur throughout the year in 1885.

When it was proposed, most members of the scientific community ridiculed the idea that insect bites could be responsible for transmission of disease. Little was done to protect personnel; fear was understandably widespread. The death toll during the French construction was devastating, peaking in 1885. Yellow fever alone accounted for 5,627 deaths and ultimately, some 20,000 people died. Almost one third of those of European stock succumbed. The Americans also had trouble at the start, a sharp outbreak of yellow fever in 1904 accumulating coffins faster than they could be cleared away. However, medical research would soon clear the way for successful completion of the canal.

Great advances in the understanding of yellow fever were made in Cuba in 1900 by a medical team comprising Doctors Reed, Carroll, Lazear and Agramonte. By allowing themselves to be bitten and infected, they proved that the mosquito species *Aedes aegypti* was the vector. All previous theories were thus invalidated, including the belief that fomites could spread the disease. Unfortunately, Lazear died as a consequence of his heroism.

Dr. W.C. Gorgas, a general in the U.S. Army working in Havana to eradicate *Aedes aegypti*, would provide further support for this theory by reducing yellow fever cases there from 1,400 in 1900 to zero in 1901. He would eventually start the same work in Panama. His methods of extermination were simple and enforced with military efficiency. Yet, despite his experience, Gorgas was greeted by non-believers and skeptics, among them his superior. Most people there knew little about the mosquito research and had no real appreciation of its importance.

His warfare on mosquitoes was primarily aimed at yellow fever. He installed screens on windows, doors and verandahs, fumigated every dwelling, insisted that all water containers be covered and put oil on lakes and streams to eliminate the mosquito larvae. While he effectively

reduced the annual number of deaths due to yellow fever from seven to two percent of the Panamanian population, his battle against malaria was not as successful. The mosquito species was more difficult to eradicate and infected individuals did not develop immunity. Furthermore, untreated individuals developed permanent parasitaemia. Gorgas compared eliminating yellow fever to expelling the household cat, and malaria to getting rid of all the beasts on the jungle. However, sanitation teams drained square miles of swamp and burned acres of vegetation, which did allow Gorgas to minimize malarial outbreaks.

The first complete trial passage of the Panama Canal by an ocean going vessel took place on January 7, 1914. Effective April 1, 1914, a new administration was officially established and Colonel Goethals, who had been in overall charge of the latter part of the construction, became the first Governor of the Panama Canal Zone.

The Panama Canal stands as one of the century's greatest technological feats, as a medical breakthrough, and as a symbol of human struggle and achievement. The following words of Theodore Roosevelt are on display in the Rotunda of the Administration Building; they convey his philosophy and spirit about the achievement at Panama:

“It is not the critic who counts, not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena; whose face is marred by dust and sweat and blood; ...who at the best, knows in the end the triumph of high achievement; and who, at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who know neither victory nor defeat.”<sup>2</sup>

Ultimately, the canal has become a symbol of medical discovery - it is a monument to human sacrifice and achievement.

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**“NO DESTITUTE CHILD EVER REFUSED ADMITTANCE”  
THE STORY OF DR. THOMAS JOHN BARNARDO**

By:

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**ABSTRACT**

**Dr. Thomas Barnardo, my great great uncle, entered The London Hospital as a medical student in 1866, with the intent of becoming a missionary in China. By this time, he was also becoming an effective evangelical preacher. Whilst a student working with cholera patients, he became acquainted with the extreme poverty of the many abandoned children who lived illegally on the streets of London. This essay will describe his work with these destitute children and the origin of the Barnardo Homes, whose motto is the title of this narrative. At the time of his death in 1905, he had cared for over 60,000 children in his Homes and another 250,000 had received some form of social assistance from him. His work continues today through the Barnardo organization in Great Britain and elsewhere. Through his tireless dedication to children in need, Dr. Barnardo was able to make an impact, and improve the welfare of children who had nowhere else to turn.**

As we, today, in the year 2000 look back on the 20<sup>th</sup> century with awe and wonder at the good and bad that has happened, so the inhabitants of the civilized world looked back in wonder at the 19<sup>th</sup> century. It had been a time of progress, poverty, abuse of minorities and the poor and mass migration. During those 100 years, sixty million Europeans moved westward giving rise to the Great Resettlement. The British Isles always contributed a steady flow. Most of them, especially the Irish, went to the United States, but other countries including Australia and Canada absorbed their share. Ireland at this time was in a particularly dismal state, enduring famine, poverty and population growth. It was into this world that Thomas John Barnardo was born on the 4<sup>th</sup> July, 1845 in Dublin.

His parents, John Michaelis Barnardo and Abigail O'Brien ensured that their children grew up in a very loving, religious environment. At this time of hopelessness and despair, religion had an important place in society. An evangelical revival was taking place, and Barnardo, inspired by the teachings, began to wonder how he could make the world a better place. In February of 1866, he decided not to take over his father's successful fur business but to embark on a career as a missionary in China. He immediately made plans to leave for London, from where the ship was to sail that April. Hudson Taylor, one of the men in charge of the China mission, quickly saw in Barnardo an intelligence which he felt should be directed toward medicine. As there was

a shortage of medical missionaries in China, he accepted this advice and delayed his trip in order to enroll in medical school at The London Hospital.

Barnardo entered The London Hospital in 1866 during the fourth and worst epidemic of cholera to hit London in recent years. Pilgrims returning from Mecca brought it to Egypt and it was subsequently carried from there to London in May. Three quarters of the cases occurred in London's East End where The London Hospital was situated on Whitechapel Road. This part of London had not yet been connected to the new main drainage system. As the epidemic struck the population, all medical personnel, including students, were being mobilized to help deal with the imminent health crisis. Barnardo was among them, taking an active role in administering to the sick poor in their homes. It was this work that gave him exposure to the dark, wretched conditions that plagued London's poor. He later recalled that "it would probably have taken him years, in normal circumstances, to have learned all he got to know in a few weeks about Stepney and East London, the way people lived, their poverty, their weaknesses and needs, their courage, chivalry and independence" (Williams, 1966, 35). This disastrous outbreak would only accentuate an already desperate situation, leaving countless families broken and many children orphaned with nowhere to go.

Since his arrival in London, Barnardo had been volunteering his spare time in order to teach Sunday school at a small free school for the poor. Religion again moved into the forefront, and the small school where Barnardo taught was often filled to capacity, and many people had to be turned away at times. He became keenly aware that his teachings and messages of hope were needed in order to help those who were sick, afraid and felt hopeless. Inspired, he and a few of his student friends decided to open their own school, a bigger place that could help even more people. Over the weeks, they worked hard to convert an old donkey stable into a school, in a place appropriately named, Hope Place.

At this new school, Barnardo welcomed young boys, girls and adults. The Hope Place school offered many classes, from reading and arithmetic to sewing so that they could mend their tattered clothes. In addition to these classes, he felt he had to provide them with some other means of getting a livelihood, and soon the boys were being taught, among other trades, boot, shoe and harness making. In this way, he hoped to give his students some means of future employment to keep them from living on the streets.

It was here that Barnardo encountered young Jim Jarvis, a poor 10-year old homeless boy. Interested in his story, he took the child home for a hot meal while Jim told him a tale of a miserable and lonely existence on the streets, which was illegal at the time. He had no father to speak of, and his mother had died when Jim was only five years old. Since then, he had been barely surviving on the streets, with no money, no food, and nowhere and no one to turn to. To Barnardo's horror, this was not an isolated story, and he was apprised fully of the situation as Jim led him to a dark and damp alley where a dozen more children of the same fate were hiding. This cold night would prove to be the turning point in Barnardo's life, as he became aware of his destiny to change the situation for all children living on the streets.

Though the problem of the poor had now been brought to his attention, this was accompanied by frustration at the realization there was little that he alone could do to change it. As fortune would

have it, a short time later, he got the opportunity to tell the story of all that he'd seen at a missionary conference. His speech was fully reported in the papers and gained the attention of Earl Shaftesbury, an influential man who had been working for over twenty years to change the situation for the homeless. This speech that Barnardo made, along with his later contact with Shaftesbury, brought even more attention to the issue. Word of the seriousness of the situation and of Barnardo's enthusiasm spread through the community of London. In response, a prominent Member of Parliament wrote to him and pledged one thousand pounds if he would to abandon the trip to China for good and establish a Home in London's East End. He gratefully accepted the donation and bought a three-storey house at #18 Stepney Causeway. This was to be the first of his Homes.

Now, with a warm place to stay, he was able to offer refuge to the street children he encountered. The need for more homes became quickly apparent, and thanks to many generous public donations, those were acquired, and his family of children was able to swell to two hundred. A sign was erected over the doorway at Stepney that read "No Destitute Boy or Girl Ever Refused Admission". At this time, such an open door policy was quite revolutionary. Other public institutions screened admissions very rigidly, admitting only those with certain qualities such as good health and character. Barnardo's policy was just the opposite. He believed that the children who were the dirtiest, the sickest and the most unwanted were those who needed his help the most. The Homes were able to provide a warm and loving shelter and home for the children, as well as friends, education and training. His advantage of having a medical training allowed him "...to pay unusual attention to sanitation and diet, and he kept a detailed medical record of every child under his care..." (Wymer, 1954, 97). The head nurse at one of his Homes stated "...he really seems to know every child by name, and the whole history of their illness, and the things that have been tried and have, or haven't done any good" (Williams, 1966, 124). This special attention and care he lavished on the children made them feel loved and cared for, and they loved him in turn. A visitor to the Homes remarked that "...everyone looked to him with a deep personal gratitude and love, for this was the friend who had gone out into the darkness and the cold to seek for each one...There was not a boy whose face did not brighten when he heard and saw Dr. Barnardo, his own close friend, drawing near to him" (Williams, 1966, 74).

Meanwhile, as he continued his work with the street children, in 1869 he passed the anatomy and physiology examinations with distinction at The London Hospital. In 1876, he gained the L.R.C.S. diploma from the Royal College of Surgeons, and became a fellow in 1880. He also registered as a medical practitioner in London. Although he never did practice medicine in the conventional sense, he paid regular visits to hospitals to keep his skills up to date. He is remembered as having a wide and good knowledge of medicine and surgery, and for always doing the utmost for the sick, crippled children under his care. Perhaps the greatest testament to his skill came a few months prior to his death. A prominent London surgeon had come to inspect the crippled children at several of his Homes to see if anything could be done for them. He was astonished at how they had already been helped and stated "...I have never seen such a sight as this. Everything has been done that could be done..." (BMJ, 1905, 834).

Barnardo's passion, his organization, continued to expand, as did public interest in the issue. By 1873, twenty thousand pounds was being donated annually to his cause. This allowed him to broaden his capacities. It was decided soon afterwards to open a special kind of home

specifically for girls in the country. After much research, he had found inspiration for it in an establishment in another part of England. Here, orphan girls were brought up in small cottages, in a home-like setting, as opposed to being housed in an institutional environment. In the late 1870s, this idea was brought to fruition with the construction of thirty small cottages, and a small school, infirmary and church in Essex.

In 1888, he pioneered a foster child plan for England. In an effort to protect his children, he instituted rigid standards to ensure their safety and protection from neglectful and abusive foster families. The program met with resounding success, and at the time of his death, more than four thousand children had been established in foster homes. The success of this venture turned his eyes overseas. Although he found it difficult to part with his children, many of them were sent to the newly united country of Canada to begin a new life. This venture was exceedingly successful as well, and many of these children grew up to be very happy, productive and respected members of society.

Dr. Barnardo continued his tireless crusade for the children for many years. Although his energy at times seemed limitless, his mortal body was not. By 1895, he began to experience severe attacks of angina, which forced him to slow down his work, much to his dismay. He continued on, however, until 1905. After a series of heart attacks, he died in the arms of his wife on September 19<sup>th</sup>, surrounded by the paperwork for the organization he so loved. Although the cornerstone of his organization was gone, it would not disappear as well. Queen Alexandra, the patron of the Homes at the time, expressed her desire for his work to continue as a memorial to him. A tremendous response ensued, and a national memorial fund started in his honor was filled with donations, and all of the organization's debts were cleared. The work of his organization has not stopped since then. In the years since his death, further expansions have been made. Homes have been established throughout the British Isles, Australia and Kenya. At the time of his death, twenty thousand children had been sent to Canada and fifty four thousand had been admitted to his Homes. By 1965, a total of 167,000 children had been helped by the organization in some way.

Today, the face of the organization known as Barnardo's has changed in response to changes in need. The world today is very different from that of Dr. Barnardo, but the philosophy of Barnardo's remains the same. Today, there are no orphanages, as it is believed that children should remain with their families, rather than in institutions. The philosophy today centers around what they consider the six building blocks: a family that can cope, opportunities to learn, emotional, physical and mental health, protection from harm, a sense of belonging and a voice in society. With these six core areas in mind, Barnardo's today tries to promote healthy advantages for children who wouldn't otherwise have them. In this way, my great-great uncle's initial passion and devotion in helping disadvantaged children continues in many ways today, through the organization which he founded and that still bears his name.

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## **Health and Human Rights: A Necessary Connection**

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### **ABSTRACT**

**The recent awarding of the 1999 Nobel Peace Prize to the physicians group Medecins sans Frontieres has highlighted the relationship between health and human rights. MSF's relief work reaches beyond borders and politics to address the needs and become the voice of those most affected by war: the civilians. There are many other examples of physician activism; the 1985 Nobel Peace Prize was presented to International Physicians for the Prevention of Nuclear War for its strong health-related stance on a controversial issue, and Physicians for Human Rights has been raising awareness and documenting human rights abuses since 1986.**

**These groups work with issues that have not traditionally been considered to be part of the medical domain. It is only in the wake of WWII and the Nuremberg Trials that an organised human rights movement emerged, and it is only recently that the connection between health and human rights is being realised and acted upon. Using the 1948 United Nations Declaration of Human Rights as a basis for approaching health needs, many determinants of health can be identified. Aspects such as housing, education, and freedom from torture may appear to be self-evident human health requirements, yet, in general, they have been only minimally addressed and incorporated into medical philosophy and curricula.**

**This paper explores the historical recognition (or lack thereof) of human rights by the general medical community and compares this with the evolution of human rights activism within specific groups such as MSF, IPPNW, and PHR. It also questions why, with the increasing awareness that the traditional biomedical paradigm of reductionism and treatment is no longer appropriate, medical education does not have a greater focus on social, economical, and environmental determinants of health.**

When considering "human rights" and "medicine" in the same context, many people automatically think of doctors rushing to war-torn areas and administering life-saving care. This image has become increasingly prevalent in the wake of the 1999 awarding of the Nobel Peace Prize to the emergency medical aid organisation Medecins sans Frontieres (MSF). The establishment of MSF in 1971 is an indication of doctors realising that their roles include

diagnosis and treatment, but also extend to human rights issues. As stated by Dr. James Orbinski, international president of MSF and McMaster graduate,

“Humanitarian action is more than simple generosity, simple charity...we aim to enable individuals to regain their rights and dignity as human beings...But we act not in a vacuum, and we speak not into the wind, but with a clear intent to assist, to provoke change, or to reveal injustice” (8).

Orbinski makes clear reference to the fact that doctors’ actions are inherently political and that doctors can play an important role in the achievement of human rights. MSF intervenes where people’s right to live freely and in good health is compromised; there are many other human rights that could be cited for their relationship to health. When a woman does not have access to information, she cannot make proper choices with respect to her reproductive freedom. When a man does not reside in adequate housing, his state of health will deteriorate. When a child does not receive an education, she has diminished opportunities to obtain employment.

These are only three of the tenets associated with the 1948 United Nations Declaration of Human Rights. This document was drafted after the atrocities of World War II and has been a guiding force for the human rights movement. Applying a human rights philosophy entails the description, promotion and protection of societal conditions for human wellbeing where each individual has the opportunity to achieve his or her full potential. Human rights are nonprovable statements of what should be assured to all people, and derive legitimacy through discussion, voting, and adoption by nations, and through their incorporation into international law. In recent decades its thirty requirements for human dignity have also been cited for their inherent connections to human health. Many healthcare workers are beginning to work with the human rights movement by explicitly using human rights languages and approaches to their work.

However, although the declaration has garnered global support, as one Haitian saying states, “Laws are made of paper; bayonets are made of steel” (Farmer 1490). Whether it is a situation of intense conflict, or a society where gender discrimination is prevalent, guidelines must be followed in order to achieve results. The adoption of a human rights philosophy is of benefit to the medical establishment because it is a physician’s responsibility to care for patients, especially those who are the most in need. It is inconceivable that doctors could ignore the one in ten Russian prisoners with active tuberculosis, UNICEF’s statement that war is the single greatest factor in morbidity and mortality, or the Canadian government’s blatant disregard of aboriginal people’s health. The medical profession is constantly being redefined, and the past thirty years shows a growing recognition of the symbiotic relationship between health and human rights. This is reflected in changing medical philosophies, the establishment of a human rights framework for organisations and individuals, and the proliferation of human rights-related articles in medical literature. This trend has yet to be picked up on by most Canadian medical schools that continue to emphasise reductionist and mechanistic teachings. In the time period between 1966 and 1999 healthcare has undeniably shifted away from rote learning to a more holistic paradigm, and medical curricula must also evolve or run the risk of training less effective professionals.

The human rights movement as a global health paradigm is a fairly recent phenomenon, with its beginnings coming with the end of World War II. Previous to this, the most common sense of global health was in relation to “microbial unification”: the crossover of diseases that occurred when different populations with different health concerns came into contact with one another (Berlinguer 579). This led to the wide-scale attempts to eradicate the ensuing epidemics in the 19<sup>th</sup> and 20<sup>th</sup> centuries. It is only recently, however, that the philosophies that motivate physicians are moving beyond treatment and diagnosis to prevention. Doctors are facing the reality that medicine makes a limited contribution to health. It has been found that only approximately one-sixth of the years of life expectancy gained in the United States during this century has been due to the benefits of medicine, medical care, and medical research. In addition, only 10 percent of preventable premature deaths are associated with a lack of medical care (Mann 441). The statistics are undeniable: although medical care is vital in many situations, its limitations must be recognised. Effective care requires seeing patients as more than isolated entities with independent parts.

This approach clashes with medicine’s historically purported goal of “objectivity”; complete separation of observer and observed in order to achieve a theoretically unbiased conclusion. In recent years there has been much debate surrounding the philosophy of medicine, and in 1988 Dr. Kerr White and forty other American medical colleagues accepted the invitation of the Kaiser Family Foundation to initiate a formal national dialogue. They challenged the medical-humanism “dichotomy” by stressing that the two are inseparable and not in opposition. White stated that “A full scientific account of the body...must include both the body as machine and the lived body as expressive and communicative reality” (156). This sentiment was reflected in the Ontario initiative in the early 1990’s: “Educating Future Physicians of Ontario,” or EFPO. It was a survey conducted with focus groups consisting of people who tend to be marginalised within society. The respondents, including women, the elderly, HIV patients, and people with disabilities, consistently stated that they desired doctors who were advocates, humanists, learners, and communicators, in addition to clinicians (AMS). However, the majority of doctors still practise with the illusion of isolation, not understanding that health itself is a politically charged social construct. External factors such as politics, economy, environment, and culture affect access, affordability, universality, and power and have great influences on physicians’ actions. In addition, patients are vocalising their right to be regarded as people instead of objects. The mentality of medical training needs to adapt to this human rights framework that acknowledges social determinants as well as individual needs.

Despite the rigidity of medical education, the emergence of a new model can be seen in the increasing numbers of physicians concerned with social justice and its inherent association with health. One manifestation is the inception of the Harvard University journal Health and Human Rights in 1994. New journals are established when existing journals are unaccepting of new research and an alternate venue for publication is required. The editor of the journal stated in the first issue that:

“The establishment of *Health and Human Rights* corresponds with the recognition of new dimensions in the fields of human rights and health: workers in both disciplines have begun to see that their goals are complementary...that human rights violations translate directly into morbidity and mortality...”(Mann).

Previous to this formal publication, there have been many medical organisations that have acted on human rights premises. International Physicians for the Prevention of Nuclear War (IPPNW) was created in 1980 during the Cold War with the premise that nuclear weapons are detrimental to the health of all people. Since its Nobel Peace Prize in 1985, IPPNW has expanded its focus from solely nuclear weapon elimination to “military conflict and the need for disarmament; poverty and economic inequality and the need for justice and equitable development; and environmental destruction and the need for universal stewardship of the earth’s fragile resources” (PGS). This overarching mandate has allowed IPPNW to mount actions regarding issues as diverse as landmines and child soldiers. Medecins sans Frontieres, established in 1971, and Physicians for Human Rights, established in 1986, also operate on what they consider to be the self-evident connection between health and human rights. These two groups have provided aid, advocated and educated with respect to issues such as torture of the Kosovar people and the extreme restrictions placed on women in Afghanistan.

Although these groups have achieved international status, an awareness of social determinants of health requires membership with an international organisation. A personal ethic is the fundamental basis of human rights work. Dr. Ruth Wilson, the head of Family Medicine at Queen’s University, worked in Northern Ontario where issues such as substandard healthcare infrastructure, housing, and sanitation compelled her to grapple with many difficult issues of social inequality. She sees her activism as an extension of her role as a *citizen* of the world, rather than merely an option (Wilson).

Philosophies such as those expressed by IPPNW and Dr. Wilson were not always associated with health; twenty years of a human rights movement were required before its vocabulary began entering the medical field. The early 1970s appears to be a benchmark with the number of medical activist organisations and the number of physicians working in the community and internationally proliferating after that point. The human rights movement created a path between health and social determinants, and many doctors exemplified this mentality through their work. Yet beyond brief mentions in sporadic classes, students have little exposure to the public health aspects of medicine or the projects that many doctors are active in.

The previously mentioned organisations and individuals were chosen because of their explicit human rights approaches; there remains the question of whether this philosophy is present in the broader field of medicine. One way in which this can be assessed is through an analysis of the content of articles that are published in medical journals. Journals are a means of conveying new ideas, challenging out-dated concepts, and creating an awareness of current issues and practices. The Medline database allows one to access the majority of medical journals; therefore, it offers an excellent opportunity for analysis.<sup>8</sup> A study was conducted of the number of human rights related articles from 1966 to 1999 and the results that were obtained clearly illustrate a trend towards more human rights-based practises in medicine.

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<sup>8</sup> Medline is produced by the United States national Library of Medicine and is a primary source for bibliographic and abstract coverage of biomedical literature. Information is gathered from various sources encompassing many disciplines with over 9.5 million records from more than 3900 journals.

Two strategies were employed in order to search the medical literature. One involved using the subject keywords of “human rights” with the *explode* function, and the other was using them with the *focus* function. Applying the *explode* parameter allows one to search for all citations that contain the selected term as well as all of its more specific terms. In the case of “human rights,” this means gathering all articles relevant to human rights, social justice, freedom, women’s rights, civil rights, and child, consumer and patient advocacy. The *focus* parameter restricts the search to only the citations that specifically contain “human rights.” It was found that although the number of human rights specific articles remained fairly constant and low over the thirty-five year time span, the number of general human rights articles rises steadily from 0.04% in 1966-1974 to 0.37% in 1995-1999. Reinforcing these results, an upward trend can also be seen in several prominent mainstream journals; the Canadian Medical Association Journal had the highest number of human rights-exploded articles, while the Journal of the American Medical Association and Lancet contained the greatest number of human rights-focussed articles.

It is also interesting to note the establishment of new medical subject headings within Medline since 1968. Similar to the establishment of a new journal, the creation of a new category is considered to be an indication of its recognition as a relevant medical topic. The scope of the issues addressed has changed; the first writings were primarily American doctors concerned with the relationship between the black and white populations in the U.S., while the more recent writings address a wide range of global issues such as freedom, social justice, and relief work. A quick scan of 1999 articles reveals topics such human rights abuses perpetrated by governments, the rights of the patient to refuse treatment, and the international women’s health movement. These topics would not have been considered medical terrain fifty years ago; they attest to the vast possibilities of medicine and human rights.

The numerical analysis and subject timeline are clear quantitative illustrations of the medical community’s growing involvement with human rights issues. The weakness of the study lies in the inadequacies of language. Since precise search strategies were required, there are likely many other relevant writings that were overlooked because they do not fall under the human rights umbrella according to Medline headings. However, if further subjects were to be included it can be hypothesised that the results obtained here would be reinforced. Medical curricula are paying greater attention to areas such as “social determinants of health;” however, there are usually mentioned in terms of epidemiological factors not as specific targets for physician action.

In conjunction with the slow progression in medical literature, Canadian medical curricula are still lacking in their promotion of the humanitarian roles of doctors, both within Canada and in the world. Didactic basic science-based teachings are the norm, leaving little room to consider prevention and the community health aspects of medicine. One exception is the problem-based learning system used at universities such as McMaster University in Hamilton, Ontario. James Orbinski of MSF, explains that

“McMaster provided an approach to medical training that demanded technical competence. But it placed that within a political context and a moral context. The approach to understanding health [was] not simply biological but also psychological and social” (Roberts).

This mentality does appear to be taking hold, as can be seen by the increase in medical literature and the work of individual physicians. However, this momentum must be increased since many physicians continue to view medicine through the very narrow lens of treatment and diagnosis. Students are becoming more vocal; the Canadian Federation of Medical Students created an International Health portfolio in 1999, and the number of PHR student chapters in the US has increased from five to thirty-five in the past year. Since the majority of people enter medicine because of their desire to improve the wellbeing of their patients, it is essential to realise that this cannot be adequately accomplished without addressing social, political, and economic issues. The imperative lies with the administrators, academics, students, and practitioners; medicine as a profession must continue its evolution towards a human rights based practice.

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# NORMAN BETHUNE: BEYOND BLOOD

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## ABSTRACT

**In the early twentieth century, before the advent of penicillin, the Canadian physician Dr Norman Bethune developed and refined surgical treatments and instruments that would save countless tuberculars. He could have continued his highly successful career as a thoracic surgeon and lived a long, socially respectable and prosperous life. He instead went on to live as a professional outcast and died a pauper in revolutionary China from septicaemia he developed while operating on Communist rebels. What choices did Bethune make that took his life as a physician off one well-paved highway and placed him on a rocky, uncharted dirt path? Bethune himself was a self-proclaimed communist, profoundly concerned with the waste of human health, potential and life caused by social injustices. In 1935 he formed the Montreal Group for the Security of the People's Health that designed a plan for socialised medicine which was ignored at the time but which would one day be instrumental in securing universal health care for all Canadians. In 1936 he went to Spain to organise Canadian medical aid in the service of the Spanish Republicans fighting the spectre of fascism, and so doing set up the Mobile Blood Transfusion unit which would become a model for battlefield surgery in ensuing wars. In 1938 he went to China to serve as a physician and organise medical services for Mao Tse-tung's Communist soldiers. In 1936 he died a Chinese hero. What this paper finds significant is the spirit of innovation that drove Bethune's bold actions, and the political and ethical messages that underscored his work. Bethune continuously challenged the limitations of the medical profession to address people's health needs. He believed that a physician's ability to combat sickness and promote health only truly began when he became aware of social injustice and used his skills in action to mediate that injustice. In his life we can see him cutting the path for future politically active physicians engaged in endeavours termed "Health-Peace Initiatives" by contemporary peace theorists, engagement which, arguably, represents the next step in modern medicine's quest to promote and defend health and wellness for all.**

In the early twentieth century, before the advent of penicillin, the Canadian physician Norman Bethune developed and refined surgical treatments and instruments that would save countless tuberculars. He was at the top of his field, internationally renowned, an innovator and leader in thoracic surgery. He could have lived a long, socially respectable and prosperous life,

continuing along the well-defined path for a highly successful physician. He instead went on to live as a professional outcast and died a pauper in revolutionary China.

What choices did Bethune make that took his life as a physician off one well-paved highway and placed him on a rocky, uncharted dirt path? Bethune himself was a self-proclaimed communist, profoundly concerned with the waste of human health, potential and life caused by social injustices. In 1935 he formed the Montreal Group for the Security of the People's Health which designed a plan for socialised medicine, ignored at the time but one day to be instrumental in securing universal health care for all Canadians. In 1936 he went to Spain to organise Canadian medical aid in the service of the Spanish Loyalists fighting the spectre of fascism, and so doing set up the Canadian Mobile Blood Transfusion Services which became a model for battlefield surgery in ensuing wars. In 1938 he went to China to serve as a physician and organise medical services for Mao Zedong's Communist soldiers. In 1936 he developed a septicaemia from operating gloveless on a Communist soldier and died a Chinese hero.

What this paper finds significant is the spirit of innovation that drove Bethune's bold actions, and the political and ethical messages that underscored his work. Bethune continuously challenged the limitations of the medical profession to address people's health needs. He believed that a physician's ability to combat sickness and promote health only truly began when he became aware of social injustice and used his skills in action to mediate that injustice. In his life we can see him cutting the path for future politically active physicians engaged in endeavours now termed "Health-Peace Initiatives," engagement which arguably represents the next step in modern medicine's quest to promote and defend health and wellness for all. Bethune's greatest contribution to the field of medicine was his insistence that social problems be defined as health problems.

Norman Bethune was born in Gravenhurst, Ontario, March 3, 1890. He finished two years of medical training at the University of Toronto before enlisting 1914. He served as a stretcher-bearer until he was injured at the Battle of Ypres and discharged home. Back in Canada he finished his medical education and then went to Europe to continue his training as a surgeon. He married and eventually moved to Detroit in 1924 to set up a practice.

In Detroit he inadvertently hung out his shingle in the red light district and soon learned that those who most needed his services could least afford to pay for them. He began to realise that there were more serious ills undermining the health of the poor than his training as a physician could address: social injustices can not be cut out with a scalpel. He worked exceptionally hard, often giving his services free of charge to those who could not pay, and he began to feel and show contempt for some of his colleagues for their inferior medical skills and their mercenary approach to medicine. Ultimately his outspokenness annoyed others and alienated Bethune from his colleagues (Allan and Gordon, 1952).

After two years of a self-imposed, exhausting professional schedule, Bethune contracted tuberculosis. In 1926 he went to the Trudeau Sanatorium in New York, the best facility at the time, either to recover or to die. He was released a year later after having received the experimental treatment of artificial pneumothorax which collapsed his lung and actually promoted a healing process. He had to advocate quite fiercely to receive the treatment, which

ultimately produced excellent results (Stewart, 1974). It is reported that before he left the sanatorium he said to another inmate, “I ‘m going to find something I can do for the human race, and I am going to do it before I die” (Stewart, 1974). Apocryphal comment or truth, the statement aptly describes the life Bethune led after he left New York.

Thereafter Bethune dedicated himself to the fight against TB, training as a thoracic surgeon at the Royal Victoria Hospital in Montreal and then serving as the head of thoracic surgery at Sacred Heart Hospital. He made significant advances in thoracic surgery and in the treatment of TB during his time there. Bethune was a pioneer in the field, a brilliant surgeon and a maverick. He invented numerous surgical instruments, some of which are still in use today, such as the Bethune rib shears. He was unconventional and outspoken on everything, including what he saw as shortcomings in the medical profession and in the personal skills of colleagues—this made him a socially unpopular man, despite his professional skills.

During this time of professional success, Bethune began to think more and more of the social causes of TB. In an article published in the Canadian Medical Association Journal, Bethune wrote:

The incurable tuberculous who will fill our sanatoriums for the next five years are now walking the streets, working at desks with early curable tuberculosis...lack of time and money kills more cases of pulmonary disease than lack of resistance to that disease. The poor man dies because he cannot afford to live. (Allan and Gordon, 1952)

Bethune was fully aware of the impact poverty has on people’s health, and he worked to address this social injustice. With all his professional accomplishments, Bethune’s greatest contribution to the field of medicine was actually something that went beyond his technical skills and procedural advances: his greatest contribution was his insistence that the practice of medicine had to include a social justice component if it was to claim honestly that it worked to advance human health. Bethune specifically redefined poverty, political oppression and war as health problems. Today peace theorists would call Bethune’s activities “Health-Peace Initiatives”, and his actions serve as a model for contemporary physicians.

It is easy to perceive the many ways in which a peace initiative will improve health overall for people, in addition to simply preventing the senseless destruction of human life through agents of mass destruction. War kills most of its victims indirectly through malnutrition, disease and pestilence rather than through direct use of swords, bullets and bombs. The history of war cannot be separated from recurrence of typhoid, bubonic plague, syphilis, cholera, smallpox, measles, influenza and other epidemic diseases; famine is an all too common result of war; despair is an often overlooked but ever present consequence of war; and social unrest and low-level conflict often lead to crime and generalised violence which are symptomatic of underlying social problems. Clearly a lack of sustainable peace in any society is ultimately detrimental to the health of its members. From this observation, one can extrapolate that physicians are at least professionally obligated, if not also morally obligated, to use their influence and expertise in attempts to prevent health disasters precipitated by a lack of sustainable peace within or between communities. Physicians hold a privileged place in most societies. They are leaders, command

respect, enjoy social prestige and have personal and political connections that many other people do not have. They have influence that can be used to further social justice and peace, and by doing so they are actually answering the call of the profession to improve health for others.

Today there is recognition that peace work is a multi-level endeavour. Peace is not an outcome of one cause, nor the outcome always of a process explicitly labelled ‘peacemaking.’ Instead, peace is the result of multiple interacting groups and forces from different echelons and types of power in society, some specifically aimed at peace and some not. In 1997, MacQueen, McCutcheon and Santa Barbara described the health-peace initiative and proposed that it constitutes a very important and unique track in multi-level peace work.

A health-peace initiative (HPI) is “any initiative that intends to improve the health of people and that simultaneously heightens that group’s level of peace, whether this peace is internal to the group or between the group and one or more other groups” (MacQueen et al, 1997). HPIs may directly work toward peacemaking, or they may aim for social justice—with the understanding that justice is a requirement for lasting peace. Health initiatives that challenge political oppression, gross economic inequalities or human rights violations work to attain social justice, which in turn supplies a foundation upon which to build sustainable peace in a society. MacQueen, McCutcheon and Santa Barbara define nine HPI categories through which health workers can strive to build and support peace.

### **1) Redefinition of the Situation**

New peace initiatives can be found when social and political situations are redefined as health concerns.

### **2) Communication of Knowledge**

The transfer of knowledge and information is extremely important to peace work because accurate information allows moral values to find expression in appropriate action. Health specialists have access, skills and infrastructure available to them that are denied to other groups so it is up to them to serve as conduits for knowledge to and from people and areas separated by politics and violence.

### **3) Extension of Solidarity**

By extending solidarity among health workers and others around the globe, it is possible to create a community of like-minded individuals who are willing to speak out when conflict threatens.

### **4) Evocation and Broadening of Altruism**

Work must be done to ensure that needed care is received by all, regardless of divisions of social class and politics. Health workers are in a position to challenge the notion of an “in-group” and “out-group” in conflict situations. By offering assistance to *all* people in need, they publicly recognise the humanity of all, and so work to broaden altruistic sentiments between opposing

groups. To the extent that health care is fully inclusive to all, it is a model to other sectors of society.

### **5) Strengthening of Communities**

Maintenance of a health system and provision of services in a community experiencing conflict serves as a stabilising force, and provides a sense of normality and caring in an otherwise unpredictable and threatening environment. After war, rebuilding a damaged health system can bring a community together for a common goal. To the extent that all have access to the rebuilt system, the health system is important to community strengthening.

### **6) Diplomacy**

Health professionals must serve as diplomats as they tackle political issues and work for a social transformation and sustainable global peace. Health professionals must extend themselves beyond their traditional duties and move into more visible leadership roles as they strive for success in other HPI areas.

### **7) Non-cooperation and Dissent**

Health workers must not use their skills and talents in support of the forces that perpetuate injustices and generate conflict and war, but instead they must raise their voices in dissent against those forces.

### **8) Social and Individual Healing**

The process of social and individual healing is essential to peace for it is the process through which the “enemy” is personalised, prejudices and intolerance are reduced, and the potential for people from opposite sides of a conflict to live together in peace is supported and nurtured.

### **9) Construction of Superordinate goals**

Health initiatives are an excellent way for opposing sides of a conflict to focus on goals that transcend their differences, and create opportunities for co-operation.

The point of the HPI model is not that the nine activities invariably produce peace, but that sometimes they do. In the light of these HPI categories, I want to evaluate the work of Norman Bethune during the last five years of his life, and establish how exactly he was acting in accordance with the HPIs long before they were articulated in 1997. Bethune devoted himself to the fight for social justice, and the activities he engaged in while waging that battle fall into the first seven of the above nine categories.

Between 1932 and 1936, Bethune was head of thoracic surgery at Sacred Heart Hospital in Montreal. Social unrest and conflict due to unchecked poverty and unemployment was prevalent in Montreal, as it was in the rest of Canada. Bethune was not oblivious to the human costs of the Depression. When he left the Trudeau Sanatorium, Bethune had believed that scientific and medical discoveries would eventually rid the world of disease; however, he began to believe the

real evil was the political and economic organisation of society (Stewart, 1977). After witnessing a peaceful protest turn bloody when a police barricade charged a crowd of demonstrators, Bethune gave his medical services free of charge to the unemployed, and he recruited other doctors to do the same. He also joined the Communist Party of Canada. Although initially he kept his membership secret to protect himself professionally; he made no attempts to hide his political views. With respect to the HPI categories, these actions can be characterised as the extension of solidarity with the poor and unemployed. They can also be viewed as efforts to evoke and broaden altruism among privileged physicians towards the socially and financially disadvantaged.

During this time Bethune was very outspoken in his belief that for many the delivery of health care itself was a barrier to health. He saw that it was necessary to challenge the social injustice of that delivery system if improved health for all was ever to be achieved. In 1935 Bethune organised and led the Montreal Group for the Security for the People's Health, which produced the first document in Canada that systematically described a mechanism for universal health insurance. Bethune ascertained that medicine, as it was practised, worked counter to social justice and therefore was working counter to its own goal of improved human health.

In April of 1936, at a symposium on medical economics for the Montreal *Medico-Chirurgical* Society, Bethune presented the proposal and strongly criticised health care in Canada, stating:

Let us take the profit, the private economic profit, out of medicine, and purify our profession of rapacious individualism. Let us make it disgraceful to enrich ourselves at the expense of the miseries of our fellow men...let us redefine medical ethics—not as a code of professional etiquette between doctors, but as a code of fundamental morality between medicine and the people. (Stewart, 1977)

Bethune saw that health care should be available to all, regardless of social class or politics, and so he worked to break down uncriticqued acceptance by his colleagues of their own privilege and other's poverty. With the proposal, Bethune redefined the social inequalities that resulted in poverty and inaccessible health care as a primary contributor to ill health among Canadians. At the same symposium he stated that "the best form of providing health protection would be to change the economic system which produces ill health and to liquidate ignorance, poverty and unemployment" (Stewart 1977). The proposal was rejected at the time, but it is important to recognise that all the major tenets of the Canada Health Act were first articulated in the document produced by Bethune's group: universal, comprehensive, publicly funded, publicly administered and transferable health coverage.

In 1936, Bethune looked out to the rest of the world and concluded that he could not continue to live comfortably in Canada while in Spain people were struggling against political oppression. General Franco, supported by Hitler and Mussolini, had overthrown the democratically elected government in Spain. In their struggle against fascism and foreign aggression, Loyalist supporters of the elected government were receiving no support from foreign governments because some members of the deposed government were Communist. Deeply concerned by the

political events in Spain and the human rights issues presenting there, Bethune left for Spain in October of 1936 to assist the Loyalists with his medical skills.

Bethune showed solidarity with the Spanish Loyalists in their battle against fascist oppression and in their desire to maintain a peaceful, democratic government. His concern for social justice was as ever expressed through his medical skills and contributions. Without the assistance of the Canadian government, he established the Canadian Mobile Blood Transfusion Services, a system which brought needed transfusions directly to soldiers on the battlefield and was the most important medical-military contribution made during the Spanish Civil War; with it Bethune saved countless lives.

In May 1937, Bethune returned to Canada to do a cross-country speaking tour on the situation in Spain and his work there. In this manner Bethune tried to educate the Canadian public and serve as a representative of the Spanish Loyalists, to bridge the geographical distances and the information gap separating the two countries, thus working within the HPI categories of Dissemination of Knowledge and Diplomacy. The tour was a huge success. Initially Bethune kept quiet about being a Communist because his sponsoring committee thought that public knowledge of that fact might hurt support for Loyalist Spain. Finally however, when confronted in Winnipeg, he announced "I have the honour to be a Communist" (Stewart, 1977).

To this announcement there was a huge uproar, both publicly and professionally, and Bethune's response was to continue to defend the morality of his actions. Politicians were justifying the invasion of Spain and their own inaction because the Loyalists were labelled 'Communist.' Because of prevailing anti-Communist sentiments, both Canadian and foreign governments, as well as the general public, simply dismissed the struggle against Franco and Fascism. Throughout his tour, Bethune endeavoured to redefine the situation, evoke and broaden Canadian altruistic expression, and expand solidarity between Canadians and the Loyalists. By announcing that he was a Communist, Bethune expressed his dissension with the Canadian and foreign powers that tacitly endorsed Franco, Hitler and Mussolini's actions in Spain, and he spoke explicitly in defence of the Spanish Loyalists:

The attempt to paint the invasion of Spain as a crusade to save the country from the "communist menace" is not only a wretched lie, it is a calculated and vicious insanity. Is it not clear that if this insanity is allowed to prevail, it will strike a mortal blow at all the rights and liberties of non-communists as well as communists? For if you are unfree, as the Spanish people were unfree, and you defend your freedom, you will be struck down as a communist. (Allan and Gordon, 1952)

Despite his eloquence, Bethune's words met with considerable public and professional resistance, as is often the case when people speak out against entrenched values and belief systems.

By the end of the tour, Bethune had found himself a new mission: he would go to China and assist the Communists in their struggle to rid free their country from Japanese invaders and violent oppression. Bethune arrived in China in February 1938, and worked ceaselessly both at

the fronts and in the villages, providing medical services both to soldiers and to peasants, training Chinese Communists in the craft of medicine, and writing several training textbooks for them. He also invented necessary surgical instruments and made innovations in techniques to suit the harsh nature of his working environment. He had very little money to work with, but he did wonders with what little he had.

On November 12, 1939 he died of septicaemia contracted while operating gloveless with a cut on his finger. In the eulogy Mao wrote for Bethune, he is praised for his selflessness, his loyalty, his sense of internationalism, responsibility and revolutionary spirit, and was held up as a model Chinese citizen. He was proclaimed a Chinese hero by Mao Zedong, and remains so today.

In Bethune's work in China we can see him employing dissent, solidarity, a broadened sense of altruism, communication of knowledge, and a redefinition of the political situation as a health issue. His contributions to the Chinese people are lauded even today. In a letter to a friend, Bethune had explained his reasons for going to China:

I refuse to live in a world that spawns murder and corruption without raising my hand against them. I refuse to condone, by passivity or default, the wars which greedy men make against others...Spain and China are part of the same battle. I am going to China because I feel that is where the need is greatest; that is where I can be most useful.

(Stewart, 1977)

Bethune went to China to use his skills as a physician in the cause of justice and peace. In 1995, Nurses for Social Responsibility wrote: "health is fundamentally political in nature. Health for all requires adequate food, shelter, income, equality, a stable ecosystem and peace." Bethune knew this, and acted on it long before others did.

Bethune was a brilliant doctor with a quick mind that led him to recognise the shortcomings of his profession and allowed him to see areas for growth and improvement in the discipline. He applied this perspective not just to surgical techniques and instruments but also to aspects of health that go beyond blood. He ultimately recognised that political activism and social justice work are a natural extension of a physician's responsibilities, since political and social justice are the foundation upon which sustainable peace is built. Without sustainable peace, within or between communities, health is an elusive commodity for many.

Bethune was outspoken in his political beliefs and for this he was ostracized socially and professionally. He was required to take strong and controversial positions in his quest to improve health for all, standing up against numerous injustices when most other physicians would not. But importantly, as one commentator on Bethune has written, because Bethune was active and outspoken, "he forced his colleagues to think more deeply than they otherwise would have done, and he disturbed the growth of the vines of science that were tending to strangle the flowers of humanistic medicine" (H. Rocke Robertson, 1982).

Through his voice and actions, Bethune calls all physicians to look beyond blood to see the greater forces at play in human health, and to direct their action against those forces with as

much commitment as they would against an infected lung or a mangled limb. Bethune believed that to promote health fully, health care must ultimately promote social justice, and he acted on that belief. He identified barriers to health that others had not, and his spirit of innovation entreats doctors today to continue the search, to risk criticism and take the strong and controversial positions when it is apparent that they lead down the true path towards health. Bethune serves as a model for health-peace initiatives in action, an example for other physicians to follow.

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## **Dr. John Rae, an Explorer Without Honour**

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### **ABSTRACT**

**Dr. John Rae was a Scottish surgeon born in the early 19<sup>th</sup> Century. He is not remembered for medical contributions, but as an accomplished Arctic explorer and the infamous discoverer of the fate of the Franklin expedition.**

**After completing his medical training in Edinburgh, young Rae was appointed ship's surgeon aboard a Hudson Bay Company vessel, the Prince of Wales bound for James Bay. Forced to winter at Moose Factory, Rae became enamoured with the north and spent the next twenty-three years with the HBC as a physician, surveyor, factor and naturalist. Rae's success as an Arctic explorer grew from his physical stamina and his willingness to adopt the indigenous people's (Swampy Cree and Inuit) ways to travel, hunt and survive. His approach to Arctic travel gave Rae both fervent local admiration but Victorian establishment disdain.**

**Rae's style of exploration and temperament contrasted sharply with that of official explorations of the Royal Navy. In small parties with native guides, Rae arguably achieved more in his two decades of northern work than any of his contemporaries. His proven abilities to lead, survive and achieve results prompted the British Admiralty to seek his help to find the missing Franklin expedition of 1845. Unravelling the fate of Franklin and his men embroiled Rae in a controversy which consigned his success to obscurity, and elevated the failures of Franklin to immortality.**

Dr. John Rae, physician and Arctic explorer, died in London in 1893 in relative obscurity. A memorial was erected for him in his home town of Kirkwall in the Orkney Islands of Scotland. There, people remember and honour him for his discovery of the final links of the Northwest Passage. Yet despite his significant contributions to Arctic exploration, he is rarely mentioned in history books and his name is overshadowed by others who achieved far less. Why was Dr. John Rae not recognized for his contributions to Arctic exploration and what circumstances led to his dishonour in Victorian society? Was it because he was merely a fur trade employee of the Hudson's Bay Company while his competitors were officers of the Royal Navy? Was it because he adopted indigenous methods to survive and succeed as an explorer? Perhaps the main reason that Rae remained outside the fold of celebrated Arctic explorers was his unfortunate entanglement in the discovery of the fate of the Franklin expedition.

Public interest in polar exploration was at its peak in the mid-nineteenth century. British Arctic explorers were the toast of Victorian society. The soon expected discovery of a northern sea route to the Orient, a route which had eluded European sailors for three centuries, elicited excitement akin to the space race of the 1960's. No matter what the cost, the British Royal Navy sent ship after ship, with hundreds of sailors, into the cold unknown waters of the Arctic to map out a path to the Pacific. In the age of British imperialism, exploration served to extend the frontiers of the Empire. But even exploration had to be conducted in the proper fashion:

“The prime consideration of fox hunting is not the killing of the fox, but the observance of good form during the pursuit of the kill. The objective of polar exploration is to explore properly and not to evade the hazards of the game through the vulgar subterfuge of going native.”

Refusing to make concessions to Arctic climate or geography, the Royal Navy sent their best officers in dress uniforms and unwieldy warships to one magnificent failure after another. But the officers and men were never prepared for the cold and barren territory that they entered. They starved because they were not prepared to hunt, they lost their way because they had no interpreters to help them communicate with the natives, and each year many men and many ships succumbed to the relentless, freezing waters. Despite this, the Royal Navy staunchly refused to change their approach; they would not allow themselves to learn the ways of the people who had survived in that climate for generations. The native diet and dress were scorned, and the native people themselves were considered savages. The Northwest Passage would be found by observing the pristine regulations of the navy, or not at all.

By 1845 the Royal Navy felt it had enough pieces of the geographic puzzle to make a final crusade for the Northwest Passage. Having opened the Eastern and Western doors, it only remained to cross the threshold. English national pride was at stake. The Admiralty selected Capt. John Franklin to lead the expedition. Franklin was a decorated naval hero, having survived some of the greatest naval battles of the Napoleonic wars. Sir Roderick Murcheson, the President of the Geographical Society of England, stated, “I have the fullest confidence that everything will be done for the promotion of science, and for the honour of the British name and Navy ... The name of Franklin alone is a national guarantee.”<sup>xxii</sup> One hundred and thirty seven officers and men sailed from London on the HMS Erebus and Terror with provisions for three years. Britain held its breath, as the largest and best equipped polar expedition sailed to force the fabled northwest passage to the Pacific.

By 1845, Dr. John Rae had been in the Arctic for over a decade. Born in 1813 in the village of Stromness, Orkney Islands, he attended medical school in Edinburgh and graduated a surgeon in 1833. Immediately after completing his training, Rae took the position of ship's surgeon on the Hudson's Bay Company vessel, Prince of Wales, bound for Moose Factory in Hudson's Bay. Though Rae had planned to return to Britain that season, the Prince of Wales was caught in the ice and the party was forced to winter on Charlton Island in James Bay. Rae got his first taste of learning to survive in a cold, desolate climate. This unexpected change in his plans deflected Rae's future career from physician to frontiersman. Upon returning to Moose Factory that summer, Rae decided against returning to Scotland and signed on as the surgeon for the Hudson's Bay Company post at Moose Factory. Rae's comment was “thinking from what I saw

that I should like the wild sort of life to be found in the Hudson's Bay Company's service I accepted the appointment as surgeon at Moose Factory."<sup>xxiii</sup> Initially Rae stipulated that he wanted his job confined to medical matters, but he quickly found himself involved in the day to day activities of the company. Rae remained as surgeon in Moose Factory for ten years.

It was during this time that he "learned all the methods of hunting, fishing, sledge-hauling, snow-shoe walking and camping both in winter, summer, spring and autumn."<sup>xxiv</sup> Rae learned these things from the Swampy Cree who formed an integral part of the fur economy. Rae learned to travel as they travelled, carrying light loads by sledge, building snow huts for shelter, and hunting en route. Rae's forte was snow-shoe walking. He once walked 105 miles in less than 48 hours in order to see a patient, 31 miles the first day and 74 miles the second day. He also made an epic trek from Red River (Winnipeg) to Sault Ste. Marie (1200 miles) in 60 days in the middle of winter. The Swampy Cree called him Aglooka which means "long strides."

Rae's excellent stamina, zeal for adventure, and his acquired woodsman abilities did not go unnoticed by the Hudson's Bay Company (HBC). In 1844 he was commissioned by Sir George Simpson (governor of the HBC) to complete a survey of the northern coastline of the Arctic ocean. Simpson thought Rae to be one of the most physically fit men alive, very adept to snow-shoeing in winter and river travel in summer. He was also an expert marksman, and of course, a good doctor. Rae jumped at the chance to explore the Arctic and he spent the next two years learning the science of surveying, cartography, meteorology, and botany. Over his career he would write more than 30 scientific articles on natural history.

The expedition left in the spring of 1846. The party consisted of Rae and about ten other men, including two Inuit who would act as guides and interpreters. They took two boats up the western coast of Hudson's Bay and wintered at Repulse Bay. They built a stone house which Rae named Fort Hope. Rae and his men were very self-sufficient, relying on the food they obtained by hunting and fishing in the fall, supplemented by flour and other staples they had carried with them. It reached  $-47^{\circ}\text{F}$  that winter and he and his men were forced to spend fourteen hours per day in bed just to stay warm. In April, Rae and a few of his men travelled overland to Lord Mayor Bay. Because they travelled on foot hauling sledges, they kept their supplies to a minimum, using igloos for shelter. They could have a igloo built in about an hour and Rae later published his personal instructions on the proper way to build an igloo. By going all the way to Lord Mayor Bay and back, Rae and his companions snow-shoed a total of 600 miles in 30 days, which was the longest journey on foot along the Arctic coast at that time. They also travelled north towards Fury and Hecla strait but turned back within ten miles of their goal due to the lateness of the season.

After returning to Moose Factory, Rae sailed for England, having completed a very successful expedition. It was the first expedition led by a man with no previous experience of exploration or survey work. However, the two most remarkable features about Rae's expedition were its streamlined self-sufficiency and its distinction of being the first known European party to have ever wintered north of the Arctic Circle. Rae's record was enviable; he had achieved his goal without casualties, starvation or scurvy.

Rae returned to England in October 1847, an England that was desperate for news of the Franklin expedition. The Royal Navy decided that if no word was heard from Franklin by the spring of 1848, three expeditions would be sent to relieve them, two by sea and one overland. Rae was recruited by Sir John Richardson (also a physician) to join in the overland expedition which would travel down the Mackenzie River to explore the Arctic coast to the east. Richardson had mapped this coastline with Franklin on earlier expeditions, and he reasoned that if Franklin got into trouble he would try to reach an area with which he was familiar and where he could get help from the natives and Hudson's Bay Company fur traders. The party reached the sea by August 3, 1848 and they set out overland for the Coppermine River. This time, Rae was travelling with all Royal Navy personnel, not the small, self-sufficient group he had had such success with. His opinion of the Royal Navy was low, calling them "the most awkward, careless and lazy set I have every had anything to do with."<sup>xxv</sup> The party wintered at Fort Confidence on Great Bear Lake, having found no trace of Franklin. In the spring, Richardson returned to England and Rae returned to the Arctic shoreline. He mapped the Wollaston Peninsula to Krusenstern but was forced to return to Fort Confidence for another winter. On the return up the Coppermine River, one of Rae's Inuit interpreters drowned at Bloody Falls. Rae was very upset about this as the man was the son of a very trusted friend. This was the only man ever lost on any of Rae's expeditions.

Having found no trace of Franklin, Rae was stationed by the Hudson's Bay Company at Fort Simpson on the Mackenzie River. During the next year, Rae occupied himself with the business of the HBC but he would not have been unaware of the ongoing search for Franklin. Men from other rescue expeditions were continually coming through Fort Simpson and Rae was acutely aware that every day men were dying and ships were being lost in the attempt to find Franklin.

Rae was commissioned by the Royal Navy to lead another expedition to search for Franklin. He and his party arrived back at Fort Confidence in September 1850 and set out in the spring of 1851. At his farthest point east, on Victoria Island, Rae was closer to the scene of the Franklin disaster than any of search had come; had he been able to cross Victoria Strait he would have solved the mystery. Though Rae failed to find any trace of Franklin, cartographically, the expedition was considered to be Rae's most successful. He charted 630 miles of unexplored coastline.

When Rae arrived back in England, he was keen to undertake another HBC sponsored expedition to Repulse Bay to explore the western coastline of the Boothia Peninsula. His motive for returning to Boothia was probably two-fold. First of all, a small portion of the west coast of Boothia remained uncharted and Rae wanted to complete this. Secondly, Rae was indignant that the Admiralty did not accept his assertion that Boothia was a peninsula. On his first trip to the Arctic in 1846, Rae had essentially proven that Boothia was a peninsula and not an island (as had originally been thought). However, the contemporary naval charts still showed the area to be in question. Rae wanted to prove his original survey accurate. Though unrecognized by the Royal Navy, Rae was gaining distinction by other organizations for his contributions to exploration. While in England, Rae was awarded the Founders Gold Medal of the Royal Geographical Society for his previous expedition to Boothia and his surveying of Wollaston. In addition, McGill University conferred upon him an honorary Doctor of Medicine degree in recognition of his Arctic exploits.

The Hudson's Bay Company agreed to sponsor his expedition and Rae's party left in 1853. They wintered at Repulse Bay and in the spring of 1854 Rae set out across Rae Isthmus to Pelly Bay. There he received the first clues of the fate of the Franklin Expedition. An Inuit told Rae that a number of "Kabloonans" (white men), at least thirty-five or forty, had starved to death west of a large river a long way off (perhaps ten to twelve days journey). He had not been there himself and would not accompany Rae to find them. Rae felt that the information was too vague to act upon. He did not know the area referred to or exactly how far it was. Furthermore, the purpose of Rae's present expedition was not to search for Franklin, nor was it sponsored by the Royal Navy. Therefore, Rae continued in his survey of Boothia. Progress was slow because of bad weather and soft snow and the party made it only as far as Cape Porter, discovering that King William Land was separated from Boothia by a narrow strait, now called Rae Strait. On the way back to Repulse Bay, Rae met some more Inuit and obtained some artifacts that convinced him that they were personal effects from members of the Franklin expedition. These items were family heirlooms in many cases and would not have been traded by their owners. One proof Rae obtained was a medal, a prized possession of Franklin, given to him as a reward for bravery by the King of Greece. When Rae arrived back at Repulse Bay, he was visited by more Inuit and obtained more items which had been found from the perished Kabloonans. At this point, Rae determined that the bodies had to be near Back River.

Because of the personal nature of these artifacts, Rae knew that the Franklin Expedition had failed tragically and without survivors. Rae felt it imperative to return to England immediately and inform the admiralty. Rae knew that search parties were still being sent to look for Franklin and that men were continually dying and ships were continually being lost in a now futile search. When Rae got back to England, he reported his findings to the British Admiralty. Instead of being applauded as a hero for discovering what the whole of the Royal Navy had not been able to find in seven years of expeditions, Rae's word was challenged and the content of his report sent the British people into an uproar. England did not want to hear this burly backwoodsman explorer for the Hudson's Bay Company assert that the biggest and best equipped Arctic expedition had failed.

The Admiralty was grudgingly willing to concede that Rae was a very successful explorer but they were reluctant to accept his findings. Sir John Franklin's wife, Lady Jane Franklin, remained convinced that her husband was alive and would be found. She had been the driving force behind the search of Franklin and to her it was unthinkable that Rae was telling the truth. She is said to have "dismissed him simply as hairy and disagreeable."

Not only was Rae's word questioned but his motive as well. The Admiralty had offered a 20,000 pound reward to anyone who rendered assistance to Franklin, but the award also stipulated 10,000 pounds to anyone able to determine Franklin's whereabouts. Rae was accused of rushing home to England to collect the reward instead of staying and trying to find Franklin himself. Rae claimed that he never knew about the reward having been offered and this was probably true as Rae would have been in the Arctic at the time the reward was announced. Furthermore, Rae's reason for returning quickly was to prevent further expeditions from being sent in a futile search and very likely sharing Franklin's fate.

Another point of controversy revolved around the fact that Rae had believed the story of an Inuit and had not verified the story for himself. Victorian England was very ethnocentric. The common view was that native people were savage, uncivilized and not to be trusted. Rae's adamant acceptance of the truthfulness of the Inuit accounts was considered to be ignorant. The public press theorized that the Inuit had probably killed Franklin and the others and then stolen the artifacts that Rae had brought back with him. Even Charles Dickens entered into the debate, implying that Rae had been deceived. Dickens criticized him for not verifying the Inuit stories for himself. Of the Inuit people, Dickens wrote, "like all savages they are liars."

The final reason that Rae raised the ire of the British public was the abhorrent content of a few lines from Rae's report to the Admiralty. "From the mutilated state of many of the corpses and the contents of the kettles it is evident that our wretched countrymen had been driven to the last resource—cannibalism—as a means of prolonging existence." Two points are important here. First of all, Rae gave this report to the Admiralty only, not expecting that the full contents of the report would be released to the public. Secondly, the public's view of cannibalism was very different from Rae's. Rae had himself endured very tough conditions and he had heard many stories from the Inuit about being driven by starvation to eat human flesh. To Rae, cannibalism was not ideal or desirable but it was excusable and understandable in extreme circumstances. The public however did not believe it possible that men of the Royal Navy would debase themselves and resort to cannibalism, not when faced with death, not ever. The alternative was to turn on the messenger, John Rae.

Dr. John Rae was eventually granted the 10,000 pound reward (though grudgingly and with great protest from the British public). Rae kept 8,000 pounds and the remaining 2,000 pounds was distributed among his men. He spent his reward on a vessel that he planned to take up to the Arctic for further exploration but sadly the boat was destroyed in a storm and Rae never managed to return to the Arctic again. Rae's report of the location of the bodies was eventually proven to be correct by Leopold McClintock in 1857. Interestingly, among those who led expeditions to find Franklin, Rae alone did not receive a knighthood.

In 1903, ten years after Rae's death and almost 50 years after Franklin departed England on what was anticipated to be the victorious conquest of the Northwest Passage, Roald Amundsen became the first explorer to navigate the Northwest Passage. Amundsen, a Norwegian, achieved this astounding triumph, which had eluded the world for centuries, by sailing through many channels in the Arctic archipelago including a narrow body of water called Rae Strait.

Recently, some local historians have attempted to move the successes of John Rae out from the shadow of the Franklin tragedy. In the summer of 1999 Calgarians, Ken McGoogan and Cameron Treleaven, made a journey to the west coast of the Boothia Peninsula. There, they placed a memorial plaque a few metres south of the cairn erected by Rae in 1854. McGoogan said,

"We'd come to this desolate spot –situated 65 kilometres from Gjoa Haven and normally visited only by caribou hunters – to celebrate John Rae, a Scottish explorer known only to history buffs, though hailed by one

renowned expert, Vilhjalmur Steffansson, as ‘the most challenging figure in the history of 19<sup>th</sup> Century exploration.’<sup>xxvi</sup>

The inscription reads, “This plaque marks the spot where Arctic explorer John Rae (1813-1893) discovered the final link in the Northwest Passage.” Dr. John Rae, the physician-explorer, has finally received the honour due to him.

## **One of Alberta's Best Kept Secrets: The Alberta Heritage Fund for Medical Research**

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### **ABSTRACT**

**“...it is believed that the structure to be developed may provide one of the finest, if not the finest, medical research plans on a pure research basis...that would exist in a country...” – Alberta Legislature, Fall 1977**

**Despite the short 20-year history of the Alberta Heritage Fund for Medical Research (AHFMR), the concept's origins, and its initiators, remain obscure. Even more obscure is the extensive research that was done by the Alberta Government before it agreed in principle with the concept, and then proceeded to establish and appoint a Board of Trustees to manage the AHFMR.**

**In 1976, the Alberta Government established the Alberta Heritage Fund which grew substantially from surplus oil revenue over the next 4 years. Why then should the Government, establish a research fund that was specifically limited to funding and making grants for basic medical research? Why not clinical medicine? Why not education? Why not other areas of Government interest?**

**The Fund has now grown to over \$1.0 billion and is self-sustaining. It has built two research facilities in Calgary and Edmonton, and has granted over \$600 million to fund research scholars, multidisciplinary projects, equipment, etc. More importantly, its capital fund has remained at semi-arms length from direct political influence and other provinces are now emulating Alberta's example.**

**Was the idea, concept and vision justified, and did it meet the expectations of its originators? The answer is a resounding yes.**

**“The AHFMR ... benefited biomedical research in Alberta at the highest level. As such, it is not only something in which all Albertans should take pride, it is also a national treasure. Long may it flourish.” – Dr. Michael Smith, Nobel Laureate and International Board of Review Member.**

The Alberta Heritage Foundation for Medical Research (AHFMR) has been successful since its inception. For an initial investment of \$300 million dollars in 1979 from the Alberta Heritage

fund into an endowment fund, it has grown to over \$1 billion in asset value as of 2000. The fund has supplied over \$690 million over 20 years to basic science research, studentships, women in science, and science fairs. In addition, the funding for two capital legacies, the two Heritage Medical Research Buildings, have been provided for. This fund over the years has made a huge impact in medical research in Alberta. Its success can be attributed to hard work and something, less often given credit, luck.

The fund was a great idea to begin with and it allowed the government to focus its ideas and game plan. With Peter Lougheed at the helm, it realised that Alberta-trained scientists were leaving the province and heading either south or east, to other Canadian centres. In addition, Alberta's reputation at the time was centred around oil and gas and for the future, information capital was needed to take Alberta into the 21<sup>st</sup> century. Finally, there simply was a surplus and the government needed to show the public that it could do something positive with it. The idea was lofty; however there were many good reasons for setting it up.

Being the first fund whose operation was at an 'arms-length' from the government, the fund succeeded by avoiding political and economic fluctuations. Peter Lougheed tells of his symbolic first meeting with the Board of Trustees, which was over breakfast. He ate quickly and usually got a word in at the end; however, this time, he ate, got up, and said: "See you in seven years." He then left. People indicated it would not last, but to this day, the fund has been managed by the board separately from the government. The board is also part of a network of checks and balances, created from the outset. They look after the objectives while the treasury looks after the funds. The scientific aspects and grants are matters of the Scientific Advisory Council with its committees, and the International Board of Review examines the fund triennially.

At least five years of consultation were involved prior to the fund's establishment. Peter Lougheed, Dr. Jack Bradley (Lougheed's main advisor), Deans McLeod of Calgary and Cameron of Alberta were key figures in the fund's establishment. Through proposals, meetings, travel to other leading centres for ideas, the positive aspects were incorporated into the fund's groundwork. Consultation was also key in focussing the fund's mandate. As the Medical Research Council (MRC), the only research fund at the time, was geared towards clinical and applied research, the AHFMR was politically sound as it funded the salaries of basic science researchers. The MRC was always kept abreast of what was happening. This avoided funding duplication. As a result, Alberta scientists were able to obtain salaries and operating grants from both the AHFMR and MRC respectively. To this day, for every dollar that the AHFMR gives to Alberta scientists, they receive two to three dollars from external funding sources. Peter Lougheed sums up the research and preparation by saying that the fund has been one of the most thoroughly researched projects that he has ever worked on.

Hard work as one of the main factors in the fund's success must be acknowledged; however, there is a major factor that is overlooked: luck.

Without a red-hot economy, Alberta would have never had a surplus. Oil prices were at their highest with approximately \$1.6 billion stored in the Alberta Heritage Fund, growing to over \$4.5 billion at the end of 1979. No other government at the time found itself with such a sizeable surplus and as a result, it had to do something with the extra funds. In addition, there were three

major political parties at the time: the Progressive Conservatives (PC), New Democratic, and Social Credit. The party in power at the time was the PC, and one can speculate that if the other parties had come to power, there might have been tax-cuts, social program spending, cheques to Albertans; however, there may not have been priorities to establish a fund. Finally, the government and economy intersected at the perfect time in order to create conditions ripe to grow the fund.

The fund also came at the appropriate time. During the late 70s, Alberta basic medical research was in its infancy. With small research groups in both Edmonton and Calgary and very little funding, the financial help allowed research to get off the ground quickly resulting in a sizeable impact on Alberta scientists.

The fund's successes were many and they continue until this day. As the future arrives, Alberta basic medical researchers can give a portion of their credit to the funding body that was established 20 years ago. This has given Alberta an edge in medical research in Canada and around the world, allowing for the improvement of health care and health care delivery. It was a legacy and a success that Alberta will always be known for. Peter Lougheed left many great political and public legacies, but none greater than this: the Alberta Heritage Fund for Medical Research.

*“The AHFMR is a wonderful resource for Alberta whose programs have demonstrably benefited biomedical research in Alberta at the highest level. As such, it is not only something in which all Albertans should take pride, it is also a national treasure. Long may it flourish.”*

- Dr. Michael Smith, Nobel Laureate and International Board of Review Member.

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<sup>xxiixii</sup> Burton, 1988, p. 148

<sup>xxiii</sup> Richards, R.L., 1985, p. 18

<sup>xxiv</sup> Richards, R.L., 1985, p. 22

<sup>xxv</sup> John Rae, 1849

<sup>xxvi</sup> McGoogan, 1999, p. B6