Biomedical Advances Confront Society: Congressional Hearings and the Development of Bioethics, 1960-1975

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Introduction

In a *Science* magazine article titled "Biomedical Advances Confront Public, Politicians, as well as Professionals with New Issues," well-respected journalist Constance Holden wrote "Times have changed. Heart transplant decisions are child's play compared to the questions raised by advances in other fields, notably genetics, which have transformed yesterday's science fiction into today's foreseeable reality."[1] Published in 1972, this article unintentionally forecast the much wider issues that today raise ethical and social issues in relation to nanotechnology, synthetic biology, artificial intelligence and robotic technology, and neurology research. Today many of these ethical and social implications are identified, examined, and discussed in the United States by scholars in bioethics, and often through a broadly focused federal bioethics commission. Most recently, President Barack Obama's President's Commission for the Study of Bioethical Issues considered the ethical issues regarding synthetic biology, neuroscience and neuroimaging research, and whole genome genetic testing. Over the last four decades, federal bioethics commissions have come and gone with the changes in presidential administrations.

This commission model began with the first such commission, namely the National Commission for the Protection of Human Subjects for Biomedical and Behavioral Research, often referred to as just "the National Commission," which was in place from 1974-1978. As its title implies, this appointed group of experts focused on human experimentation ethics, the result of which was the development of the standards

[1] Constance Holden, "Biomedical Advances Confront Public, Politicians, as well as Professionals with New Issues," *Science* 175 no. 4017 (Jan. 7, 1972): 40-41

and ethical principles by which human experimentation is conducted in this country today. The National Commission also had a secondary task, referred to as the "Special Study," which stipulated it "undertake a comprehensive study of the ethical, social, and legal implications of advances in biomedical and behavioral research and technology." It was this special study's broad task that was originally intended to be the aim of the entire bioethics commission. During the 1960s and 1970s, the formulation of an interdisciplinary set of experts reflected the growing concerns about and the need for attention to the implications of biomedical research and critically supported the legislation to create such a commission. This dissertation is an account and analysis of how this public commission was established.

During these two decades, developments and practices in biomedical research and medicine were raising ethical and legal concerns among scientists, physicians, policymakers, congressmen, and the general public. These concerns manifested themselves in conferences, media coverage, university interdisciplinary centers, and Senate hearings. The biomedical advances and practices, and the concerns they raised focused on six areas. One was the pharmaceutical side-effects from the drug thalidomide, which was discovered to cause severe fetal deformations, and which brought up questions of consumer protections and the responsibilities of both physicians and the government. Also on the front page was the growing practice of organ transplantation, which raised questions about how death should be determined, if organs and tissues should be sold, and how such rare and valuable resources should be distributed among society. Moreover, the advances in genetics raised concerns about how genetic testing would impact medical care, if testing would influence rates of abortion, and whether scientists

should be seeking to control human heredity by manipulating the human genome. In addition, experts began paying attention to the developmental biology research on nuclear transfer, which was being connected with the prospect of human cloning. Furthermore, new psychological research on human behavior related to both genetics and pharmaceuticals led to alarm over researchers' proposed ability to control people's lives. Lastly, scandals, following in the wake of the Nuremberg trials just a couple of decades earlier, revealed evidence of human subjects abuse in U.S. medical research, which, in turn, raised questions about the risks and rewards of scientific medicine, the responsibility of physicians, and the unequal distribution of risk from human experimentation toward minority and disadvantaged populations. These developments served as the impetus for a broader concern about the need to examine the social implications of all of biomedical research, and they coincided with a growing public distrust of researchers and physicians.[2]

In 1968 this concern became a focus of attention for Senator Walter F. Mondale, who proposed to the Senate the creation of a federal commission on Health Science and Society. Political and public interest in the social implications and ethics of biomedical research increased between 1968 and 1974, as Mondale's proposal progressed through Congressional legislative hearings and was passed by the Senate and later the House. As

[2] Sheila Jasanoff, "A Field of Its Own: The Emergence of Science and Technology Studies," in Robert Frodeman, ed., *The Oxford Handbook of Interdisciplinarity* (New York: Oxford University Press, 2010): 195-196; Daniel J. Kevles, *The Physicists: The History of a Scientific Community in Modern America* (Cambridge: Harvard University Press, 1995): 393-409; David J. Rothman, *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making* (New York: Basic Books, 1991): 86, 148-167; Kelly Moore, *Disrupting Science: Social Movements, American Scientists, and the Politics of the Military, 1945-1975* (Princeton: Princeton University Press, 2008): 1-12; M.L. Tina Stevens, *Bioethics in America: Origins and Cultural Politics* (Baltimore: Johns Hopkins University Press, 2000):8-45.

unethical practices in human experimentation attracted increasing negative attention, the case of the Tuskegee Syphilis Study became publicized through a *Washington Evening Star* newspaper article by Jean Heller. Spurred on by these ethical issues in human experimentation, a version of Mondale's commission was created in 1974 under the name the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. While the Tuskegee case seems, in retrospect, a critical catalyst, the impetus had been created in a number of ways that allowed the outcome to be swift and definitive.

This dissertation specifically examines how the federal government became an influential venue for discussing bioethics and identifying ethical, social, and legal issues with research. It focuses on the period when those inside and outside biomedical research were identifying bioethical issues, when the public and legislators were questioning the authority of physicians and researchers on the ethical and social aspects of their work, and when Congress was becoming increasingly interested in the research that they were funding. The three key senators, Walter F. Mondale (D-MN), Fred Harris (D-OK), and Edward Kennedy (D-MA), worked with and also challenged the assertions of physicians and researchers on the need to examine social consequences of biomedicine, and in that process they dramatically reshaped the involvement of non-scientists and non-physicians in discussions of biomedical research. This history offers insights into the foundational motivations that have shaped current attitudes and policies relating to the societal and ethical implications of biomedicine, especially arguments concerning the need for public interdisciplinary considerations and the biomedical researcher's sense of social responsibility.

This history revolves around the creation of the first federal bioethics commission and thus relates closely to the literature on the history of bioethics. Historical accounts have focused on the significance of abuses in human experimentation alongside the advances in medical care and technology. Their accounts emphasize three aspects of the creation of the field: the raising of bioethics issues, the establishing of principles of bioethics, and the forming of interdisciplinary collaboration. A review of the histories reveal a couple of common theories regarding the cause and course of the field's development. These "origin" stories or myths follow five theories as described by René Fox and Judith Swazey in their book *Observing Bioethics*. The first theory proposes that the field's sudden development was driven by developments in medical technology, such as determination of brain death and kidney transplantation. This theory assumes that the field of bioethics is primarily an intellectual pursuit, where certain unique questions are asked and unprecedented discussions are held but it does not attend to institutional developments or the role of interdisciplinarity. The second theory asserts that it was the emergence of issues, such as death and dying in relationship to transplantation, and the significance of human life in regard to assisted human reproduction and the abortion debate, that spurred the field's development. While this theory does rely on technological developments as the source of ethical concerns, it does not point to a specific advancement or event, such as heart transplantation or the founding of the Hastings Center. The third theory argues that the field was generated by specific events that questioned the prior methods and procedures of handling ethical issues in medicine through professional or medical standards and thus called for a different and broader oversight. This story usually identifies the Nazi doctors' trials, the Nuremberg code, and

the creation of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research as key events. The fourth theory emphasizes the organizational mechanisms in the field in addition to the development of the word "bioethics." This theory sees the field of bioethics as an institutional pursuit involving departments, centers, and interdisciplinary scholars in order for the field to exist. The final theory contends that the field developed over a multi-year process that resulted from multiple causes, including those identified by the other four theories. This last theory is the one this dissertation follows the closest, but it is also important to acknowledge that this dissertation does not aim to establish how the field developed or when. Rather it aims to explain how and why a federal bioethics commission was created and to reveal a side of the history of bioethics - the examination of social implications of biomedicine - that has not been explored and incorporated into the history before.

Atwood D. Gaines and Eric T. Juengst, in their article *Origin Myths in Bioethics: Constructing Sources, Motives and Reason in Bioethic(s)*, also outline the themes of the field's formation and group them into three impressions of the field. The first impression sees bioethics as reactive to issues, events, and technological advances. The second sees bioethics as a proactive effort on the part of those inside and outside biomedicine. The third impression sees bioethics as a continuous development with long roots going as far back as Hippocrates.[3] This dissertation most closely reflects the view that bioethics is generally a reactive field; however, the research also reveals that in the early history a few well-informed and activist politicians and scientists argued for and began to develop

[3] Atwood D. Gaines and Eric T. Juengst, "Origin Myths in Bioethics: Constructing Sources, Motives and Reason in Bioethic(s)," *Culture, Medicine & Psychiatry* 32 (2008): 303-327.

a specific framework to address the issues they saw emerging before them. In addition, my account of the many discussions in the hearings in Congress on Mondale's proposal makes the activist-reactivist model seem simplistic. As is often the case in policy-making, circumstances generated the actions, but the nature of the response was to open out questions to much broader issues than the specific incidents might have engaged.

Two histories of bioethics follow the history of the National Commission and the development of the field and thus are owed more examination. Albert Jonsen, in his history titled *The Birth of Bioethics,* describes how philosophers and theologians became active participants in early bioethics discussions and how they provided the needed analysis of issues that led to solutions and ethical standards. To explain the rise of the new field of bioethics, Jonsen points to a shift in medical ethics caused by the new scientific and technological dimensions of medicine in the post-World War II period. He asserts that bioethics was born out of medical ethics at a time when the optimism over scientific medicine and the use of technology in medical care began to falter during the 1960s.[4] David Rothman, in his history titled *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making*, describes how physicians became "strangers" to the public and patients. The adoption of medical technologies that distanced them from patients was accompanied by additional "outsiders" becoming involved in medical decision-making. Rothman's "outsiders" were bioethicists, regulators, and lawyers concerned with the authority and responsibility of physicians. Rothman argues that scandals in human experimentation and the growing sense that doctors were strangers had opened the door to non-physicians. He concludes that it was

[4] Albert R. Jonsen, *The Birth of Bioethics* (New York: Oxford University Press, 1998): 11-12.

the questions over new medical procedures and advancements such as organ transplantation that put non-physicians and bioethicists in charge of medical decisions and ethical standards.[5] Both Jonsen and Rothman focus on the advances in biomedicine and the issue of physician-patient relationships rather than the broader areas of social implications which included social justice, public health, moral beliefs, legal standards, and societal norms.

Jonsen and Rothman frame their history around medical ethics and human experimentation. Their orientation misses a crucial aspect of bioethics, namely the simultaneous focus on the larger social implications of research. This dissertation contends that it took the weaving together of three threads of bioethics - medical ethics, human experimentation ethics, and social implications of research - to form the field. The medical ethics and human experimentation ethics histories, such as those by Jonsen and Rothman, are the two threads that have been detailed most thoroughly in the historical literature.[6] The social implications thread, which is the focus of this dissertation, has only been alluded to in these histories. For instance, Jonsen, in his description of human

[5] Rothman, *Strangers at the Bedside,* 148.

[6] In addition to Jonsen and Rothman see Advisory Committee on Human Radiation Experiments, "Part I Ethics of Human Subjects Research: A Historical Perspective," in *Final Report* (Washington, DC: Government Printing Office, 1995); Anita Guerrini, *Experimenting with Humans and Animals: From Galen to Animal Rights* (Baltimore: Johns Hopkins University Press, 2003); Susan E. Lederer, "Research Without Boarders: The Origins of the Declaration of Helsinki," in *Twentieth Century Ethics of Human Subjects Research: Historical Perspectives on Values, Practices, and Regulations*, ed. Volker Roelcke and Giovanni Maio (Stuttgart: Franz Steiner Verlag, 2004), 199-217; Jay Katz, "The Consent Principle of the Nuremberg Code: Its Significance Then and Now," in *The Nazi Doctors and the Nuremberg Code: Human Rights in Human Experimentation*, edited by George J. Annas and Michael A. Grodin (New York: Oxford University Press, 1992); Jonathan D. Moreno, *Undue Risk: Secret State Experiments on Humans* (New York: W.H.Freeman, 2000); Jonathan D. Moreno and Susan E. Lederer, "Revising the History of Cold War Research Ethics," *Kennedy Institute of Ethics Journal* 6, no. 3 (1996): 223-237; Susan E. Lederer, *Subjected to Science: Human Experimentation in America before the Second World War* (Baltimore: Johns Hopkins University Press, 1995); Harry M. Marks, *The Progress of Experiment: Science and Therapeutic Reform in the United States, 1900-1990* (Cambridge: Cambridge University Press, 1997).

experimentation, genetics, organ transplantation, end of life, and assisted human reproduction, does not distinguish between the ethical issues of the physician-patient relationship and those relating to broader issues, such as the distribution of medical advances, the social meanings of redefining death, the cultural significance of the use of minorities and vulnerable populations for human experimentation, and the level of control over the human body that scientific knowledge was creating. This dissertation shows how these multiple threads combine into bioethics during the early 1970s.

Scholars who discuss the creation of the National Commission have typically credited the abuses in human experimentation and the attention of Senator Edward Kennedy with the creation of the commission. Jonsen argues narrowly that the 1973 hearings, led by Senator Kennedy, were the beginnings of bioethics entering the government, not the 1968 hearings on Mondale's proposal. Jonsen largely dismisses the 1968 hearings held by Senator Harris as simply an airing of issues, rather than part of the development of bioethics.[7] While both Jonsen and Rothman credit heart transplantation as spurring Mondale's 1968 proposal for a commission, they do not see Mondale's proposal and resulting hearings in the same way. Jonsen emphasizes its importance to issue identification and Rothman portrays Mondale's proposal and its supporters as attempting to wrestle control of medicine away from the medical profession.[8]

By ignoring or minimizing the significance of congressional and scientific discussions during the 1960s and overlooking the legislative efforts by Senators Mondale and Harris, scholars have missed a significant political component of the history of

[7] Jonsen, *The Birth of Bioethics*, 90-94.
[8] Jonsen, *The Birth of Bioethics*, 93; Rothman, *Strangers at the Bedside*, 168.

bioethics. Understanding the political component allows us to comprehend the intricacies of how biomedical scientists, politicians, and early bioethics scholars framed and addressed the ethical and social implications of biomedical research. In addition, the public and interdisciplinary characteristics of the political discussions help explain the collaborative outcome and the capacity of Congress to take quick political action in 1973.

This dissertation is also grounded in the history of scientific social responsibility, which has noted a sense of political and social responsibility among atomic scientists and physicists. Kelly Moore's book *Disrupting Science: Social Movements, American Scientists, and the Politics of the Military, 1945-1975* examines the public and political roles that scientists adopted after World War II.[9] While the history of the atomic scientists has revealed their ethical considerations concerns about their moral responsibility for the atomic bomb, it does not often directly examine how these actions and events defined or altered scientific social responsibility.[10] *The Scientific Life: A Moral History of Late Modern Vocation* by Steven Shapin expands the literature to explore the meanings, goals, purposes, and practices of the scientific profession in the 20th century. He focuses on two aspects: differences and misperceptions about the industrial and academic realms of science, and the moral standing or unique social responsibility of the profession. Shapin details how after WWII, scientists came to be seen as no longer morally superior and instead were considered equivalent in their moral

[9] Moore, *Disrupting Science*.

[10] See Kevles, *The Physicists*; Gregg Herken, *Cardinal Choices: Presidential Science Advising from the Atomic Bomb to SDI* (Stanford: Stanford University Press, 2000); Peter J. Westwick, *The National Labs: Science in an American System, 1947-1974* (Cambridge: Harvard University Press, 2003); Angela N. Creager, "Nuclear Energy in the Service of Biomedicine: The U.S. Atomic Energy Commission's Radioisotope Program, 1946-1950," *Journal of the History of Biology* 39 (2006):649-684; M. Susan Lindee, *Suffering Made Real: American Science and the Survivors at Hiroshima* (Chicago: University of Chicago, 1994).

standing to the general public.[11] Philosophical literature on professional and general responsibilities of scientists also adds to this historical discussion. Heather Douglas's article "The Moral Responsibilities of Scientists (Tensions Between Autonomy and Responsibility)" analyzes general human social responsibility and the specific "role responsibility" of scientists that scientists have because of their professional expertise and careers. She argues that scientists' "role responsibility" to pursue truth or reliable knowledge about the world does not conflict or overrule scientists' general responsibility. The general responsibility is one which scientists share with the public, and it holds that they not be reckless or negligent in their pursuits.[12] Douglas concludes that scientists are responsible for considering and warning about the implications and consequences of their work. This dissertation adds to historical and philosophical literature by examining the discussions among biomedical researchers over their responsibilities, both general and role specific. It describes the debates over their responsibility and their active role in discussions of social implications, and it reflects both the view described by Shapin that scientists were considered morally equivalent to the general public and the view described by Douglas that scientists' social responsibility lies in their general social responsibility and does not conflict with their role responsibilities.

This dissertation is structured to reveal how separate discussions or threads came together to form the interdisciplinary collaboration that makes up bioethics. The first chapter of the dissertation focuses on the activities and debates of biomedical researchers

[11] Steven Shapin, *The Scientific Life: A Moral History of a Late Modern Vocation* (Chicago: University of Chicago Press, 2008).
[12] Heather E. Douglas, "The Moral Responsibilities of Scientists (Tensions between Autonomy and Responsibility)," *American Philosophical Quarterly*, 40, no. 1 (2003): 59-68.

prior to the common collaboration that an emerging field of bioethics would bring about. It examines the period during 1960s when physicians and researchers were becoming increasingly concerned about the implications of biomedical research and technological developments, as well as engaging in a discussion of their social responsibility. It is during these years that a rapid increase in research funding led to the growth of research and promoted advances in biomedicine. Some of these developments, especially in medical devices, genetics, and organ transplantation, had social, ethical, and legal implications that researchers were beginning to anticipate and discuss in conferences and articles. The chapter also asserts that one impetus for the attention on social responsibility in biomedical research came from earlier discussions among atomic scientists about their professional responsibility. The chapter demonstrates that, as the 1960s progressed, more of the professional meetings, professional conferences, and other events that included conversations on social responsibility began to include scholars from outside of biomedicine, such as lawyers, theologians, philosophers, and social scientists; in some cases they were brought in by researchers who sought to resolve the issues they were identifying and in other instances the initiative came from those concerned about these issues. Ultimately, the chapter reveals how these discussions over social implications and professional social responsibility spilled out into the public sphere, spurring public and political consideration of these issues.

The second chapter concentrates on the simultaneous political discussions that led congressmen to begin examining the social consequences and effects of the research they were funding. It reveals how two key Senators, Fred R. Harris of Oklahoma and Walter F. Mondale of Minnesota, set the stage in Congress for the unprecedented proposal to

create a federal interdisciplinary advisory commission on the ethical, social, and legal implications of biomedicine. It presents a detailed examination of the legislative and Congressional sessions and hearing during the 1960s to explain how certain members became intensely focused on the applications of biomedicine. The chapter details Harris's 1967 hearings and related conference titled "Science in the Service of Man," in which he stressed that Congress had a responsibility to oversee and direct the social outcomes of innovative research in biomedicine. As chairman of the Senate Subcommittee on Government Research, Harris persuaded congressional leaders of the need for the government to examine the goals of federally funded research in an open dialogue between researchers and their sponsors on the societal implications of scientific research. Here I assert that the efforts and attention in Congress toward three areas - the future impacts of technology, the application of federal funding of biomedical research, and the role of social science in advising Congress - combined to increase public and professional attention to the implications of science and technology research.

The third chapter details the meeting of the political and biomedical research spheres through the 1968 hearings on the proposal by Senator Mondale to establish a Commission on Health Science and Society. The chapter provides details and analysis of Mondale's 1968 proposal, as revealed through the testimony and correspondence relating to the Congressional hearings. His recommendation for an interdisciplinary commission of physicians, researchers, lawyers, philosophers, theologians, ethicists, health care administrators, and legislators presumed that these experts would share authority in their analysis of the social consequences of current and future biomedical research. Hearings on the proposed legislation were held in the Subcommittee on Government Research

chaired by Harris. These hearings shaped a deliberative process regarding methods to investigate the social implications of biomedicine, who had authority to oversee research, what role the public should play, and what topics in science needed to be studied. In this setting, for really the first time, politicians, researchers, and other expert commentators had extended discussion on what should be examined in the new field of study that would become known as bioethics. While Mondale's proposal received support from many in the biomedical community, a few prominent and vocal physicians testified against the proposal. Various other concerns, including those over the breadth and length of the commission's term, stalled the proposal in the subcommittee. Despite the proposal's lack of legislative progress, it laid the foundation for bioethics scholars, citizens, and politicians by providing an arena for these early deliberations.

Chapter four continues the discussion of ongoing efforts by Senator Mondale to establish the National Commission on Health Science and Society between 1969 and 1973 and reveals what elements of his plan were eventually incorporated into legislation that created the 1974 National Commission. During these years, changes were occurring in physicians' and researchers' acknowledgement of their social responsibility and in their willingness to include outsiders in the discussions. This can be seen in the hearings on Mondale's proposed legislation in 1971 and 1973, and in the institutionalization of bioethics, as demonstrated by the establishment of two major bioethics institutes, the Hastings Center and the Kennedy Institute for Ethics (KIE) in 1969 and 1971, respectively. The differences between the views expressed in the later hearings and the earlier 1968 hearings reveal the developments in biomedicine and the influence of the newly institutionalized field of bioethics. The 1973 hearings were held after Senator

Kennedy responded to escalating public outrage over evidence of abuses in biomedical research, particularly the public discovery of the Tuskegee Syphilis Study in 1973, in which African American men were lied to about their disease and were prevented from receiving life-saving treatment. Kennedy held a four-part series of hearings on the Quality of Health Care and Human Experimentation to investigate the ethics of human subjects research, and in the process he incorporated Mondale's proposed legislation to address the issues with human experimentation, ultimately getting the legislation passed as the National Research Act.

The fourth chapter reflects the interdisciplinary interactions that were becoming standard among researchers, politicians, and early specialists in bioethics on topics including medical ethics, human experimentation, and social implications. The chapter examines these diverse groups and their collaboration through the lens of the congressional activity relating to both Mondale's proposal and other proposals on the regulation of human experimentation. Essentially, this chapter depicts how the political, biomedical, and early bioethics spheres collided around the creation of the first federal bioethics commission.

Ultimately this dissertation demonstrates how the framework for examining these issues that were forged among Congressmen, early bioethicists, and biomedical researchers between 1967 and 1972 allowed for a swift and comprehensive response to the discovery of the Tuskegee Syphilis Study. Based on extensive research in manuscript materials, organizational records, oral histories, and Senate hearings, this historical account revises the history of bioethics by emphasizing the role Congressional hearings played in building the field of bioethics, and by revealing the significance of the concerns

over the social implications of biomedicine to the history of bioethics. In addition, the dissertation reveals that indeed the biomedical community, as early as 1960, was actively engaged in discussions of the social implications of biomedical research and debated their responsibility as they confronted broad ethical, social, legal implications within biomedicine.

Chapter 1:
The Emergence of "Ethically-Minded Scientists" in Biomedical Research, 1960-1969[13]

During the 1960s and before the field of bioethics organized into an interdisciplinary field with centers, professional societies, and a federal commission devoted to its study, the issues and concerns of the emergent field could be found in various arenas. Three threads of bioethics evolved during the 1960s and each reflected distinctive, sometimes overlapping agendas and focused on somewhat different constituencies. Medical ethics was the thread of bioethics with the longest history. Historically and through the 1960s it focused on the ethics of the physician-patient relationship and the professional ethics of physicians. By the 1970s this aspect of bioethics would cover decisions about end-of-life care and patients' rights. Human experimentation ethics was the second thread to develop. Following World War II and the Nuremberg Doctors' Trials, human experimentation ethics became a significant area of study. By the 1960s concerns about human experimentation grew beyond the realm of medical ethics, having expanded as a result of the significant advances in scientific medicine and as a result of an increased interaction between law and medicine. Human subjects research ethics became the focus of the first federal bioethics commission and today is encompassed by the area of bioethics known as research ethics. The third thread developed around larger social concerns related to scientific research and will be referred to as social implication studies. This arena developed out of discussions of nuclear power

[13] The term "Ethically-Minded Scientists" came from a *New York Times* article describing the concerns with genetics research, see Robert Reinhold, "Medicine: When we Alter Genes - and Society," *New York Times*, September 22, 1968.

and atomic weapons control in the 1950s, and later grew to encompass biological questions and medical science in the 1960s. It is this last area that brought bioethics to the attention of United States Senators in 1968 and instigated the idea for a federal bioethics commission. As later chapters will show, social implication studies became less of a focus by 1973 because cases of abuse in human experimentation captured the public and political attention. Eventually, the cases of abuse in human experimentation provided the catalyst to establish the first federal bioethics commission in 1974.

The literature on the history of bioethics by Albert R. Jonsen and David J. Rothman presents the development of bioethics as rising out of human experimentation ethics and medical ethics, what I refer to as the first two threads of bioethics. The historians detail how concerns with the treatment of human research subjects and questions about how physicians should use new medical advances with patients led to non-scientists being incorporated into the medical ethics discussion. In addition both focus on the advances in biomedicine and the ethical issues that arose in relationship to the physician-patient relationship rather than as they concerned broader areas including public health, moral beliefs, legal standards, and societal norms. Rothman, in his book, *Strangers at the Bedside*, argues that scandals in human experimentation and the growing sense that doctors were not intimately connected to their individual patients opened the door to non-physicians, but it was the questions over new medical procedures and advancements such as organ transplantation that challenged the autonomy of physicians in medical decisions.[14] Jonsen, in his book the *Birth of Bioethics,* argues that theologians

[14] David J. Rothman, *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making* (New York: Basic Books, 1991): 148.

were the first to engage with physicians and scientists.[15] Lawyers also joined theologians, especially those interested in the Nuremberg Doctors' trials following WWII. Lawyers were originally interested in the issues with human experimentation and patient consent, but they would subsequently play a large role in considerations of the social implications of organ transplantation among other specific issues because of legal questions regarding death and murder.[16] Philosophers, despite having a well-established interest in ethics, came to the ongoing practical discussion of ethics in medicine and science relatively late, only at the end of the 1960s.[17]

This chapter describes the professional development of ideas about social responsibility for the ethics of biomedical research. The development of human experimentation ethics and medical ethics within the medical community are described as two strands in the development of the interdisciplinary study of bioethics. The focus of the chapter will be on the much less studied development of scientists' responsibility to consider the social implications of science. The chapter will detail how social implications studies developed out of concerns on the part of scientists over atomic science research, through a series of conferences devoted to the study of social implications, and through the growing collaboration with other fields in these discussions. These efforts and arguments for scientific responsibility were led by a small

[15] Albert R. Jonsen, *The Birth of Bioethics* (New York: Oxford University Press, 1998): 34.
[16] Tom Beauchamp, interview by author, Washington, D.C., April 27, 2011, transcript to be deposited at the National Library of Medicine.
[17] Despite philosophers having studied ethics for hundreds of years, very few made the leap to applying philosophical ethics to medicine and science (applied ethics) until the late 1960s. According to Tom Beauchamp, the first significant effort on the part of philosophers to study and discuss these topics was the 1974 Haverford Conference organized by by Sam Gorovitz. See, Tom Beauchamp, interview by author, Washington, D.C., April 27, 2011, transcript to be deposited at the National Library of Medicine; and Renée C. Fox and Judith P. Swazey, *Observing Bioethics* (New York: Oxford University Press, 2008): 41-43.

but key group of scientific researchers.

Medical Ethics and Human Experimentation Ethics

Medical ethics has a long history with traditional origins dating back to Hippocrates. Medical historians typically identify the origins of modern medical ethics as occurring in the late eighteenth century through the efforts of physicians John Gregory and Thomas Percival in Britain and Benjamin Rush in America.[18] Early forms of medical ethics stressed etiquette among physicians and attention to the "duties" of physicians, including the responsibilities of a physician to his or her patient and to society. Physicians during this period did not draw clear distinctions between therapeutic experimentation and treatment, as they were often one in the same. However, by the turn of the twentieth century, as historian Susan Lederer has shown, non-therapeutic experimentation, especially vivisection, was distinct from treatment and began to raise concerns and discussion among the medical profession and the public about patient consent and the responsibility of physicians to their patients. These discussions came to a head during the antivivisection movement during the early twentieth century, which Lederer describes in detail.[19] However, with the "unprecedented popular esteem" of the medical profession in the 1930s and the rapid rise of support for medical science prior to and during World War II, the pressure for the profession to consider the ethics of human experimentation was temporarily abated during World War II.[20]

The ethics of human subjects research became a more frequent topic after

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[18] Lisbeth Haakonssen, *Medicine and Morals in the Enlightenment: John Gregory, Thomas Percival and Benjamin Rush* (Amsterdam: Editions Rodopi B. V., 1997).
[19] Susan E. Lederer, *Subjected to Science: Human Experimentation in America before the Second World War* (Baltimore: Johns Hopkins University Press, 1995): 1-26.
[20] Lederer, *Subjected to Science*, 126-138.

WWWII for those in medicine and law as cases of abuse were discovered. The atrocities of the Nazi doctors' human experiments and the ruling at the Nuremberg doctors' trial, resulted in a standard of informed voluntary consent for human experimentation in principle even if not always in practice. Rothman's *Strangers at the Bedside* has demonstrated that in addition to successes achieved during WWII in medical research, there was also a "war mentality" in the post-war decades that encouraged making sacrifices with regard to what might be considered patients' best interests in favor of attending to the greater good of medical research and public health. This mentality allowed the profession to overlook concerns about human experimentation practices during the postwar decades.[21] Rothman argues that it is this war mentality continuing through the early 1960s, that allowed for many of the abuses in human experimentation that subsequently shocked the public in the late 1960s and early 1970s.[22]

During the late 1950s and into the 1960s medical ethics and the legal concerns with human experimentation were garnering increasing attention from those inside the medical profession.[23] In 1966 one medical insider, Henry Beecher, helped focus attention

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[21] Jay Katz has argued that the medical profession was not influenced by the Nuremberg Code and the standard of informed voluntary consent and therefore did not adopt it in practice. See: Jay Katz, "The Consent Principle of the Nuremberg Code: Its Significance Then and Now," in *The Nazi Doctors and the Nuremberg Code: Human Rights in Human Experimentation*, ed. George J. Annas and Michael A. Grodin (New York: Oxford University Press, 1992). However, more recent work by Susan Lederer and Jonathon Moreno as part of the Advisory Commission on Human Radiation Experiments (ACHRE), has proven that the medical profession was aware of the standard of informed consent and that in many departments of the federal government regulations on human experimentation were established based on the Nuremberg Code. See: Jonathan D. Moreno and Susan E. Lederer, "Revising the History of Cold War Research Ethics," *Kennedy Institute of Ethics Journal* 6, no. 3 (1996): 223-237.

[22] Rothman, *Strangers at the Bedside,* 50-52, 69.

[23] Examples of this increased focus can be seen in the creation of the Law-Medicine Research Institute at Boston University in 1958, which published an anthology and bibliography on the legal, ethical and moral aspects of clinical investigation in medicine in 1963 and can also be seen in the conference and resulting Declaration of Helsinki by the World Medical Association in 1964. Irving Ladimer and Roger W. Newman, eds., *Clinical Investigation in Medicine: Legal, Ethical and Moral Aspects, An*

to the problem of human experimentation ethics. Beecher, an anesthesiologist at Harvard Medical School, first presented a talk and then published a paper in the *New England Journal of Medicine* listing numerous cases of unethical research on humans. Beecher's article was quickly picked up by newspapers across the United States and spurred the National Institutes of Health (NIH) to create new requirements for the human subjects research they funded. In the late 1960s concerns over abuse and the number of cases of unjustified harm to human research subjects would continue to increase, eventually reaching a peak in 1972 with the public exposure of the Tuskegee Syphilis Study. This case would provide the catalyst needed to enact legislative change in the federal government's funding of human experimentation.[24]

Consideration of Social Implications

Social Implications of Atomic Science

Toward the end of World War II and in the decade following the war, physicists and atomic scientists became concerned about how the technology and knowledge they had produced during the Manhattan Project had been applied. The product of the Manhattan Project, the atomic bomb, and its use on Japan led many physicists to discuss and reconsider their responsibility to oversee applications of their work in relationship to societal values. Two atomic bombs were dropped on the Japanese cities of Hiroshima and Nagasaki, killing roughly 150,000 to 200,000 people. What was significant about the new weapon was that it took one bomb per city to kill all those people and that the destruction

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Anthology and Bibliography (Boston: Law-Medicine Research Institute, 1963); Susan E. Lederer, "Research Without Boarders: The Origins of the Declaration of Helsinki," in *Twentieth Century Ethics of Human Subjects Research: Historical Perspectives on Values, Practices, and Regulations*, ed. Volker Roelcke and Giovanni Maio (Stuttgart: Franz Steiner Verlag, 2004), 199-217.

[24] These events are described in more detail in chapter 4.

of life was not just from the immediate impact of the bomb but continued for weeks and even years through the destructive power of atomic radiation poisoning. These destructive effects meant that a future war with atomic bombs threatened not just the countries involved in a war but also the entire world and future generations. Certain atomic scientists' actions following the end of WWII warned of these dangers and sought to prevent nuclear war; in so doing they provided an example of scientific social responsibility for the next generation.

Atomic scientists' concerns about their research began before the plutonium bomb was tested on July 16, 1945, although these discussions were classified and kept secret by the military.[25] On at least two occasions at Los Alamos, in March 1943 and late 1944, scientists organized meetings and proposed the idea of demonstrating the bomb over an unpopulated area before using it in the war.[26] In the spring of 1945, I.I. Rabi, a physicist who did not officially work on the Manhattan Projects but served as a senior consultant to J. Robert Oppenheimer, the director of the project, warned that after the completion of the atomic bomb physicists would become servants of the "munitions makers" and lose the respect of the public.[27] Rabi worried about physicists being co-opted by the military and losing their independence and intellectual freedom. Meanwhile Leo Szilard along with a group led by James Frank at the University of Chicago were concerned with the product of the research: the bomb. Szilard, who was instrumental in getting the atomic bomb project started in the U.S., became a leader in speaking out against the use of the

[25] Daniel J. Kevles, *The Physicists: The History of a Scientific Community in Modern America* (Cambridge: Harvard University Press, 1995); Barton J. Bernstein, "Four Physicists and the Bomb: the Early Years, 1945-1950," *Historical Studies in the Physical and Biological Sciences* 18, no. 2 (1988): 231-263.
[26] Bernstein, "Four Physicists and the Bomb," 231-263.
[27] Kevles, *The Physicists*, 334-335.

bomb on Japan.[28] Those scientists, known as the Frank group, were mostly concerned with how the product they had created was to be used and they feared the unwarned dropping of the bomb on a populated area.

Four leading physicists serving on the Scientific Advisory Panel created by the military, Arthur H. Compton, Ernest O. Lawrence, Enrico Fermi and J. Robert Oppenheimer, raised the option of a demonstration in a May 31, 1945 meeting with military and government leaders. Ultimately, the conclusion of these discussions was to move forward with the bomb. This was not well received by other physicists working on the Manhattan Project, including Szilard and Frank. Both men, along with five other researchers, sent a report to the Secretary of War in which they "pleaded that the A-bomb not be used on Japan, suggested a non-combat demonstration and warned of a postwar race if the weapon was used."[29] Historian Daniel Kevles argues that the Los Alamos generation of atomic scientists who worked at Los Alamos on the atomic bomb as a whole agreed with the declaration by the Frank group and believed that scientists could no longer deny responsibility for the technologies and knowledge they produced.[30] However, the Frank report and the support among atomic scientists did not persuade the military or the four members of the Scientific Advisory Panel to change the plan to drop the bomb on a Japanese city, and neither did the very dramatic first testing of the atomic bomb in Alamogordo, New Mexico on July 16, 1945. During this time discussions of the atomic bomb were still classified and thus were kept from the general public. The

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[28] Gregg Herken, *Cardinal Choices: Presidential Science Advising from the Atomic Bomb to SDI* (Stanford: Stanford University Press, 2000), 25; see also Gregg Herken, *Brotherhood of the Bomb: The Tangled Lives and Loyalties of Robert Oppenheimer, Ernest Lawrence, and Edward Teller* (New York: Henry Holt and Co., 2002): 131-158.

[29] Bernstein, "Four Physicists and the Bomb," 236.

[30] Kevles, *The Physicists*, 335.

physicists' letters and requests to military and government leaders were the furthest the scientists could take their concerns at the time; they believed they should not go public by writing an editorial to the *New York Times* or expressing their concerns to Congress because of the classified status of the work.

When the atomic bomb was dropped on Japan in August 1945, the public and military realized its contribution to ending the war; however many of the scientists immediately saw the implications of the use of the bomb for international and national affairs. The atomic scientists raised concerns about the prospect of other countries developing an atomic bomb and the resulting dangers of an arms race and possible nuclear war. These concerns led some scientists and the military to urge keeping the research secret and to agree to work on an even bigger bomb, the hydrogen bomb, as a means of preventing a nuclear war or arms race. However, other scientists warned that the knowledge could not be kept secret. They held views that creating a new bigger bomb or keeping the knowledge of how to create an atomic bomb secret would not prevent the dangers of nuclear war. Instead these scientists, such as those among the Frank group, argued for civilian and international control of atomic science research and atomic weapons as opposed to American military control.[31]

The discussions about funding research on the H-bomb provided atomic scientists with a second opportunity to express their opinions and influence policy about the use of nuclear science. Historian Gregg Herken points out that, after the war, scientists believed that their opinion about the application of their results should matter. Yet there remained disagreement among scientists about whether they were obligated or even qualified to

[31] Herken, *Brotherhood of the Bomb*, 131-158.

advise on issues outside of scientific and technological research.[32] Despite this debate, many atomic scientists and physical scientists worked to influence policy and public opinion because they felt it was their responsibility. Herken explains that the initial reluctance by atomic physicists to speak publicly about the societal consequences of their work gave way as discussions of the next generation of nuclear bomb, the hydrogen bomb, began.[33]

Their concerns, expressed even as the war ended, began to resonate with politicians and the public. The Cold War anxiety surrounding the Soviet Union's development of an atomic bomb only furthered the fears of an arms race and nuclear war. A portion of U.S. atomic scientists believed that the public needed to be informed about the potential dangers and social implications of nuclear science. They formed a number of groups in late 1945, including the Atomic Scientists of Chicago, the Association of Oak Ridge Scientists, and the Association of Los Alamos Scientists. These local groups eventually combined into the Federation of Atomic Scientists and shortly thereafter, in January 1946, broadened yet again and became the Federation of American Scientists (FAS) to reflect an expanding membership. These activist scientists believed that the research on atomic science should be separated from the military and put under civilian control. They also encouraged an open exchange of knowledge regarding the science of nuclear weapons and peaceful uses of atomic science. The Chicago scientists from the FAS published the *Bulletin of Atomic Scientists* to discuss issues involving atomic science and its implications. While the newsletter was never officially sponsored by the

[32] Herken, *Cardinal Choices,* 34.
[33] Herken, *Cardinal Choices,* 34.

FAS, it served as the voice of the FAS movement.[34] Later in the 1960s, this same journal would expand its consideration of nuclear research and atomic weapons to include discussions of biology. Articles began to appear on the implications of biological weapons and genetics research. Later sections of this chapter will demonstrate the role that concerns about atomic weapons research played in the development of social implications studies of biomedical research.

While the FAS scientists were against further bomb development, other atomic scientists saw the H-bomb as necessary to reestablish American dominance internationally and to counter the growing power of and fears over communism. The debate over pursuing research on the H-bomb would continue back and forth within the scientific community, and among those scientists advising the government, for the next five years until January 31, 1950, when President Truman declared that the U.S. would seek to develop the bomb. These differing opinions and on-going discussions are evidence of these scientists engaging in conversations about the social implications of their work and also examining what a social responsibility meant in practice. While they had different opinions on what was best for society, many scientists voiced their opinions and tried to influence policy.

As historian Barton J. Bernstein writes, "most A-bomb physicists… agreed that they had a special responsibility, and burden, because they had helped build the bomb."[35] Prior to and during the 1950s, many physicists and scientists defined and fulfilled this

[34] Jessica Wang, *American Science in an Age of Anxiety: Scientists, Anticommunism, and the Cold War* (Chapel Hill: University of North Carolina Press, 1999): 18-19; see also Spencer R. Weart, *Nuclear Fear: A History of Images* (Cambridge, Mass: Harvard University Press, 1988).

[35] Bernstein, "Four Physicists and the Bomb," 250.

responsibility by speaking openly about the dangers and risks of the knowledge that they had created, specifically citing the risks of a nuclear holocaust. A letter by Leo Szilard and three other atomic scientists described the responsibility: "Scientists do not aspire to political leadership but, having helped man to make this first step into this new world, they have the responsibility of warning and advising him until he has become aware of its perils as well as its wonders."[36] Of those scientists, the ones that took up this responsibility following the war, and after much of the secrecy surrounding the research had been lifted, fulfilled the responsibility by speaking publicly in the form of public letters and through the media.[37] These discussions surrounding the moral and social implications of atomic energy research and the social responsibilities of scientists established an expectation within the U.S., and increasingly among the scientific professions, that researchers had a responsibility to warn of the consequences of their work and that they were at least partially responsible for what their research produced.

Atomic scientists aimed to fulfill their scientific social responsibility with two clear agendas: influencing legislation to limit atomic weapons and pursuing peaceful uses of atomic energy. They did this by becoming involved in the post-war policies for arms control and nuclear research, either by advising the government individually, as Oppenheimer did, or by influencing the legislation through professional groups, like the FAS, which issued public statements on atomic weapons legislation.[38] They encouraged

[36] Bernstein, "Four Physicists and the Bomb," 250.
[37] Wang, *American Science in an Age of Anxiety*.
[38] For further information on atomic scientists as advisors see Herken, *Cardinal Choices*. For more on the political actions and influence of atomic scientists see: Wang, *American Science in an Age of Anxiety*, 11: She states: "By September 1945, scientists who had worked on the bomb began to organize what later became known as the atomic scientists' movement. They worked to influence the nuclear policies of the United States and, by extension, the shape of postwar international relations."

the peaceful uses of atomic energy by supporting the Atoms for Peace program, and through the Atomic Energy Commissions support for exploring new areas of nuclear research that focused on health research and commercial energy development.[39]

Significantly, a group of physicists and other scholars organized a conference to discuss the issues and make them public. The Pugwash Conference, was the first in a series of subsequent meetings created by an international group led in part by physicist Joseph Rotblat in 1957. The Pugwash conferences focused on addressing the problems with nuclear weapons and later biological and chemical weapons. The people attending the conferences were mostly atomic scientists but some included individuals like philosopher Bertrand Russell. The attendees considered the weaponized uses of science and ways to control their dangers internationally, and they published statements that were signed by the attending scientists and scholars and were adopted by a few scientific organizations internationally. While Pugwash leaders did not influence policy on atomic weapons in the 1950s, subsequent meetings in the 1960s helped to establish the 1963 Partial Test Ban Treaty, the 1972 Biological Weapons Convention, and the 1972 Anti-Ballistic Missile Treaty.[40]

Pugwash did not just focus on atomic weapons; rather, it expanded its initial concerns about atomic weapons to consider research in biology. Biological weapons were first discussed at the eighth Pugwash in 1959, but conference attendees concluded that

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[39] U.S. Department of Energy, The History of Nuclear Energy, by the Office of Nuclear Energy, Science and Technology, DOE-NE-0088, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0CF4QFjAC&url=http%3A%2F%2Fwww.ne.doe.gov%2FpdfFiles%2FHistory.pdf&ei=lqTsT_z9BvH16gHyioXIBQ&usg=AFQjCNHTK69v7phv0_UKEyqU4Uipzy551A (accessed June 28, 2012).

[40] Martin Underwood, *Joseph Rotblat: A Man of Conscience in the Nuclear Age* (Brighton: Sussex Academic Press, 2009); J. Rotblat, *Scientists in the Quest for Peace: A History of the Pugwash Conferences* (London: Heinemann, 1972).

nuclear weapons were a higher priority. The 1964 Pugwash Conference created a working group on biological weapons, whose discussions were continued in the subsequent year by the Study Group on Biological Warfare.[41]

The other approach envisioned by atomic scientists as a way to fulfill their public responsibility was to focus on peaceful and medical uses of atomic energy. Some scientists directed their research toward more peaceful goals, which according to historian Angela Creager, "seemed to carry the burden of redemption."[42] One scientist who took the peaceful and medical goals very seriously was physicist Joseph Rotblat. Rotblat was the organizer of the Pugwash conferences, but prior to that he had shifted from doing basic physics research, including some work for the Manhattan Project, to research applying physics to medicine. Eventually Rotblat would take a position at St. Bartholomew's Hospital Medical College in England in 1949 and become a well-known medical physicist working on radio-therapy.[43] In addition to the handful of physicists who began to focus on medical applications, many physicists fought for a civilian controlled U.S. Atomic Energy Commission (AEC) so that atomic science would be kept public, so that the peaceful uses of atomic science would be encouraged, and so that a system of international control could be encouraged for atomic weapons.[44] The creation and subsequent work of the AEC would carry out some of these goals during the 1950s, especially through the work of the Atoms for Peace program.[45]

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[41] Underwood, *Joseph Rotblat,* 50-55.
[42] Angela N. Creager, "Nuclear Energy in the Service of Biomedicine: The U.S. Atomic Energy Commission's Radioisotope Program, 1946-1950," *Journal of the History of Biology* 39 (2006):665.
[43] Underwood, *Joseph Rotblat*.
[44] Wang, *American Science in an Age of Anxiety*, 11.
[45] This program did encourage the peaceful uses of atomic science, such as atomic energy, but it also served to draw attention away from the United States' continued military work on atomic weapons and to

The atomic scientists set an example for all scientists, not just to other physicists, to attend to social responsibility. They defined the social responsibility as expressing their opinions publicly, advising society and government officials, working with international organizations, pursuing more peaceful research, and generally having a say about what would happen to the knowledge they produce. Their argument and efforts would be adapted by researchers in biomedicine in the 1960s. While the biomedical researchers would not go about fulfilling their social responsibility in exactly the same way, they were clear that they were drawing on the example of the atomic scientists. Biomedical researchers also believed that it was important to consider the implications of research so that they could plan for the implications of research and therefore prevent the fears and lack of preparation that atomic scientists encountered. Throughout the 1960s in many of the professional conferences on biomedicine, in the growing public discussions of biomedicine in newspapers, and later in congressional hearings, the atomic scientists were cited to explain the concern among biomedical scientists about their own work and among politicians who were justifying congressional examination of biomedicine. In addition, the *Bulletin of Atomic Scientists* connected concerns about atomic science with concerns about biology as it broadened its topical coverage to include issues with biology in the middle of the 1960s.[46]

A Brave New World

During the 1960s significant advances in research, dramatic scandals, and public policy changes in biomedical research raised questions about the ethical practices of

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encourage other countries to devote resources to peaceful purposes. See: John Krige, "Atoms for Peace, Scientific Internationalism, and Scientific Intelligence," *Osiris* 21, no. 1 (2006): 161-181.

[46] One example is an article by Joshua Lederberg in 1966: Joshua Lederberg, "Experimental Genetics and Human Evolution," *Bulletin of the Atomic Scientists* 22, no. 8 (October 1966): 4-11.

biomedical researchers and the social implications of the research results. The advances, such as human organ transplantations, oral contraceptives, and pharmaceutical drug therapies, were promising; but they seemed to be dangerously increasing the control that scientists and physicians had over life and humans. The fears over what genetic engineering might bring, what psychotherapy might allow, and what organ and tissue transplantation might entail were framed by the influential and widely read *A Brave New World.* Originally published in 1932 by Aldous Huxley, the book has been described as one of the most "influential novels of the twentieth century."[47] Huxley envisions a world many years in the future, in which humans no longer breed naturally. Instead, they are produced in hatcheries where elite humans are cloned to rule the society and non-elite human laborers are cloned and then brainwashed to perform work. In this future world the biological sciences provided the capacity perform these task and led society to develop in this way.

In 1958, Huxley published a revision of his novel, in which he examined the current state of the world in comparison to the fictional world of his original novel, suggesting that the novel's world was coming true earlier than he expected.[48] Others, too, in the sciences, politics, and among the public were making connections between Huxley's dystopian world and the research being pursued in genetics, surgery, and psychology. The novel's title became a catchphrase during the 1960s for those in science and in politics who wanted to warn others about what biomedical research could produce

[47] David Garrett Izzo and Kim Kirkpatrick, eds., *Huxley's Brave New World: Essays* (Jefferson, North Carolina: McFarland and Company, Inc., 2008): 1.
[48] Aldous Huxley, *A Brave New World Revisited* (New York: Harper and Row, 1958).

if it was not controlled and the implications considered properly.[49]

"Ethically-Minded Scientists" at Conferences

During the 1960s the advancement in biomedical science combined with the concerns about atomic science, overpopulation, and the fears of "A Brave New World." As the following sections demonstrate, researchers in biology and medicine considered the implications of their work at conferences and in publications where they discussed their social responsibility, the roles they should play in warning about the future, and the implications of their biomedical research. The scientists at these conferences included the broader implications biomedical research had to public health, public policy, and societal values, and further examined areas of basic science in addition to medicine, often with references to atomic scientists. As the 1960s progressed, the biomedical researchers began to seek out and include scholars from outside the sciences to help consider the implications of their work, as can be seen in the Nobel Conferences, the Ciba Foundation symposiums, and the work of the National Academy of Sciences (NAS). Scientists also published articles calling on their peers to consider the social implications of their work. In just a few years these professional discussions spilled out into the public realm. While bioethicists today take the lead in pointing out and considering issues in biomedical research, in the 1960s, the consideration of social implications was largely introduced by scientists and physicians. These researchers believed that their professions were obligated to consider the implications, to warn the public, and to involve scholarly experts to address concerns with their research.

[49] The term catchphrase comes from Izzo and Kirkpatrick, eds., *Huxley's Brave New World*; references were found in the conferences and in congressional hearing testimony where "A Brave New World" is used frequently to describe the fears and risks of biomedical research.

The Great Issues of Conscience in Modern Medicine - Dartmouth Convocation Sept. 8-10, 1960

In September 1960 a Dartmouth Convocation marked the "refounding" of the college's medical school campus. The convocation included a symposium with topics that ranged beyond the traditional areas of medicine to cover concerns from environmental pollution to end-of-life care, and from man-made radiation exposure to population growth -- connecting these topics back to health and medicine. This symposium was distinct from other conferences and discussions on medical ethics in the post war period because it did not focus on issues of informed consent and human experimentation but instead considered the potential uses of medical and scientific research for human society and their impacts.

The symposium consisted of three panel discussions, each on a distinct topic relating to science and society. The first panel discussion, "The Issues of Man and His Environment," considered "certain problems posed to us by the new environment which man has been creating for himself, largely through science and technology."[50] Speakers discussed the effects of manmade radiation from nuclear power plants, nuclear weapons and x-rays; the results of chemical additives use in food production; and the impact of unseen chemical pollution and smog. For one of the panelists, George B. Kistiakowsky, who was the special assistant to President Eisenhower for Science and Technology, the moral issue raised by these advances was how to resolve the conflict over protecting the health of the individual while encouraging science that promoted the well-being of

[50] Dartmouth Convocation on Great Issues of Conscience in Modern Medicine, *The Great Issues of Conscience in Modern Medicine: Selections from the addresses and panel discussions* (Hanover: Dartmouth Medical School, 1961), 10.

society. Another panelist, Walsh McDermott, professor of public health at Cornell University, raised concerns about public health issues associated with unseen chemical pollution. He described the inability of society to dispose of chemical and automobile pollutants safely and the growing medical conditions pollution was causing throughout the public. The speakers identified problems that resulted from the sometimes unforeseen results of science and technology on the larger environment.

The second panel discussed the issue of population growth in relationship to technologies that prolonged life or produced healthier people. In the panel, on "Issues Concerning Man's Biological Future," physician George Pickering raised questions about the use of medical technologies such as artificial respiration and organ transplantation to postpone the inevitable death of very ill or unconscious patients and the use of genetics in eugenics to "breed" better humans. Pickering's views on genetics were countered by Herman J. Muller who spoke in support of eugenic practices as a means to address population growth of unhealthy individuals. Muller's view was not shared by other speakers, including Dr. McDermott, Aldous Huxley, and Charles P. Snow. Many were intrigued by the development of an oral contraceptive or birth control pill, which some of the speakers argued would help to address the population problem.[51] The final panel discussed research in psychology and neuroscience involving the prospect of manipulating or controlling human behavior and thought. The speaker, Sandor Rado, a professor of psychiatry at the New York School of Psychiatry, detailed research being

[51] Rene Dubos, Aldous Huxley, and Mahomedali Currim Chagla, Indian Ambassador to the U.S., mentioned the population problem and the prospect or urgency of an oral contraceptive in an evening assembly, see Dartmouth Convocation; For further information regarding discussions over the development of the contraceptive pill during this era see Elaine Tyler May, *America and the Pill: A History of Promise, Peril, and Liberation* (New York: Basic Books, 2010).

done on rage and methods of controlling or mediating it in humans; his presentation raised issues of voluntary consent and the prospect of controlling unwilling people.

These panels did not come to any conclusions about what should be done, but they identified problems in relationship to contemporary medicine and science, and to the future implications for the general population. Although most historical literature demonstrates that in this period physicians were concerned with physician patient relations, the attendees were also emphasizing issues concerning public health, public policy, and society-wide impacts. Later conferences during the 1960s would continue to focus on these broader areas as they related to biomedicine. When bioethics was institutionalized in the 1970s many of these would prove to be prescient topics.

The speakers at the symposium were primarily physicians and biological scientists who were leaders in their fields, but they had also been active outside of the lab and clinics by working administratively, advising in the government, and publishing outside the profession.[52] These experiences meant they were predisposed to be alert to the concerns of society. This can be seen with the chair of the symposium, René Dubos.

[52] The speakers included Rene Jules Dubos, microbiologist and author of books intended for popular audiences, including *Man and Society*; Brock Chisholm, physician and Director-General of the World Health Organization from 1948-1953; Ward Darley, physician and Executive Director of the Association of American Medical Colleges; Ralph Gerard, psychiatrist and director of Laboratories at the Mental Health Research Institute at the University of Michigan; George B. Kistiakowsky, chemist and President Eisenhower's Special Assistant for Science and Technology; Walsh McDermott, physician in public health and consultant to the U.S. Public Health Service and Veterans Administration, he would go on to help organize and serve as chairman for the Board of Medicine at the National Academies, which became the Institute of Medicine; H.J. Muller, geneticist and Nobel Prize winner in physiology and medicine in 1946, also served on the Atomic Energy Commission's team to study the effects of the atomic bomb on Japanese survivors; Wilder G. Penfield, neurosurgeon from McGill University; Sir George Pickering, physician and authority on cardiovascular disease from London; Sandor Rado, Dean and Professor of Psychiatry for the New York School of Psychiatry; Sir Charles Snow, physicist by training turned novelist and starting in 1945 the Civil Service Commissioner in charge of scientific appointments; Warren Weaver, trained mathematician and Vice President of the Alfred P. Sloan Foundation and former Rockefeller Foundation Vice President for the National and Medical Sciences.

Dubos was a microbiologist and ecologist who had written many books about the ecology of medicine and health.[53] He would become, in 1969, a member of the advisory council of the newly founded Institute of Society, Ethics, and the Life Sciences, which is now known as the Hastings Center. This organization was the first organized center for the study of bioethics when it was formed in 1969.[54]

In addition to Dubos and the other scientists and physicians like him, there were also two people from outside biomedicine who provided a social or non-scientific perspective, India's ambassador to the U.S., Mahomedali Currim Chagla, and the famous author of *A Brave New World*, Aldous Huxley. The audience for this symposium consisted of alumni of the Dartmouth Medical School and others who were there to celebrate the medical school. Like many of the conferences in this decade, this was a discussion within the profession and did not reach the general public directly.[55]

The bioethicist and author of a history of bioethics, Al Jonsen, describes the Dartmouth symposium as the beginning of the "decade of conferences," in which scientists and physicians "aired" the issues confronting medicine.[56] He uses these events to argue that it was not until theologians and philosophers were brought into the

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[53] Rene Dubos also published *Mirage of Health* in 1959 in a series titled *World Perspectives*. The board of editors for this series included a couple well regarded leaders in science, Niels Bohr, J. Robert Oppenheimer, and I. I. Rabi as well as a mathematician, Chinese philosopher, French philosopher, Indian philosopher, economist/banker, a sociologist, and a professor of Public Law and Government at Columbia University. Rene Dubos, *Mirage of Health: Utopias, Progress, and Biological Change*, vol. 22 of *World Perspectives* (New York: Harper & Brothers Publishers, 1959); Carol L. Moberg, *René Dubos: Friend of the Good Earth: Microbiologist, Medical Scientist, Environmentalist* (Washington, D.C.: ASM Press, 2005).

[54] The details of the development of the Hastings Center are described in more detail in chapter 4 of this dissertation. Letter to René Dubos, February 21, 1969, file A-K Correspondence 1969-1970, box 17, Hastings Center Records, 1969-1988, Yale University Archives.

[55] There is little evidence that these proceedings were widely distributed because they were intended for a professional audience and to promote the "new" medical school, but they are evidence of the growing concerns among practitioners and scientists. Dartmouth Convocation, 1-6.

[56] Albert R. Jonsen, *The Birth of Bioethics* (New York: Oxford University Press, 1998), 13-19.

discussions that significant analysis and ethical arguments were made. For Jonsen, these meetings simply laid the groundwork for the theologians and philosophers to step in and begin the serious work of philosophical and theological examination.

Jonsen however does not separate out the considerations of the social implications of biomedicine from those issues in medical ethics dealing with the physician-patient relationship. When he describes the beginning bioethics discussions on human experimentation, genetics, organ transplantation, end of life, and assisted human reproduction, he does not distinguish between the bioethical issues regarding how a physician should practice and what power or control a physician should have, and the issues over the implications these practices had on society's laws, norms, behaviors. To Jonsen, all of these issues are just wrapped up as part of preliminary bioethics; yet, as the symposiums, meetings, and publications described in this chapter show, these issues regarding the social implications of research were initially raised and discussed separately from the issues related to the physician-patient relationship and human experimentation. Jonsen tends to overemphasize the role of medical ethics in the origins of bioethics, by arguing that bioethics develops out of medical ethics only as theologians and philosophers enter the conversation and provide philosophical and religious analysis. In thus stressing the significance of theologians and philosophers, Jonson underplays the early concerns and actions of scientists and physicians and their increasing willingness to collaborate with interdisciplinary scholars, including theologians, philosophers, lawyers, and sociologists, and also with legislators and the public. The 1960 Dartmouth symposium, along with other conferences and published scientific writing, makes clear that several scientists and physicians played important roles in identifying potentially

problematical implications of their work, bringing attention to their concerns, and inviting interdisciplinary and eventually public discussion.

While the 1960 Dartmouth symposium identifed issues and considered the implications of biomedicine, there was also an active discussion on what responsibility the scientific profession had to society. A recurring opinion expressed during the symposium was stated by René Dubos:

> Medical science only tells us *how* to do things, not *what* we should do among all the things we can now do and the many more we will be able to do in the near future – and the choice as to *what* we do will have to be the responsibility not of the doctors and scientists but of all society, because the questions to be answered are moral questions.[57]

He thus made the problem one that required more than simply ethical practice by physicians and research scientists.

The question of *who* should decide what to do was not answered by the speakers in the same way. While Dubos expressed the belief described above, that society should make the decisions, C.P. Snow argued that science was not ethically neutral and that scientists should take on more responsibility in these discussions.[58]

> Therefore, it seems to me that the first thing is to tell the truth. I believe that is the first duty of all scientists – I believe it's a built-in feature of science itself, and one which makes me feel that it's wrong for us to say that 'science is ethically neutral.' I never have believed that – and I don't now! I believe that the very fact that truth is part of the very grain of science means that we have an ethical component right in us.
>
> The first thing, then, is to tell the truth. The second thing is not to leave it to society in quite as easy a fashion as some of my wiser friends, and Dr. Dubos last night, would suggest. We happen to know just a little more, we happen to be a little more articulate, we happen, if we're not very bad men

[57] Dartmouth Convocation, 1.
[58] Dartmouth Convocation, 10.

> indeed, to have our consciences a little sorer, because this kind of statistical mortality is something we have to live with.[59]

Another speaker, H. J. Muller, took yet another position and encouraged interdisciplinary discussions. Muller, after complaining about his personal experience with the medical profession's dislike of outside criticism, argued that the medical and scientific professions had a responsibility to speak up about their field, but that the public also had a right to have a voice in the discussions and decisions.

> I think this illustrates, on the one hand, what was said last night, that it is not merely for the medical profession to decide these matters of medical ethics.
>
> But I think, on the other hand, that it is up to the medical profession, too! And very distinctly so! I think it is up to everyone in fields they're conversant with to speak up and try to work out the truths together with others whose fields overlap, and even with complete outsiders, because *only* with such free discussion, and not with dictatorship, can we arrive at the decisions that will benefit mankind. And scientists especially should speak up on these matters, because I think that it is by no means true that science has no contributions to make to axiology – that is to the science of values.[60]

This symposium identified topics but the often well-known and articulate participants also initiated a conversation (and some debate) about the specific responsibilities of physicians and scientists and the role they and those outside of medicine had to play. In the decade that followed, they began to act as leaders by holding more conferences and by inviting carefully selected scholars from beyond science and medicine.

Ciba Foundation Between 1962-1972

The Ciba Foundation was founded in London, England following World War II, with the scientific purpose of advancing and promoting the study, general knowledge,

[59] Dartmouth Convocation, 14.
[60] Dartmouth Convocation, 14.

and research in chemistry, medicine, and surgery. The foundation's goal was also "promoting international cooperation in medical, chemical, biological, and pharmaceutical research and in allied subjects."[61] This international component brought a number of researchers from the United States to many of the symposiums held by Ciba in London. As F. Peter Woodford has demonstrated in his book, *The Ciba Foundation: An Analytic History 1949-1974*, from its foundation through the 1950s most of the Foundation's support went to the broad area of biochemistry. But by 1962, and increasing after 1966, the sociology of science became a focus and the scientists began to involve scholars from other disciplines.[62]

The trend toward examining the implications of science began with a conference titled "The Future of Man" in 1962, which analyzed the state of scientific research, mainly genetics, and predicted where genetics would go and how it might look.[63] The impetus for the conference was described in the preface for the proceedings in this way:

> The world was unprepared socially, politically, and ethically for the advent of nuclear power. Now, biological research is in a ferment, creating and promising methods of interference with "natural processes" which could destroy or could transform nearly every aspect of human life which we value.[64]

The precedent set by the atomic scientists and the development of applications for nuclear science served in the Ciba conference as a framework and justification to

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[61] Katharine Lee and Nancy G. Spufford, *Portrait of a Foundation: A Brief History of the Ciba Foundation and its Environment* (London: Ciba Foundation, 1993), vii.

[62] F. Peter Woodford, *The Ciba Foundation: An Analytic History 1949-1974* (New York: Associated Scientific Publishers: 1974), 49-53.

[63] Joshua Lederberg was one of the participants from the U.S. who attended this symposium and was outspoken about examining the implications of science and keeping the public informed. Woodford, *The Ciba Foundation*, 104. This conference was influenced by and named for the book, *The Future of Man*, which was published in 1960 by Peter Medawar. Medawar attended the conference and participated in the discussions but did not give a talk; Woodford, *The Ciba Foundation*, 96-119.

[64] Gordon Wolstenholme, ed., *Man and his Future* (Toronto: Little, Brown and Company, 1963): v.

examine the future of scientific research. Whereas the Dartmouth Convocation narrowly considered atomic science in regard to radiation pollution and drew no connection between atomic scientists and biomedical scientists in regard to the ethical and social examination of biomedical research. Topically however, there were similarities with the earlier Dartmouth Convocation and the 1962 Ciba conference as, for example, both addressed eugenic ideas in reference to recent biomedical research, with the latter providing even more focused attention.[65] In addition the London participants discussed concerns about the growing world population, but included broader concerns related to science and technology including discussions of food supplies and world resources; sociological considerations of the relationship between man and the environment and man and machines; the future of areas in medicine such as molecular biology, infectious diseases, and extension of human lifespans; and the prospect of controlling behavior through advancements in the science of the mind.

In 1966, the foundation held its first symposium to address questions of medical ethics, titled *Ethics in Medical Progress: With Special Reference to Transplantation*. This symposium focused on the ethical and legal issues with transplantation, such as consent by donors, recipients, and families; questions of when death occurs both legally and medically; and the ethical and economic considerations of providing or distributing transplantation treatment to the general public. Notably, the conference persuaded one group of researchers from the United States to stop their use of prisoners as kidney

[65] Joshua Lederberg's talk focused entirely on reinterpreting eugenics in light of contemporary science and issues and in doing so introduced his new term euphenics. Hermann J. Muller's talk preceded Lederberg's and also connected eugenics with current genetic knowledge. Both of these talks were followed by a discussion section on "Eugenics and Genetics" which reflected the viewpoints of a number of the leading scientists present at the conference, see Wolstenholme, ed., *Man and his Future*.

donors.[66]

The attendees of the conference were mostly physicians and surgeons, with a few lawyers and one religious scholar. Notably, the chairman was a lawyer not a physician, and he made note of this in his opening remarks. The need for interdisciplinary discussion of issues with medical advances was further reinforced by the first speaker, M. F. A. Woodruff, when he noted

> This symposium was planned because of the growing realization that progress in medicine brings in its train ethical problems which are the concern not only of practising [sic] doctors but of the whole community, and which are likely to be solved with intensive study of a multidisciplinary kind.[67]

The advances being produced from scientific medical research such as organ transplantation were raising questions and concerns among the medical professionals that pushed them to seek collaboration from multidisciplinary fields just as the biological sciences were beginning to do the same.

In the following eight years, the Ciba Foundation would host a number of conferences on topics including decision-making in national science policy, the family and its future, civilization and science in response to the growing antiscientific movement, medical care and protection of prisoners, and the legal and ethical aspects of artificial insemination by donor and embryo transfer.[68] These later conferences included speakers from philosophy, history of medicine, economics, sociology, law, and theology in addition to those from medicine and biology, demonstrating the very early converging of the field of traditional medical ethics with the newer area of social implication studies.

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[66] Woodford, *The Ciba Foundation.*
[67] Gordon Wolstenholme and Maeve O'Connor, eds., *Law and Ethics of Transplantation* (London: J & A Churchill Ltd.: 1968): 1.
[68] Woodford, *The Ciba Foundation*, 49-53.

The Ciba Foundation's attention to social implications during the late 1960s suggests that the concern among scientists spread internationally, showing up in the United States, but also in Britain and Europe and was beginning to be intertwined with issues in medical ethics.

Nobel Conferences at Gustavus 1965-1974

Starting in 1965, Gustavus Adolphus College in Saint Peter, Minnesota, held an annual conference, called the Nobel Conference, the first of which was on "Genetics and the Future of Man." As the name of the conference implies, it was endorsed by the Nobel Foundation in Stockholm, Sweden, and had an advisory committee consisting of Nobel Laureates. The purpose of the Nobel Conferences was to examine a scientific issue from "the broader context of its social, political, moral and spiritual implications."[69] This emphasis was supported and articulated by the Nobel Foundation and by Dr. Polykarp Kusch, the moderator of the 1965 conference in his introductory speech at the beginning of the first conference.[70]

Dr. Kusch was a physicist at Columbia University who had been awarded a Nobel Prize in Physics in 1955 for his precise determination of the electron. In his introductory speech he talked of the rapid advances being made in the sciences and the negative implications of these advancements that were not being foreseen. He described the power of radiation capable of producing genetic mutations in global populations, the pollution

[69] 1966 Nobel Conference "The Control of Environment," Nobel Conference Papers, Gustavus Adolphus College, Saint Peter, MN.

[70] "He [Kusch] has been particularly concerned that it [the conference] should consider a science-based issue in the large context of its social, moral and religious implications." Gustavus College had strong Swedish and Lutheran underpinnings. Introductory Statement, 1965 Nobel Conference "Genetics and the Future of Man," Nobel Conference Papers, Gustavus Adolphus College, Saint Peter, MN; see also The Nobel Conference Advisory Committee, 1969 Nobel Conference "Communication," Nobel Conference Papers, Gustavus Adolphus College, Saint Peter, MN.

resulting from the use of cars, and the destruction of the ecological system from the use of chemical pesticides to eradicate insects. Kusch described the symposium as "an attempt to explain what we can do, what the implications of doing it would be or are, and perhaps some discussion of one's own view of wisdom and judgment as to whether we ought to do it."[71] Beyond hosting this discussion, Kusch hoped that the conference would impress upon the audience of 8,000, including scientists, theologians and representatives from colleges and high schools across the Midwest, that they could be more effective members of society by encouraging and participating in these types of discussions. It is important to note that this first Nobel Conference on biology and genetics was moderated by a physicist suggesting that their concerns and articulation of social implications of science had set a precedent and was certainly present at the opening of the first Nobel Conference.

The initial Nobel conference thus reflected the goal of discussing the broader implications and of including scientists while incorporating more than just their scientific perspectives. The first three public lectures focused on genetics, suggesting what was possible, what would soon be possible scientifically, and what this might mean for the general public. The speakers described genetic traits in humans and their connection with past eugenic practices, genetic changes from environmental radiation exposure, and the deliberate modification of animal, plant, and human genetics. The fourth lecture started with a social problem, population growth, and considered whether current genetic knowledge held any solutions; participants then pondered the possibility that these

[71] Introductory Statement, 1965 Nobel Conference "Genetics and the Future of Man," Nobel Conference Papers, Gustavus Adolphus College, Saint Peter, MN.

techniques could be considered eugenic. While these scientists raised questions about the social impacts of the science, they struggled with finding resolutions to the difficult ethical and social issues.[72]

While the first four lectures were given by scientists, the fourth and fifth lectures were given by Paul Ramsey, a theologian and professor of religion at Princeton, and Kingsley Davis, a sociologist at the University of California, Berkeley. They were invited to the conference to guide the conversation about ethics and social science and to "appraise the possible benefits of genetic control as well as alert us to the hazards."[73] Ramsey specialized in Christian ethics and had already demonstrated, in his previous work, a desire to apply religious ethics to contemporary social issues, including discussions of war and civil rights. Ramsey discussed the role of parenthood in theology and how birth control, genetic manipulation to produce health children, and assisted donor insemination, related to the religious beliefs surrounding parenthood and sex. He foresaw no problems with birth control and genetic treatments to eliminate genetic defects, but he viewed assisted donor insemination, when not medically necessary for the couple, as problematic because it violated men's sovereignty.[74] Davis, a sociologist who had previously served on committees examining the global overpopulation situation,

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[72] Dr. Davis commented on this in his lecture, "Also I noticed that the genetics have been passing the buck in a sly way--mainly by deftly ignoring the issues." In addition, during the question and answer sections after the scientists' talks, the scientists would defer a question about the ethics of a practice to either Dr. Ramsey or Dr. Davis, see 1965 Nobel Conference "Genetics and the Future of Man," Nobel Conference Papers, Gustavus Adolphus College, Saint Peter, MN.

[73] Introduction to Paul Ramsey Lecture, 1965 Nobel Conference "Genetics and the Future of Man," Nobel Conference Papers, Gustavus Adolphus College, Saint Peter, MN

[74] He stated that "Since artificial insemination by means of semen from a non-husband donor (AID we shall call it) puts completely asunder what God joined together, this proposed method of genetic control or genetic improvement must be defined as an exercise of illicit dominion over man no less than would be the case if his free will is forced." See Lecture by Paul Ramsey, 1965 Nobel Conference "Genetics and the Future of Man," Nobel Conference Papers, Gustavus Adolphus College, Saint Peter, MN

discussed the importance of understanding social movements and social choices in choosing mates in order to anticipate how genetic treatments, genetic testing, and artificial insemination from a donor would be received by American society. Davis recognized that social beliefs influence the reception of an advancement and that simple rational consideration of the scientific or medical impacts of a new treatment may not be sufficient to achieve adoption.

Following the lectures, there was a concluding panel session when speakers asked questions of each other about the topics and ideas discussed during the conference. Speakers further discussed religious, ethical, and sociological perspectives on artificial insemination by donor, overpopulation, and the role of genetic counseling. While there were no final resolutions, major topics were shown to be complex and a range of perspectives on them were expressed. These discussions allowed for an active exchange of ideas and perspectives among the scientists, the philosopher, and the sociologist, revealing the advantages of cross disciplinary debate of these issues. In some cases, the scientists would propose a situation in the future development of their science and ask Ramsey to reflect on whether the outcome was either unethical or just not ideal.

Gustavus Aldolphus College would hold a Nobel Conference each year, focusing on a different aspect of contemporary scientific concern that had public implications. Over the next five years these conferences would host scholars from within and beyond medicine and science, including those from philosophy, theology, government administration, economics, anthropology, and linguistics. In addition, they included panel discussions that allowed the scholars from different disciplines to discuss and debate the key topics. The Nobel Conferences thus demonstrated that there were active scientists,

including leaders in biomedicine, who were willing to participate in open discussions of professional social responsibility and social implications.

National Academy of Sciences and the Committee on Life Science and Social Policy 1966-1970

Just as the scientifically focused Ciba Foundation and the Nobel conferences considered the social implications in biomedicine, so too did one of the most prestigious scientific organizations in the United States, the National Academy of Sciences (NAS). The NAS is a self-selecting organization comprised of many of the most intellectually prominent scientists in the United States electing only a relatively small number of new members each year. Most of its activity prior to the 1960s focused on producing reports requested by Congress on topics in the basic sciences. Between 1960 and 1967, the NAS produced reports and held meetings focusing on the earth sciences, chemistry, physics, agricultural biology and marine biology. Many of them included modest commentary on accessing, analyzing, or anticipating the social effects of science or biomedical research. The few cases where the social implications were highlighted included reports on the biological effects of radiation produced in 1960 and 1963; a report on communication problems in biomedicine published in 1964; reports and symposiums on the use of laboratory animals published in 1961, 1965, and continuing every year from 1967 on through 1970; and a 1967 report to the U.S. House of Representatives entitled *Applied Science and Technological Progress*.[75] This intermittent attention to the application of

[75] National Academy of Sciences, *The Biological Effects of Atomic Radiation; summary reports* (Washington, D.C.: National Academy of Science Press, 1960); National Academy of Sciences Committee on the Biological Effects of Atomic Radiation, *A Report to the Public on the Biological Effects of Atomic Radiation: based on the 1960 summary reports* (Washington, D.C.: National Academy of Sciences Press, 1960); Division of Medical Sciences National Academy of Sciences and The Federation of American Societies for Experimental Biology, *Communication Problems in*

science to medicine and on the social implications of science is not surprising considering that the Institute of Medicine within the National Academies had yet to be created and its predecessor, the Board of Medicine, was only established in 1967 after three years of unsuccessful efforts to create a National Academy of Medicine.[76] In addition, the following year the National Academy of Science created the first section on medicine within its membership.[77] Through the new Board of Medicine, the Academy began to contribute more actively to the discussion of the social implications of biomedicine.

In 1966, as part of a survey of all the sciences started in 1963, the NAS directed its attention to the life sciences. This study produced a book in 1970 by Philip Handler titled *Biology and the Future of Man* as well as a report in the same year titled *The Life Sciences: Recent Progress and Application to Human Affairs, the World of Biological Research, Requirements for the Future*.[78] This report included a much abbreviated summary of the book's material and then examined the practice of life science research, including education, the academic environment, and the role of technology. Both the book and report included a chapter titled "Biology and the Future of Man," with sections

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Biomedical Research (Washington, D.C.: The Federation of American Societies for Experimental Biology, 1964); Committee on the Guide for Laboratory Animals, National Research Council, *Guide for Laboratory Animal Facilities and Care* (Washington, D.C.: U.S. Dept. Of Health, Education, and Welfare, 1965); National Academy of Sciences Institute of Laboratory Animal Resources, *Animal Models for Biological Research Proceedings* (Washington, D.C.: National Academy of Sciences Press, 1967-1976); National Academy of Sciences, *Applied Science and Technological Progress: a report to the Committee on Science and Astronautics U.S. House of Representatives* (Washington, D.C.: U.S. Government Printing Office: 1967).

[76] Edward D. Berkowitz, *To Improve Human Health: A History of the Institute of Medicine* (Washington D.C.: National Academy Press, 1998).

[77] Berkowitz, *To Improve Human Health,* 22.

[78] Philip Handler was the chairman of the National Academy of Sciences' Committee on Research in the Life Sciences. His book was 936 pages long but only one chapter (48 pages) discussed the ethical, social, and legal implications that might arise from the science in the future. Philip Handler, ed. and National Academy of Sciences, *Biology and the Future of Man* (New York: Oxford University Press, 1970); National Academy of Sciences, *The Life Sciences: Recent Progress and Application to Human Affairs, the World of Biological Research, Requirements for the Future* (Washington, D.C.: National Academy of Sciences Press, 1970).

entitled "The Great Hazards" and "The Opportunities," and covered topics including war, population growth, food production, genetic quality, organ transplantation, terminal medical care, sex determination, and infectious disease research. Coordinated by Curt Stern, the authors were eight geneticists who had served on the Advisory Committee for Biology and Medicine of the Atomic Energy Commission from 1950 to 1955.[79] Among the research scientists were familiar notables including Theodosius Dobzhansky, René J. Dubos, and Joshua Lederberg.[80]

In the fall of 1967, the National Research Council, the primary part of the National Academies responsible for responding to requests for reports, created the Committee on the Life Sciences and Social Policy. The Committee's charge was to address concerns arising from the "rapid advances in scientific and technical knowledge in biology, chemistry, and medicine."[81] It was initially funded by the Russell Sage Foundation with the purpose of identifying "the social policy implications emerging from advances in biomedical and medical sciences" and illuminating "social, moral, legal, and ethical issues."[82]

The Russell Sage Foundation, since its inception in 1907, had focused on improving the social and living conditions in the United States and had often encouraged

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[79] American Philosophical Society, "Curt Stern Papers Finding Aid," American Philosophical Society, http://www.amphilsoc.org/mole/view?docId=ead/Mss.Ms.Coll.5-ead.xml (accessed on June 14, 2011.

[80] Handler, ed., *Biology and the Future of Man*; Committee on Research in the Life Sciences of the Committee on Science and Public Policy, *The Life Sciences: Recent Progress and Application to Human Affairs, the World of Biological Research, and Requirements for the Future* (Washington, D.C.: National Academy of Sciences, 1970).

[81] Grounds for Establishing a Committee on Biological Research, Social Behavior, and Social Policy, 1968, Committee on the Life Sciences and Social Policy Collection, National Academies Archive.

[82] Minutes from February 21, 1971, Committee on the Life Sciences and Social Policy Collection, National Academies Archive; Berkowitz, *To Improve Human Health,* 8-9; Henry David, "Three-Year Study Planned Of Social Implications of Biological Research," *News Report* 18, no. 2 (February 1968): 1, 4.

the use of social science studies to achieve these goals.[83] Thus, the expertise of the Russell Sage and the National Research Council provided an ideal combination for studying the social policy implications of biomedical research. It is not surprising that the Committee on Life Science and Social Policy had a number of non-scientific members because the foundation officials were involved in the forming of the committee.[84] When the committee was first proposed, its membership list included eight social and behavioral scientists, one lawyer, and three members from the biological, medical, chemical or other natural sciences. The prospect of having the majority of the membership composed of those from outside the natural sciences concerned some scientists.[85] Despite these concerns, the resulting membership in 1968 included lawyers, biologists, physicians, geneticists, sociologists, a philosopher, a pathologist, a psychiatrist, and a historian of science.[86] The chairman of the committee, lawyer Milton Katz, four years later, in 1972, published the seminal book *Experimentation with Human Beings: The Authority of the Investigator, Subject, Professions, and State in the Human Experimentation Process*; it is a classic, well-read reference in bioethics. In addition to

[83] "About the Foundation," Russell Sage Foundation, http://www.russellsage.org/about (accessed on June 14, 2011).

[84] Letter from Henry David to Members of the Executive Committee of the National Research Council, Proposed New Divisional Committee, May 25, 1967, Committee on the Life Sciences and Social Policy Collection, National Academies Archive.

[85] Letter from C.E. Sunderlin to Frederick Seitz and Coleman, Comments on Proposal to Establish a "Committee on Biological Research, Social Behavior, and Social Policy," September 9, 1967, Committee on the Life Sciences and Social Policy Collection, National Academies Archive; Letter from T.M. Sonneborn to Frederick Seitz, February 29, 1968, Committee on the Life Sciences and Social Policy Collection, National Academies Archive; The committee opted to add an economist but rejected the suggestion of adding a theologian in October 1968; Letter from Milton Katz to Arthur W. Galston, October 24, 1967, Committee on the Life Sciences and Social Policy Collection, National Academies Archive.

[86] From Henry David to Dr. Frederick Seitz Memorandum on Membership - Committee on the Life Sciences and Social Policy, August 9, 1968, Committee on the Life Sciences and Social Policy Collection, National Academies Archive.

Katz, the other notable member was Joshua Lederberg, highly visible as a molecular biologist and geneticist engaged in public discourse on these topics.[87]

The Committee on Life Sciences and Social Policy demonstrates a departure from previous discussions among the scientific and medical professions because it fully embraced the opinions of those outside science and its mandate was to examine policy implications rather than just identify the concerns with research. While the Committee seemed off to a good start in 1968, it was inactive for all of 1969 due to the absence of the Executive Secretary of the Committee, who was responsible for organizing and arranging for the meetings. The Executive Secretary had also been appointed Acting Executive Secretary of the Division of Behavioral Sciences at the National Research Council. However between 1967 and 1970, the National Academies increased their attention to the implications and applications of biomedicine to society, examining topics such as population growth, health effects of pollution, and the quality of health care. In the spring 1970, the Committee on Life Sciences and Social Policy began work again after Leon Kass, then at the NIH Laboratory of Molecular Biology, was appointed the new Executive Secretary of the Committee.[88]

Kass was a research scientist in genetics who had earned a M.D. and a Ph.D. in biochemistry. He had become increasingly interested in the ethical issues of biomedical science and would gain a sufficient reputation as a bioethicist and decades later would be named chair of President George W. Bush's President's Commission on Bioethics from

[87] From Henry David to Dr. Frederick Seitz Memorandum on Membership - Committee on the Life Sciences and Social Policy, August 9, 1968, Committee on the Life Sciences and Social Policy Collection, National Academies Archive.

[88] Leon Kass, interview by author, Washington, D.C., April 26, 2011, transcript to be deposited at the National Library of Medicine.

2001 to 2005. Kass's interest in the implications of biology began in college. In his senior year he was greatly influenced by a teacher, Joseph Jackson Schwab, who was a scientist but also taught social sciences and humanities at the University of Chicago. As a result Kass began to study philosophy and even considered graduate school in philosophy before going into medical school. Kass describes the impact that Schwab had on him by saying "he showed me that there were philosophical issues in biology of the sort that one just didn't see if you studied science."[89] During his graduate education, Kass began to pursue knowledge in philosophy and morals of science on his own, while also doing his graduate work in the science lab. He pondered aspects of biology and medicine that were affecting society and was influenced by reading *A Brave New World*, which he found "profoundly true."[90] In his last year of graduate school, Kass organized a reading and discussion group on topics in biology, medicine, morals, and ethics. His interdisciplinary interests and knowledge were an ideal combination for staffing the National Academies' committee.

"Ethically-Minded Scientists"

Professional journals such as *Science* and *The Bulletin of the Atomic Scientists* reflected the discussions going on in specialized conferences and committees regarding biomedicine. While the articles discussed the potential or foreseen implications of science, their authors, like the participants in the conferences, made the argument that the profession had a social responsibility to predict and warn about the implications of research and to inform the public about it. The scientists and physicians who contributed

[89] Leon Kass, interview by Judith P. Swazey, Chicago, IL, June 16, 2000, transcript deposited at the Georgetown University Bioethics Library: 8.
[90] Leon Kass, interview by Judith P. Swazey, 20.

to both journals were aware of the connections between the concerns about atomic science and the newer issues raised by biomedical research.

Beginning in 1966, Joshua Lederberg, Chairman of Stanford University's Department of Genetics, took a leading role in discussing the social implications of science and engaging the public in the discussions. Later in his life Lederberg claimed that as a child he had desired to pursue science research for the purpose of solving medical problems and society's ills. Lederberg earned a Ph.D. for his research on genetic recombination in bacteria by 1947 at the young age of 22 and would go on to share the 1958 Nobel Prize in Physiology or Medicine for this work. He helped start two medical genetics departments in the United States and, following his international success from his Nobel work, Lederberg began to consider the implications of scientific research and technology.[91] During this time he became an active participant in the conferences and professional discussion, starting with the Ciba Foundation conference on "The Future of Man" in 1962. Between 1966 to 1970, he served on a NAS committee that created a report on the life sciences and its application to human affairs, and, starting in 1968, he joined the NAS' Committee on Life Sciences and Social Policy.[92]

Lederberg produced an article in the October 1966 issue of the *Bulletin of the Atomic Scientists* that reflected on the application of genetic research to medical care and

[91] National Library of Medicine, "The Joshua Lederberg Papers: Biographical Information," http://oculus.nlm.nih.gov/cgi/f/findaid/findaid-idx?c=nlmfindaid;cc=nlmfindaid;view=reslist;subview=standard;didno=lederberg552;focusrgn=bioghist;byte=15948706 (accessed on June 28, 2011).

[92] Woodford, *The Ciba Foundation*; Committee on Research in the Life Sciences of the Committee on Science and Public Policy, *The Life Sciences: Recent Progress and Application to Human Affairs, the World of Biological Research, and Requirements for the Future* (Washington, D.C.: National Academy of Sciences, 1970); From Henry David to Dr. Frederick Seitz, Memorandum on Membership - Committee on the Life Sciences and Social Policy, August 9, 1968, Committee on the Life Sciences and Social Policy Collection, National Academies Archive.

eugenic practices. Lederberg was deliberate in choosing the *Bulletin* to publish his work, writing its editor, "for many years I have been looking forward to an opportunity to use the *Bulletin* as a vehicle for expressing my ideas on the impact of new biology on man."[93] The journal had a history of focusing discussions on the social implications and thus was receptive to Lederberg connecting its audience and authority to the new issues he was seeing in biomedicine.

Lederberg placed the research into its possible medical and social applications by describing potential implications to society and the general population. He considered the eugenic practices of the past, described the realities of identifying a hypothetical "ideal" genotype in our changing society, examined the prospect of genetically modifying human germ cells so treatments would be applied to future generations, and considered the possibility of cloning humans. Lederberg also explained why speculations on the future of research were useful. He wrote that such commentary and consideration might "protect the community from a misapplication of genetic policy…. [And] sensitize students to recognize the significance of the fruition of experiments like nuclear transplantation," and may provoke critical analysis of past uses of science being applied to the future goals.[94] Lederberg argued that crafting public policy was best achieved by scientists and citizens together because scientists were not more expert on social matters than were other members of society. However he believed that only scientists had the expertise to provide an understanding of science for developing scientific solutions in response to technological challenges and thus needed to play a significant role in influencing public

[93] Lederberg to Eugene Rabinovich, May 19, 1966, Joshua Lederberg Papers, Series V: Writings - Published Writings, National Library of Medicine, Washington, D.C.
[94] Lederberg, "Experimental Genetics and Human Evolution," 10.

policy.[95] In this article, Lederberg began to suggest that scientists could and should contribute to the discussions in relationship to other experts and the general public.

In 1967, an article by Robert Sinsheimer, also in the *Bulletin of the Atomic Scientists*, continued Lederberg's argument and argued that scientists must do more than produce research results; they had a responsibility to think about the implications of their work. Sinsheimer was a professor of biophysics at the California Institute of Technology when he published, "The End of the Beginning."[96] It was based on a lecture Sinsheimer had presented earlier at a Conference on Scientific Progress and Human Values in October 1966.[97] He focused on the future implications of research in molecular biology, but he began by asking scientists "to emerge from their laboratories to exercise their prophetic vision" and to foretell and forewarn about the implications of their research. He believed this was scientists' responsibility because their work was making sweeping changes to society. He did not present a detailed analysis of what implications may arise but rather described what would become possible from future research in molecular biology, such as altering personality, intelligence, height, and disease susceptibility. He

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[95] Lederberg, "Experimental Genetics and Human Evolution," 10.

[96] Robert Sinsheimer, "The End of the Beginning," *Bulletin of the Atomic Scientists* 16, no. 2 (February 1967): 9-12.

[97] This conference was to celebrate the 75th anniversary of the California Institute of Technology. It is yet another example of a conference held during the middle of the 1960s on the implications of science to society which connected the concerns with atomic science to the developing concerns about biomedical research. It covered topics in elementary physics, astrophysics, geology, nuclear power, space flight, communications technology, genetics, science of the mind, behavioral research, and the future of biological research. Significantly, it also included a section on science and society, which included talks by a historian, sociologists, and an English and Government professor, Herbert J. Muller, brother of the geneticist Hermann Muller. This conference was organized by the faculty at the California Institute of Technology and as a result represented a different group of scientists and scholars than those seen more commonly in the other conferences. Edward Hutchings, *Scientific Progress and Human Values: Proceedings of the Conference Celebrating the 75th Anniversary of the California Institute of Technology in Pasadena, California October 25-27, 1966* (New York: American Elsevier Pub. Co., 1967).

used the article to present the case for scientists to assume leadership and to take on this responsibility. What is most significant about Sinsheimer's article is how forcefully he argued for scientists to take on this task.

> In all of science, we have been in a sense children, spewing change into society with scant thought for the consequence. We in society are growing up now; our toys become more potent; the little games we play with nature are for great stakes, and their outcome moves the whole social structure. We must accept our responsibility.[98]

For Sinsheimer the advances and resulting level of control foreseen in the biological revolution required those pushing and creating this new knowledge to consider, foretell, and warn about what the implications may be.

Later in 1967, the journal *Science* continued the discussion of scientific social responsibility with an editorial by Marshall Nirenberg, titled "Will Society Be Prepared?" which had been adapted from remarks made in 1966 when Nirenberg had accepted an award. Nirenberg was a biochemist who between 1959 and 1961 performed experiments that revealed the relationship between DNA and RNA and how proteins are synthesized. Nirenberg won numerous awards for this research, including the Nobel Prize in Physiology or Medicine in 1968, and he became an internationally renowned scientist. When Nirenberg published his editorial in *Science* he was a respected leader in molecular biology and was Chief of the Section on Biochemical Genetics at the NIH's National Heart Institute.[99]

Nirenberg's editorial focused on the implications of research in his own fields of molecular biology and genetics. He described the developments in his fields as

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[98] Sinsheimer, "The End of the Beginning," 12.

[99] National Library of Medicine, "The Marshall W. Nirenberg Papers: Biographical Information," http://profiles.nlm.nih.gov/ps/retrieve/Narrative/JJ/p-nid/21 (accessed on June 19, 2011).

progressing rapidly and predicted that in the future they might grant man "the power to shape his own biologic destiny." He quoted Salvador Luria, a fellow researcher, who studied bacterial viruses and would also win a Nobel Prize in Physiology or Medicine in 1969 for research on the replication and genetic structure of viruses to show his opinion and concern were not unique:

> The progress of science is so rapid that it creates an imbalance between the power it places in the hands of man and the social conditions in which this power is exerted. Then neither warnings of scientists, nor breadth of public information, nor wisdom of citizens may compensate for inadequacies of the institutional framework to cope with the new situations.[100]

Luria and Nirenberg shared a strong sense of urgency about attending to the matter of science and its rapidly emerging potentials.

After Nirenberg's strong warning, he summarized the current state of the scientific research in his specialty and suggested what would soon be possible in molecular biology and genetics. He predicted that within twenty-five years researchers would be able to program cells with synthetic messages. He stated that his motivation for writing his editorial was the realization that man would likely be able to do many things biologically "long before he will be able to assess adequately the long-term consequences of such alterations, long before he will be able to formulate goals, and long before he can resolve the ethical and moral problems which will be raised."[101] He urged the scientific profession to resist simply doing what is possible before gaining sufficient wisdom on how to use the knowledge. Such wisdom would come, Nirenberg argued, from discussions about the applications of research well in advance and involving an informed

[100] Marshall W. Nirenberg, "Will Society Be Prepared?" *Science* 157, no. 3789 (August 11, 1967): 633
[101] Nirenberg, "Will Society Be Prepared?"

society. In the editorial, Nirenberg thus led by example, by voicing concerns about the application of genetic knowledge, considering the implications of the knowledge produce, and urging caution among his professional colleagues.

Joshua Lederberg was one of a group of scientists active in conferences and professional debates during the 1960s on the social implications of biomedicine, but he stood out in his efforts to inform the public. Lederberg was an active research scientist, and he argued that he, like other scientists, had a responsibility to communicate with the public about science. Lederberg took this responsibility so seriously that in 1966 he began a weekly column in the *Washington Post* to discuss topics related to medical science, biological science, and physical science, and to explain how these sciences could be or were being applied to humans and society.[102]

In his first article for the *Washington Post*, "The 'Heart Gap' Will Cause Soul-Ache," he discussed the need to develop social policy to determine the distribution of artificial hearts and other scarce medical resources. Lederberg raised concerns about access to new medical advancements, the quality of life for patients attached to machines, and the economic costs of having patients kept alive indefinitely with no hope of recovery.

> It is certain that within our present framework of political decision, confusion about automation, and technical organization, the machines and the clinical skills needed to apply them will be pathetically scarce for several years thereafter.
>
> But how to choose the few who should receive the benefit may not be the worst dilemma. It is equally certain that, while the early versions of the

[102] A collection of his articles on "Science and Man," as he called it, can be found in his personal papers at the National Library of Medicine, Washington, D.C. His first article was Joshua Lederberg, "The 'Heart Gap' Will Cause Soul-Ache," *Washington Post*, July 24, 1966.

> artificial heart might prolong life, they will also keep alive many cardiac cripples, persons irrevocably tied to their machines. And the worst stage of the gap will be the period when on a large scale the machines saves [sic] life but not livelihood, when a "plastic heart," rather like an iron lung, becomes the fount from which the patient cannot long depart. Such a [heart] gap could well last 10 or more years, say from 1970 to 1980, at an economic cost on the order of $100 billion.[103]

These concerns, he argued, "are part of many large issues of human and social responsibility." Lederberg used his column in the *Washington Post* to inform the public about the professional discussions and to include the public in the range of discussions that were occurring in the professional conferences and journals.

While Lederberg was the most vocal of the biomedical scientists, his articles stimulated other scientists to do likewise either by providing more examples or by reacting to his ideas. Leon Kass was a junior scientist piqued by Lederberg and shortly after joining the Molecular Biology Lab at the NIH, Kass proposed to the *Washington Post* that he organize response papers to Lederberg's column that he or other scientists at the NIH would write.[104]

The article that spurred Kass into writing a response in the *Washington Post*, was written by Lederberg on September 30, 1967. In it Lederberg described research on the renucleation or the replacement of an egg cell's nucleus with the nucleus of a somatic cell. Lederberg described recent experiments by Dr. J.B. Gurdon on toads and past research by Dr. Robert Briggs and Dr. Thomas J. King on renucleating (which Lederberg identified as cloning) frog eggs to study development. He concluded his article, "Unpredictable Variety Still Rules Human Reproduction," by predicting that in a few

[103] Lederberg, "The 'Heart Gap' Will Cause Soul-Ache."
[104] Leon Kass, interview by Judith P. Swazey; Leon Kass, interview by author.

years renucleating might be possible to do in humans. In addition, he proposed briefly and almost as an aside that this could be an alternative to sexual reproduction in humans.[105]

In Kass's letter to the editor, he took issue with Lederberg's lack of consideration for the moral, theological, and political issues raised by researching or attempting human cloning. He called Lederberg's tone in the article, "casual and cavalier." Kass believed this attitude and stance were inexcusable considering Lederberg's stature in the field and the purpose of the newspaper column to inform the public to make wiser choices regarding science.[106] Kass took the opportunity to raise many of the questions he foresaw with the prospect of performing human cloning, including: Is cloning a desirable result? Who should have the authority to decide when cloning should be attempted? And if attempts produce defective life, what should be done?

Kass's thoughts were supported by a philosopher who wrote to the *Washington Post* following Kass's letter. Carol Ann Hee, a graduate student at Georgetown, wrote to the editor to say that it was "heartening to find a member of the medical profession, and thus a member of the scientific community, questioning what is too often left as an assumption in our society, namely, that there is more to be considered in science than merely technique."[107] Lederberg's and Kass's newspaper encounters on the social implications of biomedical research continued in December 1967 when Lederberg

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[105] Joshua Lederberg, "Unpredictable Variety Still Rules Human Reproduction," *Washington Post*, September 30, 1967. For information on the renucleation research and the history of cloning see: Nathan P. Crowe's, "A 'Fantastical' Experiment: Motivations, Practice, and Conflict in the History of Nuclear Transplantation, 1925-1970," (PhD diss., University of Minnesota, 2011).
[106] Leon Kass, "Genetic Tampering," Letters to the Editor, *Washington Post*, November 3, 1967.
[107] Carol Ann Hee, "Science and Morality," Letters to the Editor, *Washington Post*, November 6, 1967.

published an article about the recent announcement of the first human heart transplant.[108] This transplant was performed in South Africa by Dr. Christiaan Barnard and would go on to spur not just discussion in the medical profession and in newspapers but also provide the impetus for Senator Walter Mondale to propose legislation to create a commission to study the ethics of health science.[109] Kass would continue to discuss the ethics and social implications of biomedicine in the public sphere throughout his career, most notably when he chaired a Presidential bioethics commission in the 2000s.

Lederberg and Kass were joined in public debate by other scientists such as John H. Dessauer. A research scientist, Dessauer was also vice chairman of the Xerox Corporation board and executive vice president for research and engineering there. Dessauer wrote in the *Los Angeles Times* in 1968 about researchers' professional responsibility to discuss and forewarn about the implications of their work. He and others thus took the ideas of Robert Sinsheimer and Marshall Nirenberg from the *Bulletin of the Atomic Scientists* and *Science* to the pages of a national newspaper. He pointed out the apparent change in scientists' sense of social responsibility:

> Scientists and researchers today are no longer simply technicians of progress. Many recognize their roles as necessary guides for progress. They are beginning to acknowledge that they cannot take refuge from society in the detachment of their work or the smugness of their work benches.[110]

He described the positive and negative implications of recent technological and scientific advancements, such as nuclear research's ability to produce large amounts of energy and

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[108] Leon Kass, interview by Judith P. Swazey, 23; Joshua Lederberg, "Moribund Patient's Trust Is at Stake," *Washington Post*, December 10, 1967; Leon R. Kass, "A Caveat on Transplants," *Washington Post*, January 14, 1968.

[109] The details of this are described in Chapter 3.

[110] John H. Dessauer, "Human Touch on the Push Button," Topical Comment: Obligations of Progress, *Los Angeles Times*, June 23, 1968.

its resulting potential for contamination and the jet airplanes' ability to cut travel time down but have a polluting effect. He called for, as those in the conferences and in journal articles had done before, direct involvement of the American people alongside scientific and non-scientific experts in addressing the implications of scientific research and technical developments.

The newspaper articles written by Lederberg, Kass, and Dessauer were accompanied by a growing number of articles written by regular journalists in the late 1960s, many of whom increasingly provided a bridge by interviewing scientists about their work and writing about the social implications of the research. Taken together, these articles by key scientists and journalists reveal that the professional discussion of the social implications was spilling over into the public sphere. It was in this cultural climate that political leaders in the Senate, especially Senators Fred Harris of Oklahoma and Walter F. Mondale of Minnesota, sought to involve the federal government in providing a way for scientists, social scientists, and the public to engaged in evaluation and decision making on the social implications of biomedical research.

Conclusion

The concerns over atomic science in the late 1940s and through the 1950s created a community of atomic scientists concerned with the implications of science and the responsibilities of scientists. Their actions encouraged a social responsibility discussion among scientists more generally, particularly among those in biology and the new field of biomedicine. The atomic science experience served as an exemplar for biology and as a justification in the 1960s as scientists began to hold conferences and publish on the implications of biomedical research. These activities in biomedicine were also spurred by

the fears and prospect presented in Huxley's *A Brave New World*.

By the 1960s, biological scientists and physicians presented significant issues in conferences, scientific journals, and newspapers. They stressed the importance of larger social issues that brought up public health, public policy, and population level impacts. They examined not just medical practice but also basic science, such as molecular biology, and environmental issues, such as technologically induced pollution. In addition to considering specific problems already evident in biomedicine, they argued for scientists to be professionally responsible for considering and warning about the implications of their current and future work. Scientists, some working to persuade their peers at professional meetings and others playing the role of public intellectuals, although often overlooked in the history of bioethics, played a significant role in initiating the professional discussions, bringing attention to the issues, and inviting interdisciplinary and eventually public discussion during the 1960s.

Many of the key scientists involved and the topics they identified appeared again in the Senate hearings held between 1968 and 1973 on the need for federal oversight and a bioethics commission. The political origins for these hearings are examined in the next chapter, which details how Congress became increasingly interested in the results of the research the federal government was funding and whether the results were of benefit to society. The discussions by the scientists described in this chapter coincided and reinforced the conversations organized in Congress. The two Senators, Harris and Mondale, would play a significant role in focusing the congressional and media attention on to the applications of scientific research.

Chapter 2:
Congressional Interest in the Implications of Science and Technology, 1965-1967

Fred R. Harris and Walter F. Mondale were young Democratic Senators eager to serve their state and country when they were formally sworn in to the Senate on January 4, 1965 into the landmark Eighty-Ninth Congress.[111] Harris rose to power very quickly in the Senate, and, unusual for a freshman senator, was appointed chair of a subcommittee. Between 1965 and 1969, Harris and Mondale would combine forces in many areas of politics to get legislation passed or to work for their political party. In 1967 they together suggested to President Lyndon B. Johnson that he create a special commission on civil strife to investigate the significant urban riots that were plaguing cities, most notably in Detroit and Newark that year. Their efforts were successful and the Kerner Commission was created that year with Harris as a member. In 1968 they were co-chairmen of Hubert Humphrey's presidential campaign. And regularly during their first three years they cosponsored many pieces of each other's legislation. Harris and Mondale shared a common interest in science research and using the physical and social sciences to help society. They were part of a group of young democrats that believed in legislation from President Johnson's Great Society program, which aimed to improve the lives of the poor and middle class, and their own legislation during these first few years reflected this

[111] Fred Harris was elected in November of 1964 and began serving his term immediately, before being formally sworn in at the beginning of the next congressional session because he was taking over the unexpired term of the previous Senator from Oklahoma, who had passed away in 1963. The 89th Congress is considered the most productive in American History according to Richard Lowitt, *Fred Harris: His Journey from Liberalism to Populism* (Lanham: Rowman & Littlefield Publishers, Inc., 2002): 5-6.

aim.[112]

As new senators, Harris and Mondale were in the back row of the Senate and happened to be seat-mates with Robert F. Kennedy, another new senator. The three became friends, co-sponsoring each other's legislation and socializing together during their personal time. Occasionally during Senate meetings they were "seen giggling and even laughing among themselves" in the back row.[113] The three came from different backgrounds, though Harris and Mondale shared the most similarities. Harris was born in Oklahoma on November 13, 1930 at his parent's farm. His father was a sharecropper and Harris spent his childhood involved in agriculture, earning the title of State Champion in Future Farmers of America. Harris went to the University of Oklahoma to earn his B.A. in history and government, as well as a Law degree. Harris's wife, LaDonna Crawford, was a member of the Comanche Indian tribe and together they worked during their lives on issues relating to Native American affairs. Prior to his U.S. Senate career, Harris was a state senator who was known for his pioneering work in human rights. Harris's personal background with farming, poverty, and Native Americans led him to focus on legislative issues connected to those areas, and to pursue legislation that might improve the lives of his constituents in Oklahoma. This included legislation on reducing poverty, public works projects, Indian affairs, and on increasing federal research funding for areas without elite research universities such as Oklahoma.[114]

Similar to Harris, Walter Mondale was born into poverty, but in Minnesota in

[112] Richard Lowitt, *Fred Harris: His Journey from Liberalism to Populism* (Lanham: Rowman & Littlefield Publishers, Inc., 2002).
[113] Lowitt, *Fred Harris,* 30.
[114] Lowitt, *Fred Harris.*

1928. His father, however, was not only a farmer but also a minister. Mondale attended Macalester College in St. Paul and the University of Minnesota law school. Mondale became active in politics during his college years, when he served as a volunteer in Hubert Humphrey's campaign for mayor of Minneapolis. Before Mondale filled Hubert Humphrey's Senate seat in 1965 when Humphrey became Vice President, Mondale was the Minnesota Attorney General. In this post, he became known as the people's lawyer, establishing consumer-protection, anti-trust, and civil rights units in the Attorney General's office, and leading a brief to the U.S. Supreme Court on *Gideon v. Wainwright*, which established the right of defendants to receive court-appointed counsel.[115] During Mondale's years in the U.S. Senate he would continue to pursue issues of consumer and human rights, but this time in legislation on fair housing, automotive recalls, migrant worker issues, hunger, and poverty, in addition to his legislation on the National Commission on Health Science and Society.

Within months of joining the Senate, Harris was appointed to chair the new Subcommittee on Government Research by Senator John L. McClellan of Arkansas, chair of the committee on Government Operations in which the subcommittee was created.[116] McClellan had been a friend to the previous Senator from Oklahoma whose seat Harris had filled. McClellan served as a mentor to Harris when he started in the Senate. According to Harris' biographer, Richard Lowitt, McClellan helped Harris

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[115] "Finding Aid," Walter F. Mondale Papers, Minnesota Historical Society, http://www.mnhs.org/library/findaids/00697.xml#a2 (accessed on February 20, 2012); Walter F. Mondale and David Hage, *The Good Fight: A Life in Liberal Politics* (New York: Scribner, 2010); Steven M. Gillon, *The Democrats' Dilemma: Walter F. Mondale and the Liberal Legacy* (New York: Columbia University Press, 1992); Finlay Lewis, *Mondale: Portrait of an American Politician* (New York: Harper & Row, Publishers, 1984).

[116] McClellan made the appointment of chair because he was chair of the committee in which the subcommittee sat, the Committee on Government Operations.

increase his power in the Senate out of a desire to help Harris continue where the previous Senator from Oklahoma had left off.[117] Harris had argued for the new subcommittee saying that the Senate needed to oversee the huge federal expenditure on research and that no current committee had the necessary government-wide scope to do so. The new subcommittee was considered a "watch-dog" committee, meaning it did not deal with authorization legislation or appropriations, but rather it focused congressional attention on issues, in this case on topics related to government funded research.[118] During his first two years on the Subcommittee on Government Research, Harris held a conference in Oklahoma on "Research in the Service of Man," as well as a corresponding set of Senate hearings in Washington. These activities gave him the title "Mr. Science" of the Senate.[119]

The activities in the Subcommittee on Government Research were occurring within a larger context of concern and distrust of uncontrolled science and technology. The escalating nuclear arms race of the early 1950s was an example of the risks of science and technology causing this concern. In 1965, political and consumer rights activist Ralph Nader published his book *Unsafe at Any Speed,* which criticized the safety of the technology being produced by the automotive industry. In addition, the promising view of medicine and the pharmaceutical industry that existed after World War II changed during the 1960s when concerns were raised about abuses in human experimentation and adverse effects from prescription drugs and medical devices. With

[117] Lowitt, *Fred Harris,* 7-8.
[118] D.S. Greenberg, "National Research Policy: Ambuscade for the 'Establishment,'" *Science* 153 (1966): 611-615.
[119] Lowitt, *Fred Harris,* 33.

the growing concerns, the trust in expert scientists and physicians began to erode. As a result Congress and the public expressed the need for the government to step in to ensure the safety of the public where the experts were failing. During the 1960s and 1970s Congress would consider and pass various pieces of legislation that would set up regulations to overseeing science, technology, and medicine.[120]

This chapter demonstrates that Harris focused on biomedical research, the distribution of research funding, and the social sciences, and that it was part of a growing interest in the Senate and the Executive branch to examine spending on research and to encourage more applied research. This Congressional interest combined with both an expressed need by Congress to be better informed about science and technology and a developing concern about the future impacts of science and technology. Adding to these discussions was the growing importance of social science research reflected in the development of Science, Technology, and Society programs in universities. Ultimately, this chapter argues that these congressional discussions and legislation set the stage and focused political discourse on the social implications of biomedicine. Thus, when Mondale's legislation to create a National Commission on Health Science and Society was proposed in 1968, it reflected many of the threads of the previous pieces of legislation and congressional discussion that had been occurring between 1966 and 1967. This chapter examines these origins of Congressional interest in health science and society and shows that such Congressional discussions, guided and supported by Harris

[120] For pharmaceutical industry regulation see Dominique Tobbell, *Pills, Power, and Policy: The Struggle for Drug Reform in Cold War America and Its Consequences* (Berkeley: University of California Press, 2012); For abuses and regulation of human subjects research see Advisory Committee on Human Radiation Experiments, "Part I Ethics of Human Subjects Research: A Historical Perspective," in *Final Report* (Washington, DC: Government Printing Office, 1995);

and Mondale on science policy, social science, and the future impacts of technology, increased public discourse on the potential impacts, both negative as well as positive, of science and technology research.

The Senate and House Examine Government Research

The aims of Harris's new Subcommittee on Government Research were to explore how government research could be coordinated better, to focus research on public goals and applied results, to find ways to improve the geographic distribution of research funding, to encourage dialogue between the scientific and political communities, and to oversee more effectively how the federal government was spending $15.5 billion on research annually.[121] These goals were not groundbreaking in the Senate or the House, as they had been discussed in the Senate Committee on Government Operations starting in 1957, and in the House Subcommittee on Science, Research and Development starting in 1963.[122] In 1965, Senator McClellan introduced legislation that drew on both his committee's work over the previous eight years in federal science funding and the work of the parallel House Subcommittee on Science, Research and Development. The legislation called for the creation of a commission on Science and Technology, to "study the programs, methods and procedures of the federal departments and agencies which are operating, conducing, and financing scientific programs" so that these federal programs

[121] Lowitt, *Fred Harris,* 7-8.

[122] Enough commentary on science research and development had occurred in Congress that in 1966 Senator Harris solicited an "Inventory of Congressional Concern with Research and Development" from the Legislative Reference Service of the Library of Congress, Science Policy Research Division. This increasing congressional attention on science was also expressed by the media, see Walter Sullivan, "Scientists Fear Domination by Politics," *New York Times*, October 23, 1966. See Fred R. Harris to Subcommittee on Government Research, "End-of-Year Report," January 3, 1967, Box 30, folder 26 and box 96, folder 1, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK.

might be strengthened.[123] The stated intention of this legislation was to "bring more economy and efficiency" to federal science and technology research. McClellan argued that such scrutiny was necessary because the cost for research had been steadily increasing over the previous five years, growing from around eight billion in 1960 to just over fifteen billion in 1964, and having an average rate of growth over the last decade of twenty-two percent.[124]

Besides the efficiency objective, McClellan also argued that the commission would serve to better inform Senators who were making science policy decisions. He pointed out,

> One of the basic objectives of the bill is to provide a medium through which individual Members and communities of the Congress can obtain information which is not now available to enable them to take appropriate legislative action to establish definite Federal policies in the field of science and technology.[125]

McClellan was concerned that congressmen lacked the scientific knowledge held by expert scientists and thus were hindered in their ability to make informed legislative decisions on matters relating to science and technology. This suggestion of an advisory role for scientists is one that would continue to appear during the 1960s, as Senators continued to express concern that they did not have the knowledge to make decisions on legislation that would effect science and technology. As Sheila Jasanoff shows in her book *The Fifth Branch: Science Advisers as Policymakers,* the governmental need for

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[123] Congress, Senate, Senator McClellan of Arkansas, introducing the Bill proposing the establishment of a Commission on Science and Technology, on February 17, 1965, to the President of the Senate, S. 1136, 89th Cong., 1st sess., *Congressional Record* 111: 2787-2788.

[124] Robert Reinhold, "Scientists Upset by Research Aid Cuts," *The New York Times* (June 21, 1968): 1 and 25.

[125] Congress, Senate, Senator McClellan of Arkansas, introducing the Bill proposing the establishment of a Commission on Science and Technology, on February 17, 1965, to the President of the Senate, S. 1136, 89th Cong., 1st sess., *Congressional Record* 111: 2787-2788.

expert scientific advise was often satisfied through the use of temporary, appointed scientific advisory committees in government agencies, but she argues the 1970s committees were ultimately unsuccessful in resolving political decisions with the facts of science.[126] According to Bruce L.R. Smith, in his book *The Advisers: Scientists in the Policy Process,* the idea of using scientists to advise on broad policy decisions was unique to the United States and this practice was at its height between 1957 when President Dwight D. Eisenhower established the first standing position in the executive branch as a science adviser and 1962 when President John F. Kennedy was assassinated.[127] Smith categorized the different type of science advising, describing the type that McClellan was interested in as a fourth type that provided "advice to the decisionmaker on broad political-technical issues."[128] While Smith identified this type of advising as occurring mainly in the executive branch, it can also be seen in Congress with the 1960s House scientific advisory group called the Panel on Science and Technology, which was composed of leaders in science and engineering and located within the House Committee on Science and Aeronautics.[129]

While Senator McClellan's proposal was not passed, later that year Senator Harris was successful in creating the Senate Subcommittee on Government Research, which

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[126] Sheila Jasanoff, *The Fifth Branch* (Cambridge: Harvard University Press, 1990).

[127] In other countries scientists were used to advise on policies that were on science, or "policy for science," rather than the "science in policy" that was occurring in the U.S. Bruce L. R. Smith, *The Advisers: Scientists in the Policy Process* (Washington, D.C.: The Brookings Institution, 1992): 6, 160-165.

[128] Smith, *The Advisers*, 1.

[129] The Panel was meant to provide a way for scientists and engineers to communicate problems they foresaw to Congress so that constructive action could be taken. According to historians Ken Hechler and Albert E. Eastman, the panel "helped develop a background of scientific, technical, and policy information for the committee which was authoritative, timely and candid…The panel sessions helped to identify spheres of scientific and technological research which offered exceptional promise for the welfare and security of the Nation, and which needed legislative attention." Ken Hechler and Albert E. Eastman, *The Endless Space Frontier: a History of the House Committee on Science and Astronautics, 1959-1978* (San Diego: American Astronautical Society, 1982): 50-59.

served and expanded on many of the goals that McClellan had set out for his commission. During the Subcommittee's first two years members discussed the rapid increase in science funding, the efficiency of federally funded research, the support and encouragement of applied biomedical research that could take basic research and produce cures for numerous conditions including cancer and heart disease, and the geographic distribution of science funding to ensure that funding was being spread to academic institutions throughout the country and not just on the East Coast.

The House Subcommittee on Science, Research and Development, or the Daddario Subcommittee—named for its chair, Democratic Representative Emilio Q. Daddario of Connecticut—was similarly concerned with topics of basic versus applied research, efficient research spending, and geographic distribution.[130] It was created in 1963 as Congress and the public were becoming worried by the dramatic rise in spending on research, and as Representative Howard W. Smith, Democrat from Virginia, called for a committee to investigate where all this funding was going.[131] The chairman of the House Committee on Science and Astronautics, Representative George P. Miller, in a political fight for authority in the House, proposed the creation of the Daddario Subcommittee within his own Committee to counter Representative Smith's proposal

[130] For an overview of the first year of activity see: Fred R. Harris to John L. McClellan, September 19, 1966, Box 30, folder 16, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK; and Fred R. Harris to Subcommittee on Government Research "End-of-Year Report," January 3, 1967, Box 30, folder 26, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK; Legislation on geographic distribution was introduced on March 2, 1966 by Senator Curtis calling for the NSF to recommend legislation and procedural changes to the methods of awarding federal research and development grants and contracts to remedy the unequal geographic distribution of funding. The Senate resolution was forwarded to Harris's subcommittee and hearings were held on it from July 25-27th, 1966. Congress, Senate, Senator Curtis of Nebraska, introducing the Resolution on the Distribution Among the States of Research and Development Funds, on March 2, 1966, to the President of the Senate, S. Res. 231, 89th Cong., 2d sess., *Congressional Record* 112: 4688-4689.

[131] Hechler and Eastman, *The Endless Space Frontier*, 130.

which would have created a committee outside of Miller's Committee. Miller interpreted Smith's proposal as an attempt to usurp some of the power he held in his House committee. In response Miller proposed the Daddario Subcommittee to broadened the work of the House Committee thus including scientific areas beyond aeronautics and space science.[132]

The goal of the Daddario Subcommittee was to survey the nation's scientific efforts and to "identify the major problem areas" that did or might soon exist between federal science and institutions such as industry, universities, foundations, professional societies, and federal agencies.[133] Some of the "major problem areas" identified in the hearings of the subcommittee included the unwanted direction and involvement of the federal government in basic research, the project management of large-scale and costly applied science programs, the unequal geographic distribution of research grants, insufficient science education in universities and colleges, and the need for a revision of the National Science Foundation's (NSF) charter so as to include more physical sciences and social science funding. The first hearings within the Daddario Subcommittee, held during October and November of 1963, included testimony by leading scientists on the issue of funding basic and applied research, and led to the solicitation of a National Academy of Science's (NAS) report on the level of need for basic research. This report, which was published in 1965 under the title "Basic Research and National Goals emphasized the significance of the NSF in funding basic research and argued that more

[132] This broader mandate had originally been granted to the Committee when it was created in 1958, however little action had been taken to examine areas beyond space research up to that point. See Hechler and Eastman, *The Endless Space Frontier*, 95-99.
[133] Hechler and Eastman, *The Endless Space Frontier*, 134.

stable level of funding was needed for basic research."[134] In 1964, the Daddario Subcommittee influenced the Library of Congress to establish a Science Policy Research Division, which helped to improve the scientific and technical assistance desired by members of both the House and Senate.[135] In the same year, the Subcommittee also produced a series of reports on the geographic distribution of federal research funding and solicited a report from the NSF on geographic distribution of funding between the years 1961 and 1964, which revealed that the majority of funding was going to only the top twenty universities in the country, which were located primarily on either coast of the U.S.[136] The subcommittee continued its study of applied research and science funding through 1967 with the solicited reports by the NAS and the Library of Congress Science Policy and Research Division. This emphasis on technological and scientific applications in Representative Daddario's House Subcommittee was continued by Senator Harris in his Senate Subcommittee on Government Research between 1965 and 1967, but the latter would focus his study on biomedical research. While there is no evidence of an organized collaboration between Daddario and Harris, this shared attention to the issues of basic versus applied research and the emphasis on fair geographic distribution of funding reflected topics that had been part of an earlier post-WWII political discussion in Congress on supporting peace-time federally funded science and on Vannever Bush's proposal for the creation of the National Science Foundation.[137]

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[134] Hechler and Eastman, *The Endless Space Frontier*, 140-143.
[135] Hechler and Eastman, *The Endless Space Frontier*, 136.
[136] Hechler and Eastman, *The Endless Space Frontier*, 139; and Report of the Comptroller General of the United States, *Geographical Distribution of Federal Science Funds to Colleges and Universities* (Washington D.C.: General Accounting Office, 1976): 1-2.
[137] For more information on the Debate over federal funding of science research in the post-WWII era see: David M. Hart, *Forged Consensus: Science, Technology, and Economic Policy in the United States,*

As part of Harris's early work in his Subcommittee on Government Research, he held closed hearings with expert scientists and helped to establish a rapport with the scientific community on the state of science policy. These closed sessions indicated to Harris that the area of biomedicine was becoming increasingly important and offered numerous benefits to mankind.[138] Harris's interest in biomedicine in the summer of 1966 was stimulated by a June 15, 1966 speech given by President Johnson to launch the new Medicare program. Johnson called for focusing biomedical research on the applications of knowledge to society's health problems: "A great deal of research has been done...But I think the time has come to zero in on the targets by trying to get our knowledge fully applied."[139] A week later, in a statement following a meeting with the Directors of the National Institutes of Health (NIH), Johnson referred to the "war on disease" and stated that he wanted to know what benefits the NIH-funded research was providing to society.

> National Institutes of Health are spending more than $800 million a year on biomedical research. I am keenly interested to learn not only what knowledge this buys but what are the payoffs in terms of healthy lives for our citizens. We must make sure that no lifesaving discovery is locked up in the laboratory.[140]

In both his speech and statement, Johnson was echoing the concerns voiced in the Senate Committee on Government Operations and the House Subcommittee on Science, Research and Development about whether the funded research was fruitful and whether it

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1921-1953 (Princeton: Princeton University Press, 1998); and Daniel J. Kevles, "The National Science Foundation and the Debate over Postwar Research Policy, 1942-1945: A Political Interpretation of Science--The Endless Frontier," *Isis* 68, no. 1 (1977): 5-26.

[138] Fred R. Harris to Subcommittee on Government Research "End-of-Year Report," January 3, 1967, Box 30, folder 26, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK; Fred R. Harris to Subcommittee on Government Research, "Summary of Seminar on Science and Public Policy - Draft," Box 58, folder 25, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK.

[139] Senate Subcommittee on Government Research, *Research in the Service of Man: Biomedical Knowledge, Development, and Use, A Conference*, 90th Cong., 1st sess., 1966, 5.

[140] Senate Subcommittee on Government Research, *Research in the Service of Man,* 6.

was an efficient use of public spending. Yet Johnson was more specific than either the Senate Committee or House Subcommittee, because he was focusing his concern on the biomedical community. In response to the speech, Harris held the conference entitled Research in the Service of Man from October 24 to 27, 1966 in his home state of Oklahoma. The conference attendees discussed what areas of biomedicine could provide benefits to society and how policy might be directed to encourage applied results from research.[141] As Johnson's speech and Harris's conference demonstrate, the passage of Medicare made it more imperative to deliver new and effective remedies, especially for chronic problems with high price tags.[142]

President Johnson and Harris were not alone in thinking that the federal government's entrance into healthcare, through the Medicare program, provided a rationale for paying closer attention to how federal health research funding was being spent. Even as the Medicare bill was making its way through the Senate and was then signed into law by President Johnson, Senator Absalom W. Robertson of Virginia had proposed the creation of an advisory commission to examine health science research activities. In his speech introducing the Senate joint resolution, he argued that it was the passage of the Medicare bill that "makes it more imperative than ever that the Federal Government get the best results possible from the money it is spending on medical

[141] Senate Subcommittee on Government Research, *Research in the Service of Man,* 3.

[142] For a summary of President Johnson's call for focus on applied research and the response from the scientific community see the memo from the staff researcher to the staff director of the Senate Subcommittee on Government Research: Joe Meyer to Steve Ebbin, "Proposed Hearings on 'The Application of Biomedical Knowledge in the Service of Man,'" August 10, 1966, Box 31, folder 3, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK.

research."[143]

Biomedical researchers quickly interpreted Johnson's call and the ensuing congressional discussions as a debate over the value of basic verses applied research. The biomedical community was shocked by Johnson's call for an increased focus on applied results for biomedical research.[144] They responded by publicly arguing for the equal importance of basic research to applied research. The reaction was perhaps disingenuous because they were certainly familiar with this discussion on supporting applied research over basic research because it had been the focus of post-WWII debates over federal funding of science. These earlier discussions had resulted in the creation of the National Science Foundation (NSF) in 1950 which had negotiated a compromise by establishing policy that funded basic research as well as applied research.[145] While the debate over basic and applied research might have seemed resolved in the 1950s, it reemerged in the 1960s as evidenced by Senator Robertson's legislation, President Johnson's speech, the creation of a House Subcommittee on Science, Research and Development, and Harris's discussions in the Senate Committee on Government Operations, especially his Conference on Science in the Service of Man. Moreover, a growing public distrust of

[143] Congress, Senate, Senator Robertson of Virginia, Introducing the Joint Resolution to establish an Advisory Commission on Health Research Activities, on July 12, 1965, to the President of the Senate, S.J. Res. 96, 89th Cong., 1st sess., *Congressional Record* 111: 16430.

[144] This was according to Alvin M. Winberg, the director of the Oak Ridge National Laboratory, who gave a talk at Harris's conference. See: Senate Subcommittee on Government Research, *Research in the Service of Man,* 33; Also see Joe Meyer to Steve Ebbin, "Proposed Hearings on 'The Application of Biomedical Knowledge in the Service of Man,'" August 10, 1966, Box 31, folder 3, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK.

[145] The legislation creating these two organizations supported basic research as a key part of developing applied solutions to social issues. The beliefs reflected in these pieces of legislation were that basic research provided the knowledge that allowed applied sciences to do their work and then in turn this produced technology and medical treatments for society. For more information on the debate over federal funding of science research in the post-WWII era see: Hart, *Forged Consensus*; and Kevles, "The National Science Foundation and the Debate," 5-26.

researchers picked up momentum in the middle of the 1960s and became widespread by the early 1970s. This was due to an attention toward the political consequences of dropping the atomic bombs, the increased danger of war from atomic weapons, atomic radiation exposure fears, medical technologies that extended life such as dialysis and organ transplantation, the thalidomide prescription drug disaster, and the growing cases of abuse in human experimentation.[146] Combining with this lack of trust was an increase in federal spending on the Vietnam War, which increased the pressure for efficient spending of federal tax-dollars on many other areas of the federal budget.

Conference on Science in the Service of Man Oct. 24-27, 1966

Harris's 1966 conference on "Research in the Service of Man: Biomedical Knowledge, Development and Use," aimed to examine how biomedical research could be improved by focusing research funding on specific societal goals and also examine the effect of policies that were emphasizing the application of biomedical knowledge. Along with Harris, many of the speakers at the conference and the media recognized that this discussion was being interpreted as a debate over "basic versus applied research."[147]

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[146] Sheila Jasanoff, "A Field of Its Own: The Emergence of Science and Technology Studies," in Robert Frodeman, ed., *The Oxford Handbook of Interdisciplinarity* (New York: Oxford University Press, 2010): 195-196; Daniel J. Kevles, *The Physicists: The History of a Scientific Community in Modern America* (Cambridge: Harvard University Press, 1995): 393-409; David J. Rothman, *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making* (New York: Basic Books, 1991): 86, 148-167; Kelly Moore, *Disrupting Science: Social Movements, American Scientists, and the Politics of the Military, 1945-1975* (Princeton: Princeton University Press, 2008): 1-12; M.L. Tina Stevens, *Bioethics in America: Origins and Cultural Politics* (Baltimore: Johns Hopkins University Press, 2000):8-45.

[147] Harris said in his opening statement that the problem being discussed had been "erroneously termed, in some quarters, "basic versus applied research." Senate Subcommittee on Government Research, *Research in the Service of Man,* 1-3. For evidence of the scientific communities response see: D.S. Greenberg, "Biomedical Policy: LBJ's Query Leads to an Illuminating Conference," *Science* 154 (November 4, 1966): 618-620; For evidence of the media interpretation see Ed Edelson, "Researchers Vie for Share of U.S. Health Study Aid," *World Journal Tribune*, October 2, 1966, in Fred R. Harris Papers, box 31, folder 1, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK.

Harris said in his opening statement that the problem being discussed had been "erroneously termed, in some quarters, 'basic versus applied research.'" While the conference was intended to encourage research with practical and applied goals, in Harris's mind it was not about setting basic research against applied; both were valuable. One speaker, Harry H. Gordon, the director the Rose F. Kennedy Center for Mental Retardation and Human Development, warned about the dangers of interpreting the discussion in this way, saying "I cannot reiterate too strongly what Dr. Stewart and Dr. Shannon and others have already told us: That we avoid the traps of pitting the support of basic against support of applied research or both against the needs for more and better health services."[148] As a result of this interpreted competition between basic and applied research, many of the speakers argued for one or the other and further reinforced that there could only be one, not an integrated effort that required both.

The speakers varied in their emphasis, with many describing how their work was applied and others arguing strongly for the importance of basic research.[149] Some like cancer researcher Ralph Jones, emphasized how their area of research was addressing applied goals and could thus be funded more to encourage more applied results.[150] Others such as W. F. Libby, professor of chemistry at University of California at Los Angeles, emphasized that basic research was important because "it pays" in the long run, though

[148] Senate Subcommittee on Government Research, *Research in the Service of Man,* 130.

[149] See talks by James A. Shannon, Director of the NIH, W.F. Libby, Professor of Chemistry, UCLA; Richard L. Lesher, NASA; and Harry H. Gordon, Director of the Rose F. Kennedy Center for Research in Mental Retardation and Human Development. In Senate Subcommittee on Government Research, *Research in the Service of Man*. These discussions were repeated again in the Senate hearings on this conference. See testimony by Robert H. Ebert p.187, Samuel M. Nabrit p. 203, and Albert B. Sabin p.265, In Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 90th Cong., 1st sess., February 28, March 1-3, 16, 1967.

[150] Senate Subcommittee on Government Research, *Research in the Service of Man,* 136-143.

not always in a direct route to application. A third group from industry argued for government to encourage applied research by supporting the pharmaceutical and medical device industry. Dr. Leonard A. Schelle, Senior Vice President of Warner-Lambert Pharmaceutical Company, for example, urged a "reasonable" and protective patent system and an investment in animal models in order to allow the pharmaceutical industry to more effectively and quickly screen drugs for safety and effectiveness.[151] A group of researchers from the Association for the Advancement of Medical Instrumentation proposed support for medical and technical education programs, standardization in medicine, and a less restrictive patent policy that would "stimulate industry to take a strong lead in implementing an accelerated program of biomedicine."[152] Both Schelle and the group from AAMI believed industry should pursue the applied work while government policies encouraged the process. Frequently during the conference, speakers emphasized that research, development, and application were independent pursuits that exist on a continuum, with all stages being essential. They simultaneously acknowledged that the development of applications did not occur in a controlled linear development from basic research to applied research to applied technology or treatment.[153] William H. Stewart, the Surgeon General, described that public support for science in his talk at the conference, while also emphasizing the importance of applying the research to social problems:

> I am confident that the public has accepted the importance of basic biomedical research. But public expectations of research are framed

[151] Senate Subcommittee on Government Research, *Research in the Service of Man,* 157-158.
[152] Senate Subcommittee on Government Research, *Research in the Service of Man,* 165-173.
[153] See the talks by William Stewart, Director of the NIH James A Shannon, W. F. Libby, Richard L. Lesher, and Harry H. Gordon. Senate Subcommittee on Government Research, *Research in the Service of Man.*

> largely in terms of specific medical benefit—the cancer cure, the wonder drug. It is important that we fulfill these expectations of tangible benefit whenever we can.[154]

Overall discussion during the conference emphasized the value of fundamental laboratory investigations while underscoring the ultimate goal of addressing health issues and finding ways to address specific medical problems.

The conference had an unmistakable pro-science tone to it. The advancements of the biomedical field in the previous twenty years were emphasized and celebrated, and the spending of federal funding on science was described as a benefit to society. One of the aims of the conference was to inventory the areas of current research that could benefit from more funding, and thus many experts spoke about their area of expertise.[155] These included cancer research, organ transplantation, artificial organ development, vaccine research, maternal and child health research, research on aging, prosthetics research, and research on vision, speech, language and hearing. Only four of the twenty-eight speakers mentioned negative or complicating societal implications of research or technology, specifically citing the double sided nature of technology, the risks of speeding up pharmaceutical research, and legal and financial impacts of organ transplantation. These few speakers who did so echoed the discussions that were occurring in the professional research community during the 1960s in which the negative consequences of medical and scientific technologies were identified and developing fields in biomedicine were examined for social, ethical and legal consequences.[156]

One of these speakers, Dale R. Corson, Provost at Cornell University, described

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[154] Senate Subcommittee on Government Research, *Research in the Service of Man,* 69.
[155] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 4.
[156] See chapter 1.

the doubled sided nature of technological advances.

> The world of technology is one of grave problems and one of vibrant hope. It is a world which offers easy access to remote areas of the earth—and even to the moon and beyond—but which harbors the specter of a population far outrunning an adequate food supply. It is a world which promises ever-increasing freedom from pain and disease but which harbors the specter of nuclear war.[157]

A second speaker, Gerard Piel, the publisher of *Scientific American*, argued that there are "hazards" when speeding up the process of introducing the results of applied research into society. He specifically cited the example of the thalidomide disaster overseas, which the United States mostly escaped due to a delay in the approval of the drug by the Food and Drug Administration.[158] The two other speakers, D. B. Amos, chair of the Department of Immunology at Duke Medical Center, and Belding H. Scribner, Professor of Medicine at the University of Washington, mentioned the complicated social issues that made implementing the advancements of research difficult. Amos described the legal barriers to organ transplantation, while Scribner mentioned the high costs for the use of dialysis and thus the problems of equal access to dialysis.[159] These four speakers reminded their audience that science and technology could have unintended social consequences and that it was the responsibility of scientists and society, including policymakers, to put safeguards in place to limit such outcomes. The idea that scientists shared the responsibility for considering the social implications of research was further echoed by two speakers at the conference. Dr. William H. Stewart, the U.S. Surgeon General, argued that the task of applying research to society's problems required a

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[157] Senate Subcommittee on Government Research, *Research in the Service of Man,* 12.
[158] Senate Subcommittee on Government Research, *Research in the Service of Man,* 22. For more information on the Thalidomide disaster see Trent Stephens and Rock Brynner, *Dark Remedy: The Impact of Thalidomide and Its Revival as a Vital Medicine* (Cambridge: Perseus Publishing, 2001).
[159] Senate Subcommittee on Government Research, *Research in the Service of Man,* 181 and 201.

collaboration among scientists, physicians, "statesmen and others who chart society's course and set its policies."[160] Another physician employed by the federal government, Dr. Ivan L. Bennett, Jr., seconded the call for more collaboration, but he emphasized the importance of scientists doing a better job communicating their work to the public and to policy makers.[161]

Just as the early 1960s professional science and medical discussions, described in chapter 1, were beginning to involve the social scientists, and argue for the use of experts outside the sciences to consider how science and medical research could be applied to society's needs, this was also occurring in the Senate discussions. During the conference, scientists and physicians expressed the need for social scientists' involvement in assessments of scientific research. D. B. Amos and Belding H. Scribner, who spoke on transplantation and dialysis, respectively, both argued that the advances in medical research could not be applied effectively to society unless expertise outside science was involved. Amos identified differing state legislation on death and consent as one of the biggest barriers to organ transplantation, thus implying that lawyers and legislator were necessary to effectively making use of organ transplantation. Scribner argued that policymakers' decisions to subsidize or support organ transplantation was essential to extend treatment to the larger population. Senator Fred Harris, demonstrating his interest in social science research, invited the sociologist Kingsley Davis, who that same year had been elected to the NAS as the first sociologist. Davis reacted to the comments made by another critical speaker, who had spoken on the thalidomide disaster and reported that

[160] Senate Subcommittee on Government Research, *Research in the Service of Man*, 71-72.
[161] Senate Subcommittee on Government Research, *Research in the Service of Man,* 8-9.

death rates in general over the last 10 years had stalled despite continued and increasing funding of health science research. In response, Davis suggested that the lack of progress on the death rate was not the result of ineffective health science research but rather the effect of social problems, such as poverty. "We already know enough about medical science to provide sound medical care. The technological problem is therefore not an issue...What is at issue is the question of the *distribution* of medical care, and that is a social and economic matter."[162] Davis concluded his talk by endorsing and arguing for Senator Harris's recent proposal for a National Social Science Foundation. Harris closed the conference by observing that the conference had cleared interdisciplinary channels of communication between the political and scientific communities and demonstrated the need for further "inter-disciplinary communication and cooperation and programming."[163] Harris also suggested that the conference had demonstrated that the social and behavioral sciences were "equally important" to the goal of improving the health and lives of society.[164]

Hearings on Research in the Service of Man

Four months after the conference in Oklahoma, Harris held hearings in his Senate subcommittee to continue the discussion on how to increase the number of applied results coming from federally funded biomedical research. He focused the hearings on existing federal funding systems and what might make them more effective. He asked the witnesses about communication among scientists in different fields and between scientists and policymakers. He did not identify any specific agencies, but those who

[162] Senate Subcommittee on Government Research, *Research in the Service of Man,* 24.
[163] Senate Subcommittee on Government Research, *Research in the Service of Man,* 245.
[164] Senate Subcommittee on Government Research, *Research in the Service of Man,* 246.

testified focused their comments on the NIH, the Food and Drug Administration, the Atomic Energy Commission, and more generally on external funding of research by federal agencies. Harris also asked about federal institutions' abilities to make long-range plans, to prioritize areas of biomedical research, and to encourage more applied research in biomedicine.

Generally, those who testified felt that the federal institutions were doing a good job and argued that there was no need for regulation to focus research or mandate specific goals for the research. A few researchers emphasized the recent increase in interdisciplinary work between different fields within science.[165] Three researchers argued for more interdisciplinary collaborative research between physicians and engineers, which they argued would have a positive impact on producing more applied and socially beneficial results from biomedical research, because of the practical applied focus of the engineering field.[166]

Two experts did warn that speeding up the transfer of basic knowledge to applied research could be dangerous because it would not allow society to prepare for the implementation of the technology or to address unintended consequences.[167] One of the experts, Joseph D. Cooper, a professor of Government at Howard University, cited the case of Phenylketonuria (PKU) screening to prove his point. In this case, policy was enacted to mandate the PKU screening test for all infants at birth. Some physicians and geneticists argued in 1966 that the mandate started before the effectiveness of the test had

[165] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 31.
[166] See testimony by Adrian Kantrowitz, Robert H. Ebert, and Erik Walker. Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*.
[167] See testimony by Lederberg p.13 and testimony by Cooper p. 61 where he cites the case of PKU screening as an example of this risk. Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*.

been fully researched, and they cited a number of problems with false positives and false negatives.[168] This concern expressed by researchers led politicians to doubt the value of the mandated genetic public health program. PKU was one of the many examples during the 1960s that led the public to question the trust they gave to physicians and scientists.

The other expert to warn about this risk was the geneticist Joshua Lederberg, introduced in chapter 1, who only a year earlier had begun his weekly column in the *Washington Post*. Lederberg was concerned about work in genetics and the possibility that knowing the "secrets of life" and would led to the "precise control of human development."[169] He warned that the quick application of results would lead to the development of treatments and technologies that come with unintended and unforeseen consequences:

> If we demand narrow payoffs too quickly, we may indeed get them, as we already have and then find ourselves with nuclear weapons, but insufficient means of control and inspection; with splendid automobiles, and unmitigated smog; with innumerable healthy babies and an inadequate base of population control.[170]

Lederberg argued that decisions about the use of these advances and technologies should be "made in a climate of effective communication between the political and scientific communities, in one of continuing mutual education about social purposes and scientific opportunity."[171] Thus he praised Harris for holding such hearings, which provided for interdisciplinary communication and opened the discussion beyond the professional

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[168] The test results were crucial in determining treatment, which was a change in diet. The change in diet based on a false positive result could have negative effects on the infant who would have been normal. And false negatives meant that appropriate diet changes were not made and risked the developmental problems associated with PKU. See chapter 2 of Susan Lindee, *Moments of Truth in Genetic Medicine* (Baltimore: Johns Hopkins University Press, 2005).

[169] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 17.

[170] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 17.

[171] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 17.

research community.

An additional aspect to Cooper's PKU example was that law and medicine were interconnected and thus legislators needed to be prepared to handle these areas where the two meet. Cooper, himself a "non-scientist," believed that the best results would come from a diversity of views including experts in law, political science, social psychology, cultural anthropology, and institutional sociology.[172] The importance of including social experts was further reinforced by the comments of James A. Shannon, the director of the NIH. Shannon argued that a significant reason biomedicine was not benefiting all of society was because of economic and social problems with the distribution of medicine, not because of scientific problems.[173] Senator Harris joined them in observing that interdisciplinary consultation was needed between the sciences and those outside science.

Harris stated that part of the subcommittee's job was to "shed light on the general problems, and also to stimulate dialogue between those involved in the social sciences, and in politics and public policy on the one hand, and those involved in biomedicine on the other."[174] Harris described interdisciplinary work as communication among the fields, but one witness, Christopher Wright, suggested that communication was not enough. Wright argued that a full exchange of knowledge between these fields was required:

> Harris: Many people are now recommending—Dr. Rene Dubos, for example—that we put more emphasis upon interdisciplinary effort which brings together social scientists and those in the life sciences. Now, you say that is not entirely satisfactory. We have somehow to get within the life sciences some recognition of the social aspects. I suppose you would

[172] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 60, 63-65.
[173] James A. Shannon, director of the NIH, Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 101
[174] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 63.

> say the other, too, that is, within the social sciences, some understanding of the life sciences is necessary.[175]
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> Wright: Yes. We are dealing with a complex system. I would agree with Dr. Dubos that one starts by developing a dialogue between different people from different disciplines, but that in the long run, you have to expect to develop persons who you will no longer be able to place or identify simply as a biological scientist or as a social scientist. This will be a person whose essential commitment and competence is in the understanding of the interactions between…[interrupted by Harris].[176]

Wright went further still, arguing that what was needed was a new field that could do this interdisciplinary work:

> I do not, however, believe that this can be accomplished simply by bringing together existing social scientists and natural scientists. This would constitute what might be called the dual-discipline fallacy. It does not follow that an individual well trained in existing medical sciences and well trained in the existing social sciences, will thereby be equipped to understand the social aspects of the medical sciences. What is needed, therefore, is a totally new kind of inquiry and competence which is not now possessed by either group.[177]

Wright was proposing a new field he called "Biomedical Affairs," which he placed within the large field of "Science Affairs."[178] The new expert in "Biomedical Affairs" would be trained in combination of the social sciences, humanities, law and the medical sciences. Harris was receptive to Wright's argument for social scientists to study science, and later in the hearings Harris would state that he was thinking of interdisciplinarity broadly, so as to include the social sciences studying the social aspects of medical research and medicine.[179]

Wright's proposal was grounded in his career and current work at Columbia

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[175] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 148.
[176] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 148.
[177] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 147.
[178] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 150.
[179] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 166.

University. Wright began studying the sciences early in his life. As an 18-year-old University of Chicago student he was sent to join the scientists at Los Alamos Laboratory working on the Manhattan Project during World War II.[180] After the war, he completed his bachelor's degree at Harvard, went on to teach philosophy at Williams College, worked as a research associate at the University of Chicago Law School, and then become the executive director of the Council for Atomic Age Studies at Columbia University in 1958. It was in 1966, a year before testifying in Harris's subcommittee, that he was appointed the director of the Institute for the Study of Science in Human Affairs at Columbia University.[181] This Institute at Columbia was funded by the Alfred P. Sloan Foundation and also by the Commonwealth Fund, which requested that the institute work on medicine and the biomedical sciences.[182] The Institute was described by Wright in the hearings in this way:

> This is a response on the part of one major university to a growing awareness of the need to look at the ways in which modern science is affecting human affairs, and the ways in which human interests affect the course of scientific development...It is designed to permit greater interaction between the natural and the social scientists and the humanists and to engage them in studies of the sort that I have been describing here, among others. Such studies require the knowledge and experience of people from many backgrounds, in and out of the university.[183]

This new field Wright was helping to shape and build would provide a forum to advance knowledge of an interdisciplinary sort that Wright argued was missing from discussions

[180] The Manhattan project developed the first atomic bomb. See Kevles, *The Physicists*.
[181] "Christopher Wright, 62; Analyzed Science," *The New York Times,* May 13, 1989, accessed April 3, 2012, http://www.nytimes.com/1989/05/13/obituaries/christopher-wright-62-analyzed-science.html; Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 145.
[182] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 154.
[183] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 154.

about science research.[184] He even suggested that to fund this research a very small percentage of appropriations toward biomedical research might be devoted to this study of possible long-range social and scientific side effects.[185] Wright identified a few topics that this new field could study: human reproduction processes, the effect of lengthening life spans, the manipulation of genes, and environmental pollution.[186] Christopher Wright and his Institute for the Study of Science in Human Affairs became evidence of the growing interest in academia on the impacts and social aspects of research and of the motives to develop a field of scholars studying science, technology and society together.

The Congressional hearings on the Conference on Research in the Service of Man grew out of a desire to sustain discussion about the efficiency and outcomes of federally funded biomedical research and to support more applied research. As the testimony by Christopher Wright and the views of Senator Harris demonstrate, these hearings also mark a turning point when the Senate's interest moved from financial concerns to the social impacts of current and future science research.[187] The arguments in the hearings for the increased involvement of the social sciences would be reinforced in Congress by legislation from Harris and Mondale and by the development of Science, Technology and

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[184] Wright clarified during the hearings that his proposal was not to create an administrative authority that might hinder research but to provide an area of knowledge. Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 154.

[185] This was particularly prophetic, as twenty-one years later the geneticist James Watson would enact this very idea when he announced the NIH's Human Genome Project and the corresponding program on the Ethical, Legal and Social Implications (ELSI) of the Human Genome Project. Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 150-151; Eliot Marshall, "The Genome Program's Conscience," *Science* 274 (1996): 488-489; Nancy S. Wexler, "Climbing the Ladder of Life: James D. Watson and the ELSI Years," in *Inspiring Science: Jim Watson and the Age of DNA*, ed. John Inglis, Joseph Sambrook, and Jan Witkowski (Cold Spring Harbor: Cold Spring Harbor Laboratory: 2003), 403-412.

[186] Senate Subcommittee on Government Research, *Hearings on Research in the Service of Man*, 145.

[187] A *Chicago Tribune* article on the hearings noted Lederberg's warning about the ability to control life and connected Lederberg's warnings to Aldous Huxley's *A Brave New World*. Willard Edwards, "Future of Man is Discussed in Lonely Senate Hearing," *Chicago Tribune*, March 5, 1967.

Society programs at universities.

Science, Technology, and Society (STS) Programs and the Social Sciences

In 1967, as Harris's subcommittee was discussing the "Research in the Service of Man," both Harris and Mondale were also participating in hearings on each of their proposed pieces of legislation promoting social science research. They argued that while knowledge of the natural sciences had increased there still remained little knowledge regarding how humans related to one another and how they engaged with contemporary science, technology, and medicine. Harris and Mondale were part of a group of liberal politicians in the 1960's who were "eager to use the powers of government to affect social change," and were very supportive of including social science knowledge in policymaking decisions.[188] Some of the congressional interest and the rise in importance of the social sciences was due to the increasing role of the social sciences, especially psychology, in foreign policy and military action during the cold war and through the 1960s.[189]

Harris proposed legislation to create a National Foundation for the Social Sciences (NFSS) and Mondale proposed legislation to create a Council of Social Advisers (CSA). These two pieces of legislation intended to involve the social sciences through two complementary pathways, based on funding social science research and

[188] Howard P. Segal, "Progress and Its Discontents: Postwar Science and Technology Policy," in Hamilton Cravens ed., *The Social Sciences Go To Washington*, (New Brunswick: Rutgers University Press: 2004): 114; In addition to Harris and Mondale, Representative Daddario was also working on the issue of increasing social science research in his house subcommittee, see D. S. Greenberg, "Social Sciences: Harris Bill Evokes Limited Support," Science 155 (1967): 812-814.

[189] Ellen Herman, *The Romance of American Psychology: Political Culture in the Age of Experts*, (Berkeley: University of California Press, 1995).

social science advising. In Harris's legislative introduction to the Senate for his National Foundation for the Social Sciences in October 1966, he argued that it was needed to provide a system of civilian-controlled funding for social science and because "our understanding of man, himself, has not increased proportionately" with the natural sciences.[190] Mondale's legislation for the CSA proposed that the council would advise on policy decisions and develop methods for evaluating the social status of the country through creating social indicators. It was modeled on the Council of Economic Advisers, which was created in 1945 and had successfully established economic indicators and informed economic policy in the United States. Mondale recognized that the academic disciplines in the social sciences had yet to focus on social policy and social values, but he hoped the creation of a CSA would spur the disciplines to pursue this research in conjunction with policymakers.[191] One part of what Mondale's proposed CSA would do was measure quality of life in areas such as education, health, housing, and social mobility. These social indicators would then be used to establish social goals, which

[190] The legislation arose out of a study and subsequent hearings that Harris held on Federal Support of International Social Science Research. This interest was due to the controversy surrounding two social science projects sponsored by the Defense Department and conducted in Chile and Columbia, called the "Camelot Project" and "Project Simpatico." Fred R. Harris to Subcommittee on Government Research "End-of-Year Report," January 3, 1967, Box 30, folder 26, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK; Fred R. Harris to Senator John L. McClellan, September 19, 1966, Box 30, folder 16, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK.

Harris's proposed legislation was never passed, and while the hearings consisted of repetitive praise for the importance of social science research, the method proposed by Harris was not well supported. D. S. Greenberg, "Social Sciences: Harris Bill Evokes Limited Support," *Science* 155 (1967): 812-814; and Congress, Senate, Senator Harris of Oklahoma, introducing a Bill to provide for the establishment of the National Foundation for the Social Science, on October 11, 1966, to the President of the Senate, S. 3896, 89th Cong., 2nd sess., Congressional Record 112: 26028.

[191] Hamilton Cravens ed., *The Social Sciences Go To Washington*, (New Brunswick: Rutgers University Press: 2004); and Tim Booth, "Social Indicators and the Mondale Initiative," *Science Communication* 13 (1992): 371-398.

would include health and research goals for society.[192] Mondale later suggested that both the CSA and the NFSS could have responsibly handled the ethical, social and legal issues that he saw with biomedical research in 1968 when he proposed the National Commission on Health Science and Society.[193]

Mondale's 1968 legislation to create the National Commission on Health Science and Society focused specifically on the social issues of health science research and was, as Mondale implied, a logical companion to both pieces of proposed legislation on the social sciences. Their mandates were to use the social sciences to provide Congress and the Executive branch with the much-needed information to make decisions on social policy, which included policy on healthcare and technology adoption.[194] In addition, these pieces of legislation reflected Senator McClellan's advocacy for more systematic advice on issues relating to science and technology, when he had called for a commission on Science and Technology in 1965. Mondale's CSA could have provided the advice McClellan sought, and Harris's increased funding of the social sciences through his proposed National Foundation for the Social Sciences would have funded the research that would provide advice on these matters. The argument for a better socially informed Congress was a recurring theme during the mid-60s among Senators Harris, Mondale, McClellan, Edmund Muskie, Edward Kennedy, Eugene McCarthy, Gaylord Nelson, and William Proximire, all of whom were part of a liberal reform oriented group of

[192] Mondale's proposed legislation passed the Senate three times but was never introduced to the House. Booth, "Social Indicators and the Mondale Initiative," 371-398.
[193] Senate Subcommittee on Government Research, *Hearings on S.J. Resolution 145*, 90th Cong., 2d sess., March 7-8, 21-22, 27-28, April 2, 1968, 11.
[194] Booth, "Social Indicators and the Mondale Initiative," 371-398.

Congressmen.[195] They argued, in reference to multiple pieces of legislation, that Congress needed experts and advisory commissions so that it, as well as the public, would be prepared to make difficult and important social policy decisions.

Senators Harris and Mondale were not alone in wanting more research on the social implications of biomedical research. Beginning around 1966 and expanding in 1968, interdisciplinary groups at universities, composed of scientists, lawyers, and social scientists, were organizing programs and centers on Science, Technology, and Society.[196] A few of these programs, such as the Center for the Study of Science, Technology and Public Policy at the University of Virginia, and the Program in Science, Technology, and Public Policy at Case Western Reserve University, focused explicitly on the public policy aspects of the social implications of biomedical research.[197] The faculty at both of these public policy programs included social scientists from sociology departments. The UVA Center was housed in the law school, and thus was directed by a professor of law, yet it

[195] Increasingly the Democratic congressmen during the 1960s were focused on reforming Congress to reduce the hierarchical power that the committee system allowed and to reduce the power of the Southern Democrats. Many of the social policies passed by the Congress during these years benefitted from the efforts to reform the committee system and thus those who supported the social reforms were also part of the congressional reform group. See Julian E. Zelizer, *On Capitol Hill: The Struggle to Reform Congress and Its Consequences, 1948-2000* (Cambridge: Cambridge University Press: 2004).

[196] The Harvard Program on Technology and Society was already formed in October 1966. The University of Albany SUNY was beginning discussions of the formation of the Center for the Study of Science and Society in the summer of 1966 and was funded by the NSF in 1968 along with the University of Virginia program and the Cornell University program. Letter from Judith P. Swazey to Dr. Joseph Meyer, October 28, 1966, Box 61, Folder 16, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK; and Seth Hirshorn, "Center for the Study of Science and Society: A Case Study," Box 1, Folder 42, Center for the Study of Science and Society Records, M.E. Grenander Department of Special Collections & Archives, University at Albany, SUNY, Albany, NY.

[197] Center for the Study of Science, Technology and Public Policy, "Second Annual Report," June 30, 1970, Box 13, Folder 1970-1971 Center for the Study of Science Technology and Public Policy RG-Z/1/2.741, Albert and Shirley Small Special Collections Library, University of Virginia, Charlottesville, VA; and "Program in Science, Technology, and Public Policy," Box 1, Folder 14, Center for the Study of Science and Society Records, M.E. Grenander Department of Special Collections & Archives, University at Albany, SUNY, Albany, NY.

also included faculty from the sciences, such as biology, environmental science, and chemistry, as well as engineers and faculty from economics and medical affairs.[198]

Other programs had broader areas of study beyond public policy. These program developed during the 1960s included Cornell University's Program on Science, Technology and Society (prior to 1968), SUNY-Albany's Center for the Study of Science and Society (1967), Harvard's Program on Technology and Society, Columbia University's Institute for the Study of Science in Human Affairs (November 1966), and other programs at Massachusetts Institute of Technology (MIT), Penn State, and Stanford.[199] Sheila Jasanoff, in her chapter on the history of the field of Science and Technology Studies, which appears in the *Oxford Handbook of Interdisciplinarity*, describes the Science, Technology and Society (STS) programs as the half of the field of Science and Technology Studies that was concerned with the impacts and control of science and technology.

> The second major thrust within [Science and Technology Studies] derives from scientists'—and, with increasing intensity, citizens'—concerns about the impacts of S&T [science and technology] developments on health, safety, and fundamental human values. No event did more to spur these concerns than the dropping of the atomic bombs on Hiroshima and Nagasaki in 1945, and the ensuing arms race between the United States and the former Soviet Union during the Cold War. Themes of scientists' complicity in war and violence, and technology's lack of democratic accountability, gained added prominence during the Vietnam War, which

[198] Center for the Study of Science, Technology and Public Policy, "Second Annual Report," June 30, 1970, Box 13, Folder 1970-1971 Center for the Study of Science Technology and Public Policy RG-Z/1/2.741, Albert and Shirley Small Special Collections Library, University of Virginia, Charlottesville, VA.

[199] Jasanoff, "A Field of Its Own," 195-196; and "Cornell University Program on Science, Technology and Society," Box 1 Folder 19, and paper on the Center for the Study of Science and Society, box 1, folder 46 and 42, Center for the Study of Science and Society Records, M.E. Grenander Department of Special Collections & Archives, University at Albany, SUNY, Albany, NY; Walter Sullivan, "Columbia Sets up New Science Unit," *The New York Times*, November 11, 1966, 32.

> also spurred linkages between earlier worries about the ungovernability of science with nascent concerns about S&T's environmental impacts.[200]

Jasanoff's claim about atomic science spurring broader concerns about the impacts of science and technology is reinforced by the history presented in Chapter 1, which describes how concerns among atomic scientists on the impacts of their work spread to biologists raising concerns and considering the impacts of their work. The influence of atomic or nuclear science is also seen in the STS programs through their choice of topics to study. Many of the centers studied national defense and science, or nuclear energy and world order, in addition to topics on world population and food resources, legal and moral implications on modern biology and medicine, national science policy, impact of automation on management and labor, scientific methods and decision making, ecological impact of technology, prescription drug compensation, allocation of health care, and population, technology and the city. In a more concrete manner concerns over atomic research can be seen in the University at Albany SUNY Center for the Study of Science and Society (CSSS). The original idea for CSSS was proposed by Eugene Rabinowitch, biophysicist and the co-founder of the *Bulletin of Atomic Scientists*.[201] In 1967, Rabinowitch suggested that the CSSS be created and he proposed that he join the faculty to work in the center and bring with him the *Bulletin of Atomic Scientists* journal to be housed at the university. His proposal was accepted and he joined the faculty in 1967 and his son, Victor, became the director of CEES in 1968.[202]

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[200] Jasanoff, "A Field of Its Own," 195.

[201] Originally CSSS was called Center for Science and the Future of Human Affairs. Alice K. Titus, "Biographical Sketch of Eugene I. Rabinowitch," M.E. Grenander Department of Special Collections and Archives, http://library.albany.edu/speccoll/findaids/ger075.htm (assessed on February 17, 2012).

[202] The University of Albany CSSS was ultimately unsuccessful as funding issues plagued the center and ultimately led Victor Rabinowitch to go back to a position at the National Academy of Sciences.

Jasanoff explains that the STS programs were founded and often led by scientists, such as Rabinowitch, or by engineers, and that these programs were established with the "presupposition" that they "had to be cross-disciplinary."[203] According to the director of the UVA center, the emphasis on cross- or interdisciplinarity in the study of science and society was a "developing trend" that had been on-going since at least 1968. The director also argued that the UVA center had been a benefactor of this trend because new avenues for funding had become available through this increasing Congressional attention.[204] In fact, in 1968 NSF had begun to fund planning and policy studies programs, of which the UVA center was one.[205] The Cornell Program on Science, Technology and Society, and the University of Albany SUNY's Center for the Study of Science and Society were also benefactors of NSF funding around 1968.[206] The influence of NSF funding on the STS field also capitalized on the growing recognition that experts needed to communicate across their boundaries. Sociologist Peter Weingart, who wrote a brief history of interdisciplinary knowledge formations in the *Oxford Handbook of Interdisciplinarity* observes that "inter- and transdisciplinary research fields are promoted by funding

[203] Jasanoff, "A Field of Its Own," 195-196.

[204] Memo from Mason Willrich, "Future of the Center for the Study of Science, Technology and Public Policy," February 1, 1971, Box 13, Folder 1970-1971 Center for the Study of Science Technology and Public Policy RG-Z/1/2.741, Albert and Shirley Small Special Collections Library, University of Virginia, Charlottesville, VA.

[205] Memo from Mason Willrich, Director of the UVA Center for the Study of Science, Technology and Public Policy, Box 3, Folder 18, Center for the Study of Science and Society Records, M.E. Grenander Department of Special Collections & Archives, University at Albany, SUNY, Albany, NY.

[206] "Cornell University Program on Science, Technology and Society," Box 1 Folder 19, Center for the Study of Science and Society Records, M.E. Grenander Department of Special Collections & Archives, University at Albany, SUNY, Albany, NY; and Seth Hirshorn, "Center for the Study of Science and Society: A Case Study," Box 1, Folder 42, Center for the Study of Science and Society Records, M.E. Grenander Department of Special Collections & Archives, University at Albany, SUNY, Albany, NY.

agencies in the interest of directing research to politically desired goals."[207] While the work of Senators Harris and Mondale during the late 1960s demonstrates the political desires to study the social implications of science, the prevalence of NSF funding for the multiple STS programs, which existed alongside growing university programs in the history and philosophy of science, technology, and medicine, during the same period reinforces that political, academic, and societal attention was growing on this topic.

The two worlds of Congress and STS did not exist independently, of course, but engaged in this topic together through the conference, hearings, and follow-up meetings. Christopher Wright was not the only member of the developing STS field to connect through these public events. Judith P. Swazey, a sociologist from Harvard's Program on Technology and Society, wrote to Harris's subcommittee researcher, Dr. Joseph Meyer, once after the conference in Oklahoma and once more in July of 1967, when Harris was holding hearings on Research in the Service of Man. In October 1966, Swazey expressed her appreciation for Meyer taking the time to meet with her and her colleague, Stanley Joel Reiser, M.D. She wrote that they met and discussed their "research project on the social implications of advances in biology and medicine, and [learned] of [his] work with the Senate Sub-committee."[208] Although she had missed, the conference, she looked forward to seeing copies of the papers, which she felt would be "germane" to their work at Harvard. She concluded by inviting Meyer to Harvard's upcoming conferences and colloquia. In July Swazey was producing a bibliography on the social implications of

[207] Peter Weingart, "A Short History of Knowledge Formations," in Robert Frodeman, ed., *The Oxford Handbook of Interdisciplinarity* (New York: Oxford University Press, 2010): 12-13.

[208] Letter from Judith P. Swazey and Stanley Joel Reiser, October 28, 1966, box 61, folder 16, Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK.

biomedical science and asked Meyer if he would send along a list of any references that he felt might be relevant. Meyer was the only researcher on the staff of Harris's subcommittee, and he worked directly with Harris on all of the hearings and legislation seen in the subcommittee and maintained communication with relevant programs. It is also important to note that while Swazey was a sociologist in an STS program in 1966 and 1967, she would later become a member of the bioethics community and is considered today to be a bioethicist. In a less definitive manner, this connection between STS and Congress can also be seen with another piece of legislation co-sponsored by both Harris and Mondale in 1967 and proposed by their democratic colleague Senator Edmund Muskie of Maine.

Proposal to establish a Committee on Technology and Human Environment

Senator Edmund Muskie was also concerned with the social impacts of science and technology. At the end of the congressional session in 1966, and then again in the beginning of the congressional session of 1967, Muskie proposed legislation to create a Committee on Technology and Human Environment. When it was introduced in 1966, Harris and Mondale recognized its consistency with their social science legislation and Harris's work on Research in the Service of Man and they agreed to become co-sponsors along with several other reform-oriented senators.[209] The legislation was referred to McClellan's Committee on Government Operations and then to Muskie's own Subcommittee on Intergovernmental Relations. The select committee proposed by

[209] Of the group of liberal senators co-sponsoring Muskie's legislation, several had co-sponsored Harris's legislation on a National Foundation for the Social Science, Mondale's legislation for a Council of Social Advisers, and would later co-sponsor Mondale's legislation on a National Commission.

Muskie was to be made up of fifteen senators who would have the task of

> conduct[ing] a comprehensive study and investigation of (1) the character and extent of technological changes that probably will occur and which should be promoted within the next fifty years and their effect on population, communities, and industry… and (2) policies that would encourage the maximum private investment in means of improving the human environment.[210]

His proposal encompassed a very broad area and was not a *scientific* advisory committee but a Senate committee composed of Senators, not scientists, which would compile information on the social implications of technology for the sake of other senators. Describing his commission on the floor of the Senate, Muskie echoed the argument by Harris, Mondale, and McClellan, saying "the need for the politician and the government administrator at every level to become more educated and oriented in the directions of science and technology has never been greater than it is today."[211]

Although Muskie's proposal was never passed by the Senate, the public hearings in December 1966 and in the summer of 1967 publicized the unintended consequences of science and technology and led Representative Daddario to pursue the topic by holding hearings in the House, initiate studies by the Library of Congress, and explore having the NAS and the National Academy of Engineering arrange some technological assessments.[212] Muskie's hearings also reflected the arguments made in Harris's subcommittee about the involvement of social sciences, and echoed the concerns which had been expressed earlier in the decade at scientific and medical professional

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[210] Senate Subcommittee on Intergovernmental Relations, *Hearings on S. Resolution 68*, 90th Cong., 1st sess., March 15-16, 20, April 5-6, 11, 1967: 6.

[211] Congress, Senate, Senator Muskie of Maine, introducing the Resolution to Create a Select Committee on Technology and the Human Environment, on January 25, 1967, to the President of the Senate, S. Res. 68, 90th Cong., 1st sess., Congressional Record 113: 1508.

[212] Luther J. Carter, "Technology and the Environment: A New Concern on Capitol Hill," *Science* 157 (August 18, 1967):784-786.

meetings.[213] One of the witnesses at the hearings stated that "we need eager, constructive collaboration of the social scientists with the physical scientists, the life scientists and the engineers to find out what really is so in our endless search for the good life."[214] Another witness, Dr. James Shannon, director of the NIH, elaborated on the risk of car accidents, pollution, atomic radiation, and urban living.[215] In addition to the concerns expressed by the expert witnesses, the general public weighed in about the need for attention on the implications of future technology. Muskie included a constituent letter from G. Harry Stine in his introduction, Stine wrote "It is most certainly time that we started serious consideration of future technology in order to assure that it remains a tool to assist human beings rather than a master to whom we are beholden."[216] Such letters were not the only evidence of a growing public interest and concern over the future of technology and its social impacts.

A CBS News series titled "The Twenty-First Century" examined what technology might be possible in the next century and how it might change society. The transcripts of the entire 16-part CBS series were included in the record of the hearings on Muskie's legislation, and demonstrate the interest in anticipating future developments and making predictions of what opportunities and dangers were possible. The series covered topics on technology and engineering, such as communications technologies, automotive and

[213] Harld M. Schmeck Jr., "Mechanized Society is Isolating American Women, Scientist Says," *New York Times* (December 15, 1966).

[214] Congress, Senate, Senator Muskie of Maine, introducing the Resolution to Create a Select Committee on Technology and the Human Environment, on January 25, 1967, to the President of the Senate, S. Res. 68, 90th Cong., 1st sess., Congressional Record 113: 1509.

[215] Congress, Senate, Senator Muskie of Maine, introducing the Resolution to Create a Select Committee on Technology and the Human Environment, on January 25, 1967, to the President of the Senate, S. Res. 68, 90th Cong., 1st sess., Congressional Record 113: 1508.

[216] Congress, Senate, Senator Muskie of Maine, introducing the Resolution to Create a Select Committee on Technology and the Human Environment, on January 25, 1967, to the President of the Senate, S. Res. 68, 90th Cong., 1st sess., Congressional Record 113: 1509.

aeronautical transportation, computers, urban design, and technologies for the home. It also included scientific topics such as atomic research, space exploration, and biomedical research, including genetics and artificial organ research. The series started on January 29, 1967, with an introduction by Walter Cronkite who said that during the multiple episodes they would "explore these promises and these pitfalls" associated with technology.[217]

Conclusion

By the end of 1967, while Harris, Mondale, and Muskie were focusing Senate attention on the applications of scientific, medical, and technological research and their social implications, the public discourse was also growing via the congressional hearings and media attention. Harris's 1966 conference was covered twice by the *New York Times* and also by *Science* magazine. In the *Times* the first article was on the front page and described the increasing congressional involvement in American science and the concern among scientists about this involvement.[218] Later the *Times* reported on a speech given by Dr. Ivan L. Bennett Jr., the science advisor to President Johnson, in which he called for scientists to take responsibility and educate the president and other educated laymen on the applications of their work.[219] *Science* devoted three pages to the conference, describing the talks given by those present and the discussion over basic and applied

[217] The transcripts of the television series are included in Senate Subcommittee on Intergovernmental Relations, Hearings on S. Resolution 68,(itls) 90th Cong., 1st sess., March 15-16, 20, April 5-6, 11, 1967: 341-409.
[218] Walter Sullivan, "Scientists Fear Domination by Politics," *The New York Times*, October 23, 1966, 1.
[219] Walter Sullivan, "Aide Bids Scientists to Educate President on Work," *The New York Times*, October 25, 1966, 71.

research.[220] Senator Muskie's hearings in 1966 and 1967 were also covered by the *New York Times*, *Washington Post,* and *Science* magazine.[221] Harris's 1967 hearings on the Research in the Service of Man also attracted attention, appearing in the *New York Times, Chicago Tribune,* and *Science News*.[222] The *Times* article described the testimony warning of the hazards of speeding up the application of biomedical research, while the *Tribune* emphasized the significance of the hearings despite the numerous other political issues taking center stage.

> A few years from now when, hopefully, Viet Nam, inflation, and Adam Clayton Powell are fading memories, the record of these hearings may mark the first coordinated effort of government and science to study the long-range effects of his environment on the human animal.[223]

In addition, Joshua Lederberg, who had begun his *Washington Post* series on Science and Man in 1966, had his testimony from Harris's hearings excerpted and republished in the weekly magazine the *Saturday Review*, along with that of fellow witness Joseph D. Cooper from Howard University.[224]

In addition to the media attention during this time, activities on campus involving

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[220] D. S. Greenberg, "Biomedical Policy: LBJ's Query Leads to an Illuminating Conference," *Science* 154 (November 4, 1966): 618-620.

[221] Harold M. Schmeck Jr., "Mechanized Society is Isolating American Women, Scientist Says," *The New York Times,* December 16, 1966, 49; Morton Mintz, "U.S. Women Held 'Isolate," *The Washington Post,* December 16, 1966, A5; Luther J. Carter, "Technology and the Environment: A New Concern on Capitol Hill," *Science* 157 (August 18, 1967):784-786.

[222] Evert Clark, "Scientists Warn on Research Uses," *The New York Times*, March 1, 1967, 27; Willard Edwards, "Future of Man is Discussed in Lonely Senate Hearing," *Chicago Tribune,* March 5, 1967, 14; "Uses of Biomedical Research," *Science News* 91, no. 10 (March 11, 1967): 231.

[223] Willard Edwards, "Future of Man is Discussed in Lonely Senate Hearing," *Chicago Tribune,* March 5, 1967, 14.

[224] Joshua Lederberg, "Some Problems," *Saturday Review* (May 6, 1967): 66-70; and Joseph D. Cooper, "More Problems," *Saturday Review* (June 3, 1967): 56-61; both articles were found in the Fred R. Harris Papers, Carl Albert Center Congressional Archives, University of Oklahoma, Norman, OK; for information on the *Saturday Review* see: "Saturday Review of Literature," http://www.things-and-other-stuff.com/magazines/saturday-review.html (accessed on February 18, 2012); and "Saturday Review (U.S. Magazine)," http://en.wikipedia.org/wiki/Saturday_Review_%28U.S._magazine%29 (accessed on February 18, 2012).

faculty and students in programs in Science, Technology, and Society contributed to public awareness and helped foster the interdisciplinary study of science and technology. As congressmen became increasingly aware of how difficult it was to provide oversight on sophisticated new scientific and technological research as well as its social implications, they began to seek ways to inform themselves better, proposing legislation for councils, committees, and social science research.

The congressional activity was led by a group of liberal senators who believed in and supported President Johnson's Great Society and his War on Poverty. While six democratic senators co-sponsored all three pieces of legislation – Harris's National Foundation for the Social Sciences, Mondale's Council of Social Advisers, and Muskie's Committee on Technology and the Human Environment – there were nine more who co-sponsored at least two of those pieces of legislation. And there were fifteen who co-sponsored one of those pieces of legislation and would then go on to co-sponsor Mondale's 1968 legislation calling for a National Commission on Health Science and Society.[225] Harris's role as "Mr. Science" is significant because he focused the Senate's attention on these topics, through his own initiatives and the legislative proposals of Mondale and Muskie and their legislation. Looking back, it is clear that their initiative helped to set the stage in the Senate, because Mondale, too, would focus on interdisciplinarity in his proposed National Commission on Health Science and Society,

[225] See figure 1. The six Senators were: Fred Harris, Walter Mondale, Edmund Muskie, Gale William McGee, Gaylord Nelson, and Daniel Ken Inouye. The nine Senators were Robert Kennedy, Edward Kennedy, Joseph Sill Clark, Michael Joseph Mansfield, Ernest Henry Gruening, Eugene Joseph McCarthy, Joseph Davies Tydings, William Proximire, and Philip A. Hart. The fifteen Senators were Fred Harris, Walter Mondale, Gale William McGee, Gaylord Nelson, Daniel Ken Inouye, Robert Kennedy, Edward Kennedy, Birch Evans Bayh, George Stanley McGovern, Joseph Sill Clark, Ralph Webster Yarborough, Frank Edward Moss, Jennings Randolph, William Proximire, and Philip A. Hart.

which examined the ethical, legal and social implications of biomedicine. The hearings on Mondale's proposed commission would be held in Harris's subcommittee, and Harris would prove to be a big supporter of it saying that he saw it as "a continuation of the Subcommittee's deep interest, dating back to shortly after its creation in 1966, in this important area."[226]

Mondale's proposal would rely on the discussions that were guided and supported by Harris and Muskie and it would build on them to justify and argue for congressional examination of the social implications of biomedicine. The conference and hearings on Research in the Service of Man expanded the discussion on the application of biomedical knowledge into the public discourse and began to engage social scientists and scholars from STS centers. The hearings on the legislation to create the National Foundation for the Social Sciences and the Council of Social Advisers emphasized the importance of social sciences in the examination of areas such as society's interaction with science, medicine and technology. In addition it revealed the Senators' desires to better inform themselves and other policymakers on issues regarding social and science policy. While the hearings on establishing a committee on Technology and Human Affairs reinforced arguments about the need for Congress to be better informed about science and technology and its impacts and echoed the claim that social scientists had a role to play in these discussions, it focused on technology's negative side-effects, including the environmental impacts of technology and the health impacts of pollution. All of these discussions between 1966 and 1967 paved the way for Mondale's legislation, which

[226] Senate Subcommittee on Government Research, Committee on Government Operations: *Hearings on S.J. Resolution 145*, 90th Cong., 2nd sess., March 7, 1968: 3.

coalesced the various discussions occurring in the Senate on biomedical research, social science, and technological impacts. Mondale's ability to manage these issues is evident in the comment by biographer and historian Steven M. Gillon: "Mondale was deliberate and controlled, always calculating consequences before acting...Mondale carefully examined situations, probed for points of compromise, and worked toward common ground."[227] Yet it would require more of Mondale than those qualities to bring about his National Commission on Health Science and Society. It would take planning, persistence, and patience, characteristics that he demonstrated tirelessly over six years in his unsuccessful pursuit to create the Council of Social Advisers and in his eventually successful pursuit of the National Commission on Health Science and Society.[228]

[227] Gillon, *The Democrats' Dilemma,* 85.
[228] Booth, "Social Indicators and the Mondale Initiative," 371-398.

Chapter Three:

Senator Walter Mondale and Congressional Hearings on Health Science and Society, 1968

> Heart transplant operations and genetic breakthroughs, have focused worldwide attention on the awesome implications of advances in medical and biological sciences. These dramatic possibilities, and others perhaps unimagined as yet by most of us, hold great promise for the present and future of mankind. At the same time, they raise profound and complex questions of ethics, law, and public policy— what is life and what is death; who shall live and who shall die; how long shall life be preserved and how shall it be altered; who shall make which decisions; how shall society be prepared?[229]

When Senator Walter Mondale spoke these words before the Senate on February 8, 1968, he began a six-year effort to open up widespread discussion of the ethical, legal, and social implications of biomedical research. In addition to raising questions about biomedical advancements publicly, he also questioned who should have the authority to make decisions on the impacts of biomedical research in society, where the discussions of these issues should occur, what the purpose of these discussions should be, and what topics in biomedical research needed to be discussed. On that day in February, Mondale introduced fresh legislation calling for the creation of a National Commission on Health Science and Society. His argument for the commission would continue in hearings and they, in turn would reveal previously unarticulated concerns of experts and alert a public still not very familiar with biomedicine.

In his introductory speech to the Senate, Mondale proposed the creation of an unprecedented interdisciplinary commission composed of scholars appointed by the

[229] Congress, Senate, Senator Mondale of Minnesota, introducing the Joint Resolution to Establish a Commission on Health Science and Society, on February 8, 1968, to the President of the Senate, S.J. Res. 145, 90th Cong., 2d sess., *Congressional Record* 114, pt. 3: 2623.

President of the United States to study the social implications of and advancements in biomedical research. Such a commission would discuss and make recommendations, including if necessary legislative recommendations to the President and Congress after one year of study. Mondale echoed the previous concerns about building the capacity of Congress to make more informed decisions on legislation regarding biomedical research and technology.

Although Mondale used the title Commission on Health Science and Society, his focus was on the area that had become commonly known as biomedical research. This included a range from scientific medical research, such as research on cancer, immunology, and hematology, to experimental life science research, which included cell biology, embryology, and molecular biology.[230] During the middle of the 1960s there was little if any distinction between the terms biomedical research and health science.[231] This eliding of terms is evidenced when Senator Harris used the term biomedical research while Mondale discussed health science in regard to the same areas of research. Further evidence appears in a 1968 *New York Times* article covering Mondale's proposed commission when the reporter used the term health science interchangeably with the term biomedical research within the same paragraph.[232] To reduce confusion in this chapter, the term biomedical research will be used in place of what Mondale called health science.

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[230] The definition of biomedical research are based on that used and identified in Daniel J. Kevles and Gerald L. Geison, "The Experimental Life Sciences in the Twentieth Century," *Osiris* 10 (1995):97-121; and the shift toward technological and scientifically based medicine is described in Keith Wailoo, *Drawing Blood: Technology and Disease Identity in Twentieth-Century America* (Baltimore: Johns Hopkins University Press, 1997): 1-16; and Harry M. Marks, *The Progress of Experiment: Science and Therapeutic Reform in the United States, 1900-1990* (Cambridge: Cambridge University Press, 1997).

[231] Personal email correspondence from March 8 and 10, 2012 with Charles McCarthy and Constance Foshay Row, legislative assistant to Walter Mondale in 1968.

[232] Harold M. Schmeck, Jr., "Exploring the Role of Health in Society," *New York Times*, April 7, 1968.

Mondale's idea for an independent Presidential-appointed commission and its structure came from the example set by the Presidential Commission on Civil Strife and the President's Health Manpower Commission.[233] Both according to Mondale were good models because they were attached to the President rather than any specific agency or organization, which gave more prestige and visibility to the commissions, and because they had firm links to the general public and public policy by including public testimony, being open to the public, and being tasked with developing a policy solution. Mondale had the closest ties to the Commission on Civil Strife, which was a response by Congress and the President to the riots in cities across the country in the mid-1960s. Mondale and Democratic Senator Fred Harris of Oklahoma suggested the formation of this commission to President Lyndon B. Johnson in 1967 and Harris was later appointed to it.[234] Timely and well-led, this commission produced a bestselling report in 1967 and spurred discussion of solutions to the problems of race in the U.S.[235] It was one of the first presidential commissions in a long line of such commissions that proved such highly focused groups could provide valuable insight and recommendations to policy makers and the president on important issues along with spur national discussion. Thus Mondale's idea for a commission to study the areas of biomedical research was a logical choice considering the influence of the first commission he had proposed. While Mondale thought the independent nature of the Commission on Civil Strife was a useful

[233] Article for Dimensions, Walter F. Mondale Papers, Senatorial Papers, 153.K.12.3B, folder on Articles by Mondale, Minnesota Historical Society, Saint Paul, MN.
[234] Richard Lowitt, *Fred Harris: His Journey from Liberalism to Populism* (Lanham: Rowman & Littlefield Publishers, Inc., 2002).
[235] "The Kerner Commission - 40 Years Later," in *Bill Moyer's Journal*, Public Broadcasting Station, March 8, 2008, http://www.pbs.org/moyers/journal/03282008/profile.html (accessed on May 20, 2012).

model, he also wanted his proposed commission on health science and society to be part of a larger effort started in 1967 by Harris and himself to create a Council of Social Advisers and a National Foundation for the Social Sciences.[236] As the previous chapter showed, Harris and Mondale hoped to create both social science bodies because they wanted to increase the role of social science expertise in public policymaking through federal funding of research and through active participation and advising.

In the years leading up to Mondale's proposal there were a number of incidents connected with biomedicine, such as the thalidomide disaster, the safety concerns with oral contraceptives, and Henry Beecher's publication of abuses in clinical research, which raised questions about the authority and public trust of physicians. Combining with these incidents and in reaction to the recent passage of Medicare in 1965, there was an increasing concern in Congress about the rising costs of health care and the efficiency of biomedical research funding. There were also growing concerns about the current and future impact of science and technology more generally on society. While federal research funding had risen dramatically after World War II, by 1966, the annual rate of increase in federal research funding was declining. As the previous chapter showed, congressional attention began to focus on improving the applied results produced from science without increasing funding, particularly in the case of biomedical research.[237] In addition, in the decades after World War II the image of the trusted scientist eroded in response to growing concerns about the nuclear warfare and the atomic bomb research performed during the war.

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[236] Senate, *Hearings on S.J. Resolution 145*, 3 and 8.
[237] Robert Reinhold, "Scientists Upset by Research Aid Cuts," *New York Times* (June 21, 1968).

For Mondale, introducing his legislation was only the first of many efforts to address the impacts that ever more evident science and scientific activity were having on society. He needed to convince other senators, physicians, biomedical researchers, and the public that there was a need to examine specifically the ethical, legal, and social consequences of biomedical research. Discussion of a commission would inevitably raise other questions: Who had the authority to address these issues? How important was it to include the public in these discussions? Where in the federal government should the discussions be held and even if the federal government was best for such discussions? And what areas of health research needed this careful scrutiny?

Knowing that these questions would have to be discussed and that his legislation would have to be supported by the biomedical researchers and the public for it to pass, Mondale sought expert opinions before introducing his legislation. True to his careful nature, Mondale had written to over two hundred leaders in biomedical research, medicine, philosophy, theology, and law to gauge the reaction to his proposal.[238] After his legislation was introduced and assigned to the Senate Subcommittee on Government Research in 1968, Mondale worked with the chairman of the subcommittee, Senator Harris, to organize hearings. In addition, Mondale wrote articles for publication in various professional and scholarly journals on his proposal and sought out the attention of the public media, managing to get the attention of the "NBC Today Show" and the "CBS Evening News with Walter Cronkite" to cover his proposed commission.[239] Mondale and

[238] For a description of Mondale's character see Steven M. Gillon, *The Democrats' Dilemma: Walter F. Mondale and the Liberal Legacy* (New York: Columbia University Press, 1992): 85.

[239] Questions for the Today Show, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN; Letter from Burton Benjamin, Senior Executive Producer at CBS News to Senator Walter Mondale,

Harris used the hearing and publicity as a means of discussing publicly the questions and issues that Mondale foresaw, in a way, fulfilling some of the goals of the proposed commission. Their effort during 1968 on the proposed National Commission and the response to it among physicians, researchers, and scholars are the focus of this chapter.

The first part of this chapter describes Mondale's intentions and his methods, with Harris, as they argued for the new commission. The second part of the chapter details the events at the hearings and describes the range of views on Mondale's proposed legislation. The final part analyzes the responses from those in biomedical research and those in law, philosophy, theology, the social sciences, and the government, by detailing key themes, concerns, and confusions regarding bioethical discussions that came up in the hearings and in letters to Mondale and Harris. The discussion proved to be thoughtful, informative, contentious, and productive. Ultimately, Mondale and Harris identified many key ethical issues with biomedicine in the public sphere, involved scholars from other fields besides medicine, and proposed a structure, function, scope, location, and membership for subsequent action. These ideas would be incorporated into the developing field of bioethics and ultimately into the first federal bioethics commission, namely the National Commission for the Protection of Human Subjects in Biomedical and Behavioral Research, created in 1974.

The Impetus and Intent

Mondale sent out his two hundred letters to the leaders in the medical, scientific,

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January 11, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.K.7.2F, folder on Health and Welfare 3: Health Commission 1, Minnesota Historical Society, Saint Paul, MN; Mondale wrote articles for the *Hennepin Lawyer*, the *American Medical Women's Association*, *The Visitor*, and *Dimensions*, see Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society and 153.K.12.3B, folder on Articles by Mondale, Minnesota Historical Society, Saint Paul, MN.

religious, philosophical, legal, and social science fields on January 10, 1968, asking them for their reactions to his proposal to form a commission on health science and society. The letters were brief and standardized and included a two page description and justification of the proposed commission's scope and membership.[240] The replies to his letter gave him feedback on the commission's structure, function, and membership, and helped him identify potential supporters and opponents.

David J. Rothman and Albert R. Jonsen, in their books *Strangers at the Bedside* and *The Birth of Bioethics,* respectively, have identified the first successful human heart transplantation as an impetus for Mondale's proposed legislation.[241] The surgery was performed by Dr. Christiaan Barnard on December 3, 1967 in South Africa, a little over a month before Mondale wrote his letters. There was public optimism for this medical breakthrough but also concern. Newspaper coverage of the event focused initially on the remarkableness of the operation but within days had turned to describing the risk of immune system rejection and the rising ethical and legal questions of donation.[242] Part of the quick shift from celebratory to critical or cautious enthusiasm was the poor survival rate of the patients and the many physicians who were publicly expressing a need for

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[240] Senator Walter F. Mondale to James A. Shannon, January 10, 1968, Office of the Director Central Files, 443, Box 78, Folder 5, National Archives and Record Administration, College Park, MD; Senator Walter F. Mondale to Frederick Seitz, January 10, 1968, Folder on Subcommittee on Mondale Resolution, Board of Medicine Collection, National Academies Archive, Washington, D.C.

[241] Rothman gives more credit to the heart transplantation, asserting that it "fueled" Mondale while Jonsen asserts that heart transplantation was just one of the issues that motivated Mondale. See, David J. Rothman, *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making* (New York: Basic Books, 1991): 168; and Albert R. Jonsen, *The Birth of Bioethics* (New York: Oxford University Press, 1998): 90-91.

[242] Joshua Lederberg, "Moribund Patient's Trust Is at Stake," *Washington Post,* December 10, 1967; "Affairs of the Heart," *Washington Post,* January 17, 1968; Edwin Diamond, "Are We Ready to Leave Our Bodies to the Next Generation?" *New York Times Magazine*, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

caution. By January 11, 1968, five patients had had a heart transplant but only two were still alive.[243] Beyond the issues with the recent heart transplantation, there were still unresolved problems with organ and tissue transplantations more generally. Immune system rejection was the largest problem and continued to be despite transplantation surgeries becoming relatively routine procedures in select hospitals across the country. Mondale used organ transplantation as one of many examples to describe the need for his commission. He asserted that an interdisciplinary team could best address such complex issues as transporting organs across state lines, clarifying murder laws to allow physicians to remove life sustaining organs such as hearts, redefining death away from the heartbeat, requiring consent in donating organs, and establishing a just distribution of these limited resources.

Mondale also identified the artificial production of DNA as a potential issue for consideration. In 1956 a group of genetic researchers led by Arthur Kornberg at Washington University artificially synthesized DNA using an enzyme they had discovered in cells, earning Kornberg a Nobel Prize in Physiology or Medicine in 1959. By 1968 increased knowledge about genetics and genetic diseases fueled interest in the burgeoning specialization of genetic counseling. For Mondale and for some journalists, these developments in genetics raised questions about researchers' potential future ability to alter the bodies and minds of men and women at will and manipulate "life" using genes.[244] Mondale was also concerned about the potential use of genetic testing to

[243] "Medicine's Long Road," *New York Times,* January 9, 1968.

[244] Senator Walter F. Mondale to James A. Shannon, January 10, 1968, Office of the Director Central Files, 443, Box 78, Folder 5, National Archives and Record Administration, College Park, MD; Joseph Wood Krutch, "Is Life Just a Chemical Reaction," *Saturday Review*, May 4, 1968; Walter F. Mondale

determine criminal predisposition and its use in courtrooms.[245]

While Mondale highlighted organ transplantation and genetics, his purpose for the commission was much larger than just those two topics. He identified five additional areas of interest: behavioral control; human experimentation; public education; professional training; and the interrelationship of basic science research and the application and distribution of treatment. While heart transplantation was taking the spotlight, Mondale wanted to emphasize that this commission would help evaluate procedures yet untried and the application of new scientific knowledge. He intended to create a proactive public commission that would anticipate issues with biomedical research.

According to Mondale's proposal, the commission would be housed in the federal government and be responsible to both the president and Congress. It would examine "the legal, social, and ethical implications of health science research and development." It would "make the widest possible use of materials already developed by governmental agencies and private groups and individuals." It would make its way "to the people through regional and local discussions at widely scattered points of the country" for the purpose of involving and educating them. The legislation also specified more general responsibilities including "setting goals, suggesting programs, recommending priorities, suggesting legislation, and formulating models for the evaluation of our national health

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Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

[245] Article for the *Hennepin Lawyer*, 1969, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

science effort within the context of the needs of society as a whole."[246]

Mondale's legislation was deliberately broad and vague. It did not specify exactly which topics the commission would study, what the commission would produce, or how the membership of the commission should be constituted. Mondale and Harris used the hearings to spur discussion and derive a consensus on how to handle the ethical issues within biomedical research and to address the issues that emerged as most important.[247] Mondale also hoped the hearings would serve as a resource for scholars and the public on the social implications of upcoming advancements in biomedical research.[248]

In Mondale's introductory speech to the Senate he posed fundamental questions: What is Life? What is Death? Who Shall Live? Who Shall Die? and, How Shall the Public Education Take Place? His focus on philosophical questions rather than on specific areas of biomedical research emphasized the importance of identifying fundamental issues as well as specific problems.[249] He asserted that advances in

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[246] Senate, Senator Mondale introducing the Joint Resolution, 2625. These ideas have their origin in the ideas and goals discussed in Harris subcommittee on government research in 1966 and 1967 and in prior Senate and House discussions. See chapter 2 of this dissertation for more details.

[247] Judge David Bazelon, the Chief Judge of the U.S. Appeals Court in Washington D.C., noticed that there was a purpose for the hearings besides getting the legislation passed. "Our task is to find the decisionmaking [sic] process by which these standards [on human experimentation] may be evolved. In particular I think we should focus on the roles which the experts, on the one hand, and the public on the other, should play in the decisionmaking [sic] process." See: Congress, Senate, Subcommittee on Government Research, *Hearings on S.J. Resolution 145*, 90th Cong., 2d sess., March 7-8, 21-22, 27-28, April 2, 1968: 275.

[248] Mondale called it a resource in his article for *Dimensions*, Walter F. Mondale Papers, Senatorial Papers, 153.K.12.3B, folder on Articles by Mondale, Minnesota Historical Society, Saint Paul, MN; In addition to Mondale, Joshua Lederberg would also call the hearings a resource and requested copies of the hearings to use in a class on he was teaching on Biology and Health Affairs; unfortunately for Lederberg all the copies produced had already snatched up by other members of the public and Congress: National Library of Medicine, Joshua Lederberg Papers, box 49, Letter to Mondale from Lederberg September 2, 1968.

[249] When Mondale introduced his legislation he had sixteen co-sponsors from the Democratic Party in the Senate. While he did not have bipartisan support, his co-sponsors included some of the most powerful Democratic Senators in Congress. They included Senators Edward Kennedy from Massachusetts, Robert Kennedy from New York, and Fred Harris from Oklahoma, the chair of the subcommittee

biomedical research were granting "men more and more power in matters of life and death" and, moreover, that oversight of these powers required a public and interdisciplinary discussion. Mondale wanted to forestall the view that he was against biomedical research by emphasizing that the commission would deal with the *implications* of the research not the science or medicine being done. To reassure researchers that he was actually supportive of basic science, Mondale stated explicitly that the commission was not intended to interfere with research agendas.[250]

In addition to stating he was not anti-science, Mondale quoted the opinions of those who had written positive responses to his January letter.[251] Mondale recognized that the advancements in organ transplantation and genetics were double sided. Such research had potential for health and medical benefits; however, as Mondale put it, they also "raise profound and complex questions of ethics, law, and public policy."[252] To emphasis his point Mondale quoted Barry Commoner, a biologist at Washington University as saying "the real question is not *whether* we should use our new knowledge, but *how* to use it."[253] To Mondale, Commoner represented a prescient leader in science and medicine who was aware of the dual impact of science and was ready to address the questions surrounding

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where the hearings on Mondale's legislation were held. The remaining co-sponsors were George McGovern from South Dakota, Robert Byrd from West Virginia, Philip Hart from Michigan, Gale McGee from Wyoming, Gaylord Nelson from Wisconsin, Joseph Clark from Pennsylvania, Daniel Inouye from Hawaii, William Proxmire from Wisconsin, Birch Bayh from Indiana, Frank Moss from Utah, Jennings Randolph from West Virginia, Harrison Williams from New Jersey, and Ralph Yarborough from Texas.

[250] Mondale said: "The purpose underlying the commission's functions is not to interfere with medical research. Indeed it is to encourage it, but also to be sure that the moral and social implications of the products of such research are fully and responsibly considered and dealt with." See: Senate, Senator Mondale introducing the Joint Resolution, 2625.

[251] Mondale quoted Dr. William A. Nolen of the Litchfield Clinic in Minnesota, Dr. Joseph T. English, the Acting Director of Health Affairs for the Office of Economic Opportunity, and Dr. Michael DeBakey, a famous cardiac surgeon from Baylor College of Medicine in his speech.

[252] Senate, Senator Mondale introducing the Joint Resolution, 2623.

[253] Senate, Senator Mondale introducing the Joint Resolution, 2623.

the use of scientific knowledge.[254]

While some in biomedical research and most in Congress believed that the ability to transplant organs and modify genes granted new powers to physicians and researchers, there was considerable disagreement over who should manage the potential dangers this technology posed. Knowing that some researchers and physicians in biomedical research had argued that they were the most qualified to handle the implications of these advancements, Mondale spent considerable time addressing this issue. Of the nine columns of text that Mondale wrote for the introduction of his legislation, five examined the question of who had the authority and right to make decisions about the use of research outcomes.

Mondale detailed the potential claims for participation of four cohorts: physicians, patients, society, and lawmakers. Reviewing physicians' claims first, Mondale emphasized the range of reactions and identified problems the medical profession was having with handling the ethical issues of transplantation.[255] He pointed out that the Hippocratic Oath was too vague to guide physicians in decisions on transplantation because removing an organ for donation might or might not violate the "do no harm" phrase that had become the shorthand summary of the oath. He quoted physician William A. Nolen from the Litchfield Clinic in Minnesota, describing the yet unresolved problems surrounding the definition of death that arose in his work on transplantation at the Hennepin General Hospital. Nolen observed, "The point is that confusion reigns even in a

[254] Commoner's work focused on plant physiology and on environmental impacts. Starting in the late 1950s Commoner became a vocal activist against nuclear testing and wrote books about the ecological impacts of above ground testing.

[255] Mondale said "the shades of opinion in the profession have ranged from caution to enthusiasm." See: Senate, Senator Mondale introducing the Joint Resolution, 2623.

center where kidney transplants are frequent. Policies are established but on uncertain grounds."[256]

Continuing with his examination of physicians' handling or lack of handling of ethical and social issues, Mondale raised a point regarding donors and recipients in transplantation. He strategically used the commentary of religious leader, Rabbi Bernard S. Raskas of Saint Paul, Minnesota. Raskas wondered about the ethics of using a black man's heart for the benefit of a white man in a country that practiced segregation outright, like South Africa. His observations undoubtedly reflected the contemporary social and political circumstances in the United States, which was in the middle of a civil rights battle.

> Is it all right to have the heart of a Negro inside you, beating for you, giving you life, but not all right to have him live next door?...Is it perfectly permissible to use the kidneys of Negroes for one's welfare, but then to deny them the rights of employment, the opportunity to better their minds through education and to reject their right for the pursuit of happiness?[257]

Mondale's speech reflected the view that physicians needed help on broader ethical and legal issues with biomedicine, but he was careful to be clear that there was no question that the medical profession had specialized expertise. Rather, he argued that responsibility for ethical and social issues within medicine should not solely reside with doctors. Mondale pointed out that the field of medicine was divided on the question of authority in ethical and social issues, noting:

> There seems to be a split in the medical profession between those who feel that these problems, which I think everyone concedes exist, should be the domain exclusively of the profession, and those who believe that the

[256] Senate, Senator Mondale introducing the Joint Resolution, 2623.
[257] Senate, Senator Mondale introducing the Joint Resolution, 2623.

> profession must be fundamentally involved, but there are other disciplines and other kinds of advice and counsel which should have a bearing.[258]

Mondale emphasized his point by quoting Dr. G. S. Schuster of the Mayo Clinic:

> The social, moral, ethical, legal and other aspects to new advances in medicine and surgery are recognized here as transcending the purely medical and scientific. Problems are now being confronted in which advanced medical practitioners need, require, and will welcome support and aid of other disciplines.[259]

This argument about the medical profession not having sole authority would be one of the most heatedly discussed topics during the hearings, with a few vocal opponents and many supporters from the medical profession.

Mondale further argued that patients and families also had a place in these discussions. Patients, as a group, had only in the last twenty years begun to gain more rights in medical decision-making through informed voluntary consent.[260] From the creation of the Nuremberg Code and continuing through the 1960s, discussions persisted in conferences, among physicians, within the National Institutes of Health's (NIH) Clinical Center, and in the American military, about just how "informed" and how

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[258] Senate, *Hearings on S.J. Resolution 145*, 100.

[259] Senate, *Hearings on S.J. Resolution 145*, 101.

[260] Following World War II and the trials of Nazi Doctors, the standard of informed consent, as defined by the court in the Doctor's trial and known as the Nuremberg Code, was slowly and sporadically adopted by those in the medical profession and those in the military medicine. See Jay Katz, "The Consent Principle of the Nuremberg Code: Its Significance Then and Now," in *The Nazi Doctors and the Nuremberg Code: Human Rights in Human Experimentation*, ed. by George J. Annas and Michael A. Grodin (New York: Oxford University Press, 1992); Paul Weindling, "The Origins of Informed Consent: The International Scientific Commission on Medical War Crimes, and the Nuremberg Code," *Bulletin of the History of Medicine* 75, no.1 (2001):37-71; Jonathan D. Moreno and Susan E. Lederer, "Revising the History of Cold War Research Ethics," *Kennedy Institute of Ethics Journal* 6, no. 3 (1996): 223-237; Susan E. Lederer, "Research Without Boarders: The Origins of the Declaration of Helsinki," in *Twentieth Century Ethics of Human Subjects Research: Historical Perspectives on Values, Practices, and Regulations*, ed. Volker Roelcke and Giovanni Maio (Stuttgart: Franz Steiner Verlag, 2004), 199-217; and Ruth R. Faden and Tom L. Beauchamp, "Part II. A History of Informed Consent," in *A History and Theory of Informed Consent* (Oxford: Oxford University Press, 1986).

"voluntary" consent needed to be.[261] To Mondale this principle demonstrated that patients and their families had a right to be involved in their own medical decisions. This was especially relevant to organ transplantation, which had raised the question of what was meant by "informed consent" again and "in a more dramatic context."[262] For example he wondered how someone suffering from grief can make an informed and fully voluntary decision and whether such decisions, made during a time of stress, would later be regretted.

Just as Mondale had argued that patients and families had a right to be involved, he also suggested that the larger public also had reasons to be engaged in discussions about the implications of biomedical research. How health care funding should be spent, which medical treatments should be emphasized, and how biomedical advancements should be included in the economy—on such topics Mondale believed that "society at large," composed of Congress, scholars, and the public, had a social and economic investment. Thus he proposed that the commission be charged to "analyze and evaluate, through the use of seminars and public hearings and other appropriate means, public

[261] It was only in 1966, two years prior to Mondale introducing his legislation, that the National Institutes of Health (NIH), under the Department of Health, Education and Welfare, stipulated that informed consent was required for research on human subjects. But even then there was no clear definition of what was meant by informed consent and there would not be until the mid 1970s when standards were set for all research being funded by the Public Health Service. Outside the federal government the World Medical Association took action in 1966, creating their first policy on human experimentation. This policy, know as the Declaration of Helsinki, was crafted out of a need to have a human experimentation policy that was more realistic and practical for researchers than the very restrictive Nuremberg Code. The Declaration of Helsinki allowed physicians to waive informed consent in some cases and to get informed consent from family members or friends of the patient if the patient was unable. See: Lederer, "Research Without Boarders: The Origins of the Declaration of Helsinki," 199-217.

[262] Senate, Senator Mondale introducing the Joint Resolution, 2623.

understanding of and attitudes toward such implications."[263] He included in his presentation a list of the expected accomplishments from such a commission, which included Public Education, Stimulation of Public Interest, and Fostering Development of a More Representative Process of Decision-Making. He elaborated on the final item, stating that this "more representative process" was one

> in which all segments of society could participate in recommending public policy in health research and medical care, now and in the future. This would include establishing an appropriate role for the health specialist, but also a role for others, including the public policy maker and the public at large.[264]

To achieve this more representative process Mondale proposed interdisciplinary membership for his proposed commission, including members who represented the interests of society.

In his testimony at the hearings he emphasized that the public, including ordinary citizens, had the right to participate in discussions of biomedical research. Borrowing the language and example of nuclear research, he said the commission would, "among other things, explore the moral and social implications of the *fallout* of modern medical research."[265] Public anxiety about nuclear weapons that was pervasive since the 1940s, reinforced Mondale's opinion that biomedicine needed the social oversight that nuclear research should have had. He stated this directly in his testimony when he compared

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[263] Senate, *Hearings on S.J. Resolution 145,* 2; Also see: Congress, Senate, Subcommittee on Health, *National Advisory Commission On Health Science and Society: Hearings on S.J. Res. 75*, 92nd cong., 1st sess., November 9, 1971; Congress, Senate, Subcommittee on Health, Committee on Labor and Public Welfare, *Quality of Health Care--Human Experimentation, Part 1-3*, 93rd Cong., 1st sess., February 21-23, March 6-8, 1973.

[264] Commission on Health Science and Society outline, Walter F. Mondale Papers, Senatorial Papers, box 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, St. Paul, MN.

[265] Senate, *Hearings on S.J. Resolution 145*, 4.

biomedicine to society's experience with the atomic bomb.

> Mr. Chairman, this society is in a constant race to keep up with advancing technologies, understand them, and see that they are put to constructive use. We have been too late, too secret, and too superficial in too many cases.
>
> One of the results is the terror of automation-produced unemployment. Another is the terror of nuclear holocaust.
>
> A third might be the terror of a brave new world. But in this case we have an opportunity for previous, public, and penetrating examination of the implications of the developing technology in health science.
>
> These new developments are as dramatic as the dawning of the nuclear age. And some of them, like genetic manipulation and behavior control, are potentially as dangerous. Their potential benefits to human physical and mental health are tremendous, of course. But our experience with the atom teaches us that we must look closely at the implications of what we do.
>
> It is not only a matter of living or dying, but also a matter of the quality of life that we sustain or control.[266]

Mondale sought a proactive public effort to examine biomedical research as an anticipatory process rather than a retrospective one. If the public now demanded a say in the control of nuclear research and weapons, as Mondale indicated was justified, then he rhetorically wondered why biomedical research was any different.[267]

In Mondale's opinion, the cohort with the final claim to authority was lawmakers and "the Law." He argued that federal and state laws were already stipulating oversight of physicians and researchers based on policies proposed by lawmakers and lawyers in the state and federal governments, the most prominent of which was the proposed Uniform Gift of Tissues Act. Thirty-eight states had already passed tissue donation statues, some of which limited the tissue donation to eyes only or ignored the option of

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[266] Senate, *Hearings on S.J. Resolution 145*, 5.

[267] Mondale repeated this tactic of drawing comparisons between nuclear weapons research and biomedicine in numerous articles and speeches. Walter F. Mondale Papers, Senatorial Papers, Minnesota Historical Society, Saint Paul, MN.

donation to tissue banks.[268] Mondale also detailed the problems with existing laws that put physicians at risk of being charged with the mutilation of a body or violating the property rights to a body.[269] For Mondale organ transplantation was just one of the current issues where the law and biomedical research intersected. He anticipated that other rapidly developing areas of biomedical research would soon cross paths with the law, particularly genetics research and cell biology. The possibilities of being able to alter genes and to diagnose diseases and behavior based on genes raised continuing ethical questions about eugenics and "perfecting the race" as well as legal issues about the rights of individuals as patients.[270] Here, too, Mondale identified that informed consent would be of critical importance.

Mondale's concluding remarks to the Senate made the case for why a federal commission was needed to address these ethical and social issues, even through physicians and researchers were already exploring the social aspects of certain areas of biomedical research. Indeed, theologians, philosophers, sociologists, and lawyers were increasingly being consulted by biomedical researchers and physicians.[271] Moreover, journalists were revealing the advances in biomedical research through newspapers,

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[268] Senate, Senator Mondale introducing the Joint Resolution, 2624.

[269] Senate, Senator Mondale introducing the Joint Resolution, 2624; In addition to the legal concerns described in his introductory speech, Mondale described in detail the legal implications in a speech he wrote for an Intercollegiate Symposium on April 23, 1968. Remarks of Senator Walter F. Mondale Intercollegiate Symposium, April 23, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN; He also wrote about the legal issues of organ transplantation in "The Legality of Transplants," *The Visitor*, March 3, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN; The legal concerns with organ transplantation were also described in two newspaper articles: "A Legal Complication," *New York Times*, May 8, 1968; and "Third Houston Transplant Doing Well," *Washington Post*, May 8, 1968.

[270] Senate, Senator Mondale introducing the Joint Resolution, 2624.

[271] See chapter 1 and chapter 2.

magazines and television news. Mondale sought through his commission to integrate and encourage interdisciplinary points of view in a more comprehensive way and in a public arena where the ethical and social issues could be addressed in more depth than in the media. The commission's discussion would then inform and involve Congress and the public in order to develop solid public policy.[272] Mondale argued:

> Taken together, these efforts represent a significant beginning. But something more is needed. The right information is not getting into the proper channels. Many issues remain undiscussed. And many American citizens, including Congress and the President, have yet to become involved and informed.[273]

In both Mondale's January letter, and in his speech to the Senate, he emphasized that the commission would provide open public discussions of the social implications of not just organ transplantation and heart transplantation, which happened to be currently capturing the public's attention, but also the whole field of what he was calling health science.

Many of Mondale's goals were shared by his colleague and subcommittee chairman, Senator Fred Harris, but their point of view and approaches differed somewhat. Harris's early efforts serving as chair of the Senate Subcommittee on Government Research emphasized the need to pay closer attention to the effects of federally funded science research. When Mondale's legislation was introduced in 1968, Harris sought credit and claimed these new hearings as "a continuation of the Subcommittee's deep interest, dating back to shortly after its creation in 1966, in this important area."[274] Given the two Senators' similar views and collaboration, Harris opened the 1968 hearings to

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[272] Mondale emphasized the lack of consideration of public policy implications in his article for *Dimensions*, see Article for Dimensions, Walter F. Mondale Papers, Senatorial Papers, 153.K.12.3B, folder on Articles by Mondale, Minnesota Historical Society, Saint Paul, MN.
[273] Senate, Senator Mondale introducing the Joint Resolution, 2624.
[274] Senate, *Hearings on S.J. Resolution 145*, 3.

create Mondale's commission by stating his support of the legislation and identifying its usefulness.

Senator Harris was not as assertive as Mondale had been in pointing out the potential problems with the advancements in biomedicine. Instead Harris focused on the rapidity of new developments. He argued that the proposed commission and these hearings could help find

> ways to strengthen our support of biomedical research and development and at the same time to learn how to make wiser decisions concerning the use of new knowledge so that the fruits of research are fully realized while the rights of man are not diminished and social and moral imperatives are not overlooked.[275]

Harris knew that it would be imperative to get agreement from physicians and researchers in his effort to provide more federal oversight of their work. He also very carefully pointed out that the Senate had the authority and indeed the responsibility to look into this issue. He noted,

> [the] large-scale Federal support for biomedical research through funds appropriated by the Congress make it incumbent upon us to consider matters relating to the public interest. The social, economic, and legal consequences of biomedical research involve the responsibility of the Government, Federal, State, or local.[276]

Unlike Mondale, Harris avoided any mention of the negative consequences from the recent advancements in biomedical research. In Harris' introduction, genetics research held the promise of changing the character and quality of life, and the advances such as kidney transplants, heart valve transplants and kidney dialysis were all discussed as life-sustaining treatments.[277] Whereas Mondale described these advancements as fraught with

[275] Senate, *Hearings on S.J. Resolution 145*, 4.
[276] Senate, *Hearings on S.J. Resolution 145*, 4.
[277] Senate, *Hearings on S.J. Resolution 145*, 3.

social and moral problems that needed the help of the government and those outside of medicine and research, Harris was careful to sustain the support he had established with the scientific community, perhaps because his future work in his Subcommittee depended on mutual respect and its collaboration. Harris was playing to the constituency of researchers and physicians, while Mondale was emphasizing those that shared his concern about negative impacts while continuing to credit the researchers for their innovations.

The Debate over the Commission

The hearings on Mondale's proposal took seven days and were held over a three-month period starting in March of 1968. While the second day of the hearings revealed strong opposition to Mondale's proposal, the first day and the remaining days of the hearings were designed to demonstrate general support outside and inside biomedicine. Testimony described in this section is from the first two days of the hearings and it demonstrates the range of views on and contention over the proposed commission. The first two days included influential members of science and medicine who had something to lose if their research was criticized or regulated. Mondale knew that some in the opposition viewed any "consideration of the social implications of medical research as an attempt to interfere with the magnificent progress in this field."[278] Indeed, some physicians and scientists viewed the proposal as a challenge to their autonomy that would slow down or regulate their research and these concerns would persist among opponents. Supporters agreed that public involvement needed to occur, that the discussions and topics required interdisciplinary attention, and that outcomes from discussion needed to

[278] Senate, Senator Mondale introducing the Joint Resolution, 2625.

inform policy makers; inevitably, even supporters had specific suggestions for modifying the legislation. Ultimately, the contested and complex views expressed in the hearings reveal why the proposal was not immediately adopted despite general agreement that the social implications of biomedical research needed to be addressed.

John S. Najarian testified on the first day of the hearings. He had been appointed Chairman of the Department of Surgery at the University of Minnesota in 1967. He was a leader in organ transplantation, specifically kidney transplants, and had previously worked at the University of California at San Francisco. When Mondale introduced Najarian he pointed out that the prominent physician was Chairman of the department that trained Christiaan Barnard, who had just performed the first human heart transplant in December of 1967 and would testify the next day. Powerful and visible, Najarian's prestige within the medical profession was significant and Mondale and Harris knew his opinion would be influential.

Najarian described Mondale's proposal as a "very thoughtful, timely, and provocative statement."[279] He acknowledged that the problems Mondale had identified with organ and tissue transplantation were real and significant. He testified that even though the medical profession was examining these issues, the proposed commission could provide a valuable service for establishing a uniform law on procurement, setting priorities and recommendations for funding of research in this area and for coordinating between various federal agencies. While he was supportive of open public discussion, he was not comfortable with relinquishing complete authority to scholars from outside medicine, which was a slight misperception of Mondale's proposal, and insisted that

[279] Senate, *Hearings on S.J. Resolution 145,* 470.

groups of physicians could share the responsibility.[280] Najarian also argued that university teaching hospitals had sufficient "social conscience" to be able to address the ethical issues with transplantation on their own without federal regulations. He thus expressed two common concerns with the legislation: that it would challenge physician authority and that the federal government would interfere in medical matters. Yet one of the reasons he was "very very firmly for this resolution" was because the innovations and procedures were eventually going to be expanding beyond socially conscious university teaching hospitals and would then need federal regulations.[281]

The hearings on the second day were held without Senator Harris. Very early on the morning of the hearings Harris's mother had suffered a stroke, and he flew home immediately. He left Senator Abraham A. Ribicoff to chair the hearings. Ribicoff was a democratic Senator from Connecticut who had been elected five years earlier. Although he was not a co-sponsor of Mondale's legislation, he was supportive of Mondale's proposal and defended it against some of those who testified that day.[282] Mondale aggressively questioned the witnesses who disagreed with him, and the debate garnered considerable media attention. Unfortunately for Harris and Mondale the media emphasized the views in opposition rather than the views in support of the legislation, likely because of the stature of those who were expressing those opinions.

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[280] Senate, *Hearings on S.J. Resolution 145*, 470-472.

[281] Najarian's belief that the ethical standards of university teaching hospitals was higher than other institutions was also shared by the National Academy of Science's Board on Medicine, as evidenced by their report in response to the recent human heart transplantation. See "Board of Medicine Recommends Criteria for Heart Transplants," News from the National Academy of Sciences, Office of the Director (OD) Central Files, Folder on Medical legal Aspects of Tissue Procurement & Organ Donation, 1967-1976, National Archives and Records Administration, Washington, D.C.; Senate, *Hearings on S.J. Resolution 145*, 15.

[282] Senate, *Hearings on S.J. Resolution 145*, 46-48.

The first witness was Arthur Kornberg, the head of the department of Biochemistry at Stanford University School of Medicine, whose work focused on genetic chemistry and DNA. Kornberg testified about the state of genetic research, detailing the recent research creating synthetic viral DNA, and argued that there were no current ethical and legal issues that needed attention by the proposed commission. Senator Ribicoff questioned him about the consequences of genetics research and about scientists' responsibility for the results of their research, pushing Kornberg to admit that the potential social consequences, while unknown, could be problematic as well as useful. He was successful in getting Kornberg to acknowledge that there might be future issues with genetics, but the scientist argued they were too far off to warrant consideration at that time.

When Mondale questioned Kornberg, he asked why, if Kornberg agreed that the public needed to know more and that scientists had a role to play, he was not in full support of the proposed commission. Kornberg commented that he wished

> there were some assurance [sic] that the deliberations of the proposed commission would immediately dispense with unnecessary extrapolations and focus quickly on what a great opportunity we have now to expand our basic knowledge to make it of greater service to man.[283]

Mondale then asked what made him think that the proposed commission was not going to do just that. Kornberg expressed concern about the expertise on the commission and the likelihood that its actions would interfere with research:

> Without knowing what they would do, there is legitimate concern for what might come out of it. But I am really not fearful at all, if I were assured that this would be a searching and thorough inquiry by able people with sufficient time to do the job. But the charge, as I read the resolution, is so

[283] Senate, *Hearings on S.J. Resolution 145*, 52.

> broad that I cannot conceive of any group being educated and thoroughly informed in all the aspects that will concern this Commission. I guess I would have to confess that the need for an aggressive research effort seems so obvious to me that I do not see why we do not go on with it.[284]

In the end Kornberg seemed to support a commission specifically defined and staffed with adequately educated people. He acknowledged its potential to educate the public, to identify research areas of important public health goals, and to give scientists a place to engage in these discussions. Reinforcing his testimony, Kronberg subsequently wrote to Mondale explaining that he would fully support the proposed commission to study and create guidelines for the social, ethical, and legal issues with research on humans.[285]

Joshua Lederberg, a prominent geneticist at Stanford University School of Medicine and recipient of the 1958 Nobel Prize in Physiology and Medicine, also testified that day. Distinct from most other researchers and physicians, he was already active in public discussions of science. He used his weekly column in the *Washington Post*, titled "Science in Man," to comment on advances in and social implications of biomedical research. Lederberg was among a growing number of scientists who believed they had a social responsibility to consider the social implications of their work and alert the public of these potential implications, both positive and negative. His support was thus very significant for Mondale.

Earlier, on January 16, 1968, Lederberg had responded critically to Mondale's letter regarding the proposed commission. He felt that Mondale had overdramatized the issues with genetics. He was also concerned with the breadth of the commission and its

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[284] Senate, *Hearings on S.J. Resolution 145*, 52.

[285] Letter from Kornberg dated March 11, 1968 published in *Drug Research Reports* (March 20, 1968): 18 in Henry K. Beecher Papers, Box 12, Folder 21, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

emphasis on genetics. "There is no doubt that these prospects deserve careful and thoughtful consideration," Lederberg argued, "but I believe the issues are no more profound than those that are involved in the guidance of the child's mind through the process of education and the changing of people's minds through the use of mass media." Yet four days later, on January 20, Lederberg wrote in support of Mondale's proposed commission focusing on one area of research in his column for the *Washington Post*:

> This perception of the importance of biological discovery for human welfare is utterly commendable. My criticisms of the proposal have to do only with its huge scope… Instead of tackling so many issues at once, why not concentrate on the one most immediately at hand and investigate what Federal legislation might lead to the most orderly development of a rational, socially fruitful use of organ transplantation?[286]

His support came from his changing awareness of the goals of the commission, but it did not lesson his concern about its ambitious scope.

For Lederberg the main issue with the proposal was its short life span and its broad topical mandate. He suggested that, with just a year to conduct its work, the commission should examine areas of bioethical concern in the future, using a method that paid particular attention to democratic ideals. Lederberg pointed out that some concerns were already being addressed through the Subcommittee on Government Research, which held public hearings dealing with scientific research. Overall, Lederberg did agree with Mondale on the need for such conversations and on the range of experts who might make a contribution.

Lederberg returned to the Senate on March 28 to refine his testimony after seeing how his initial testimony was interpreted by the press. He stated then that his initial

[286] Senate, *Hearings on S.J. Resolution 145*, 68-69.

concern with the broadness of the commission's task was now no longer pertinent after listening to others testify. He then proceeded to correct the media's perception of his opinion:

> I was surprised to be charged with being opposed to inquiry, with professionalism, and with the belief that experts should make decisions that might affect the deepest public interests. Far from it. I favor the inquiry, but I believe it should be a continuing process, not confined to a 1-year term, and I am especially gratified at the present hearings and the interest they help to focus on central problems in biology and medicine. I am opposed to premature closure of inquiry...There is unanimous agreement that such a commission could perform many constructive tasks.

Lederberg proceeded in his second round of testimony to list the areas of biomedical science and medicine that urgently needed investigation. At the conclusion of his testimony, Senator Harris directly asked if Lederberg supported the passage of the legislation. He responded that with the addition of his suggestions for a longer term and a focus on the areas that he had just described that he would surely favor it.

After Joshua Lederberg's testimony the sub-committee recessed until 5pm that Friday. When the sub-committee came to order, Senator Ribicoff was still presiding but he was now joined by Senators Mondale, Karl E. Mundt (R-South Dakota), and Carl T. Curtis (R-Nebraska). The Senators were not the only ones eager to see the testimony of the next expert. Senator Ribicoff commented at how remarkable it was that the room was so full of press and television personnel on a Friday afternoon. This much anticipated witness was Dr. Christiaan Barnard, the South African surgeon who had completed the first human heart transplant in December, just three months earlier.

Barnard was there with his colleague and teacher Owen Wangensteen from the University of Minnesota, where he had received his Masters of Surgery and his Ph.D.

Both were there to testify on Senator Mondale's proposed legislation and both would provide the most intense opposition to the Minnesota Senator's proposal. Barnard and Wangensteen's views represent the extreme end of a continuum that stretched from enthusiastic support to downright objection. Barnard began his testimony by stating that he was only prepared to express an opinion on the proposed commission from the perspective of his own field of organ transplantation and would thus restrict his testimony to that area. His rationale was that he was not an expert in other areas and thus not qualified to talk about them. This comment emphasized the importance Barnard gave to qualifications and corresponding authority and helped explain his resistance to non-medical experts speaking about medicine.

Barnard stated that he would only support a commission that studied the social and ethical issues with organ transplantation if it was made up of "a qualified group of doctors belonging to that institution where the transplant is being done."[287] He then argued that physicians were already engaged in such discussion around the world, implying that Mondale's proposal was unnecessary. He went even further, suggesting that any proposal for a commission was "seeing ghosts where there are no ghosts."[288] Instead, he portrayed Mondale's proposed commission as risk for researchers and the field of organ transplantation in the United States.

> If I am in competition with my colleagues of this country, which I am not, and were I completely selfish, then I would welcome such a commission, because it would put the doctors who embark on this type of treatment so

[287] Senate, *Hearings on S.J. Resolution 145*, 70.
[288] Senate, *Hearings on S.J. Resolution 145*, 70.

> far behind me, and hamper the group of doctors so much that I will go so far ahead that they will never catch up with me.[289]

Barnard even called the commission "a danger" if it went beyond discussion of financial support for research. He explained his reasoning by saying:

> … we must go and learn by our experience in the past. Commissions have been set up to decide on various medical advances in the past. These commissions have driven a Semmelweirs [sic] to the lunatic asylum where he died, and have hampered the progress of medicine in nearly every case where such commissions intervene; because they were not qualified to deal with the various aspects.[290]

For Barnard, this commission might stymie medical advances through regulations. In addition he thought involving the public was not useful but rather a risk that an under informed majority might not support the research. Barnard was dismissive: physicians had medical expertise and authority and these hearings were pointless and exasperating.

When Mondale got his chance to question Barnard he focused on the claim that there were no new issues or at least any issues that might, in Mondale's words, benefit from an examination by "the finest men in the medical fields, health administrators, responsible theologians, attorneys, and other persons vitally and responsibly interested in this field."[291] Barnard responded in his, now typical for these hearings, confrontational

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[289] Senate, *Hearings on S.J. Resolution 145*, 70.

[290] The case of Ignaz Semmelweis mentioned by Barnard, and also by Wangensteen, was one where Semmelweis had discovered that puerperal fever after child birth could be dramatically reduced through simple handwashing by physicians. Some of his physician colleagues were offended at the suggestion that they were not clean, and he was not able to change much behavior in pre-Pasteur decades. The criticism may have contributed to his emotional distress and subsequent admission to an asylum where he died at the age of forty seven, as Barnard mentioned. "Dr. Semmelweis Biography," Semmelweis Society International, http://semmelweis.org/about/dr-semmelweis-biography/ (assessed on July 22, 2012).The analogy was not particularly apt because this situation largely involved physicians raising the objections, not untrained members of the public. Senate, *Hearings on S.J. Resolution 145*, 86. Wangensteen also cited cases on the prevention of smallpox inoculation in 1721, and the resistance to anesthesia, hypodermic needles, blood pressure monitoring, and the use of alcohol for antisepsis, as other supposed examples where public resistance or concern prevented medical advances. See: Senate, *Hearings on S.J. Resolution 145*, 92-93.

[291] Senate, *Hearings on S.J. Resolution 145*, 85.

manner:

> Senator, by wanting to set up a commission, you must have one of two reasons. Either you are seeing new problems, or you are not satisfied with the way the doctors have handled problems in the past. That is the only reason you can ask for a commission.[292]

Dr. Barnard did acknowledge that a commission might well help identify financial support for the research and facilities to accelerate saving lives with this new procedure.

Wangensteen, a leading surgeon who had chaired the Department of Surgery at the University of Minnesota from 1930 until 1967 and in that capacity had trained many of the surgeons then performing transplantations, followed his former student and reinforced many of Barnard's points.[293] Wangensteen narrowly interpreted the commission's focus to heart transplantation, worried about how the proposed commission would impact the transplantation field, and stressed the importance of leaving this issue in the hands of the professionals inside medicine. Wangensteen identified both the National Academy of Science Board on Medicine and universities' "Intramural Committee on Volunteers for Experiments Involving Human Beings" as evidence that the medical community was already engaged with the major ethical issues, thus justifying why Mondale's proposed commission was unnecessary.[294] Wangensteen argued, consistent with Barnard's view, that having a proactive committee with non-medical members on it that held cautious views in regard to medical advancement and experimentation was actually risky because such caution and timidity would limit

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[292] Senate, *Hearings on S.J. Resolution 145*, 85.
[293] Maurice B. Visscher, *Owen Harding Wangensteen, 1898-1981* (Washington, D.C.: National Academy of Sciences, 1991).
[294] Senate, *Hearings on S.J. Resolution 145*, 99.

research and innovation at their early stages.[295] He not only voiced his opinion in the Senate but also wrote to colleagues to mobilize them to speak out against the legislation. Other physicians seemed to agree with him with regard to the regulation of transplantation research; however, most were not as opposed to allowing informed outsiders to consider the issues.[296] Months later Wangensteen was willing to acknowledge that the interdisciplinary discussion that had occurred in the Senate hearings was beneficial, however he was firm that forming a committee to create legislation was ill advised.[297]

The next speaker, Henry K. Beecher, demonstrated clearly the range of opinions among physicians on the proposed commission. Beecher was an anesthesiologist by training and one of the insiders in medicine who had earlier become concerned with the ethical practice of the profession. In March 1965, Beecher, whom historian David Rothman has referred to as a "whistle-blower," gave a talk describing numerous abuses of human subjects in medical research, all were identified from the published medical literature.[298] Beecher published his findings in the *New England Journal of Medicine*, and his results were covered by many newspapers. Beecher argued that the solution to these abuses was not a new code of ethics but holding physicians to the standards of the profession: do no harm. He argued that the best protection against such abuses was a

[295] Letter to Dennis Brezina, staff Assistant to Subcommittee on Government Research from Owen Wangensteen, March 22, 1968, Board of Medicine, Folder: Statements: Cardiac Transplantation in Man, National Academy of Sciences Archive, Washington, D.C.

[296] Wangensteen described his correspondence with C. Walton Lellehei and the American Federation of Scientists and Walsh McDermott from the NAS Board of Medicine, see: Letters from Walsh McDermott to Wangensteen, March 5, 1968 and Letter to Dennis Brezina from Wangensteen, March 22, 1968, Board of Medicine Papers, Folder: Statements: Cardiac Transplantation in Man, National Academy of Sciences Archive, Washington, D.C.

[297] Letter to Dennis Brezina from Wangensteen, March 22, 1968 Board of Medicine, Folder: Statements: Cardiac Transplantation in Man, National Academy of Sciences Archive, Washington, D.C.

[298] Rothman, *Strangers at the Bedside*, 70.

good physician-patient relationship rather than a set of rules.[299] By the time Mondale introduced his idea for a national commission, Beecher was on record in favor of breaking down the walls that hid the inner workings of the medical profession from public view. Thus he was an obvious choice for Mondale to contact for his opinion on the proposed national commission. Beecher wrote back expressing his support and complementing Mondale: "I would like to tell you how greatly impressed I am by your far-seeing plans to study the 'Social and Ethical Implications of Health Science Research.'"[300]

In his prepared statement Beecher expressed his strong support of Mondale's proposed commission. "I believe the establishment of such a Presidential Commission is of great importance, that it would go far to reassure the public and be a source of stimulation to the scientific community."[301] For Beecher this commission would serve to engage public discussions and to help the community deal with the difficult issues in research; this was a benefit not a risk. Beecher soon became a motivated organizer for this legislation, just as Wangensteen was for the opposite side. Beecher wrote to colleagues and tried to persuade them to support the commission and even to convince

[299] Beecher was viewed negatively by the medical profession when he published his article describing the research projects. Many saw him as a muckraker. *JAMA* had refused to publish his article because he had initially named the researchers and projects which had questionable ethics in the article. When he approached the NEJM they suggested removing the names of the researchers. The struggle and resistance that Beecher meet during this process may have led him to be more traditional and conservative with his recommendations for how to resolve these problems and explain why he suggested the best protection was a good physician-patient relationship. See: Henry K. Beecher, "Ethics and Clinical Research," *The New England Journal of Medicine* 274, no. 24 (1966); Rothman, *Strangers at the Bedside*, 70-84; Susan Lederer, "Beecher's Bombshell Revisited," (lecture, University of Minnesota Center for Bioethics Seminar Series, Minneapolis, MN, March 13, 2009).

[300] Senate, *Hearings on S.J. Resolution 145*, 472.

[301] Senate, *Hearings on S.J. Resolution 145*, 115.

them to testify.[302] Concerned about what he believed to be a widespread "misunderstanding" of what the commission was supposed to do, he wrote to Mondale and Harris, suggesting that they counter an impression that their proposed organization would focus only on organ transplantation. He even offered to persuade other physicians of the benefits of the commission.[303] This misunderstanding of Mondale's proposal was also mentioned by transplant surgeon John S. Najarian, who wrote to Mondale in February 1968. Najarian expressed in his letter his "very enthusiastic support" while also observing that local and national press coverage had misconstrued the intent of the commission.[304]

Although sometimes misrepresenting the proposed commission, the newspaper and journal coverage did highlight the ethical and social issues identified in the hearings. Reporters tended to concentrate on the disagreements over the proposed commission, rather than on the consensus about examining the ethical issues. The *New York Times* described the ethical and social concerns over the biomedical research in some detail. However the more specialized trade journal the *Drug Research Report* implied that those testifying only gave support after the Senators brought up the issue of funding, suggesting that threats of pulling money from research were being used to gain support for the proposed commission.[305] The *Washington Post* also focused on the outspoken opposition

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[302] Henry K. Beecher Papers, correspondence, box 12, folder 17, 15, and 21, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

[303] Letter to and from Mondale, Oct. 23, 1968, Henry K. Beecher Papers, box 12, folder 17, also Letter to Harris from Beecher, March 20, 1968, Henry K. Beecher Papers, box 12, folder 15, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

[304] Senate, *Hearings on S.J. Resolution 145*, 470-472.

[305] Harold M. Schmeck, Jr., "Exploring the Role of Health in Society," *New York Times,* April 7, 1968; Harold M. Schmeck, Jr., "Scientist Says Control of Intelligence Is Possible," *New York Times,* April 3, 1968; "Transplant Expert Backs Federal Unit on Health Studies," *New York Times,* March 23, 1968;

by titling one article "Two Criticize Ethics Study of Transplants."[306] Thus, the national news media did help Mondale bring public attention to the ethical issues with biomedical research, especially the *New York Times* and the *Washington Post,* which covered the hearing in some detail.

On Tuesday, April 2, toward the end of the hearings, Mondale summarized the commentary to date and indicated his plan to revise the proposed legislation. Mondale optimistically described a "unified chorus calling upon the Congress for action to create this Commission."[307] The testimony, he believed, had clarified the role of the commission, as he had hoped it would. The commission was to "establish a dialogue between health science experts and the public at large," "raise questions without requiring answers," focus on the delivery of new advances to patients, and "lead us toward the development of a new decision-making process."[308] The agenda for the commission would include the implications of transplantation, issues of behavior control, issues in genetics, and other areas. Mondale also modified his proposed legislation by removing the economics of research funding, suggesting that other legislative bodies were already addressing them. The commission would be mandated to identify issues without pressure to identify solutions or legislation. Mondale agreed with thoughtful witnesses that such changes would address misconceptions about a potential regulatory

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Harold M. Schmeck, Jr., "Health Research Held Slow in U.S," *New York Times,* March 8, 1968; The *Drug Research Report was more invested in research moving forward with out regulations and was logically more supportive of the views of Wangensteen and Barnard, see:* "Star Witnesses Differ on Mondale Bill and on Need for Ethics Commission: But All See Need to Cooperate When Senators Say Research Money is Issue," *Drug Research Reports* (March 20, 1968):14-20.

[306] United Press International, "Two Criticize Ethics Study of Transplants," *The Washington Post*, March 9, 1968.

[307] Senate, *Hearings on S.J. Resolution 145*, 326.

[308] Senate, *Hearings on S.J. Resolution 145*, 326.

role for the commission and emphasize instead the identification of issues in current biomedical research.

Delineating Discussions on the Ethical, Legal, and Social Implications of Biomedicine

The letters submitted and the testimony in front of the Subcommittee on Government Research raised a number of issues and topics. Primarily they focused on delineating *how* discussions of the ethical, legal, and social implications should be conducted. Overall, six main topics came to the fore. The first considered who should be involved in ethical discussions of science and medicine and, quite specifically, what authority and responsibilities physicians and scientists had in relationship to the public. The second issue identified sites of current debate and considered the appropriateness of the locations. The third and forth areas concerned the public; namely citizen involvement and the importance of educating participants so they could make useful contributions. The fifth area focused on the purposes of the discussions, while the sixth area was concerned with the scope of ethical deliberations.

Membership, the Authority of Physicians, and Scientists' Social Responsibility

One area of discussion, which proved to be the most controversial in the hearings, was the commission membership and the role of physicians and scientists in ethical and social deliberations. Underlying that issue were those of authority and responsibility. Clearly scientists and physicians had a fundamental role to play, but scholars and experts beyond those categories were also important. Mondale had found strong support for such engagement among those who responded to his initial letter writing campaign. The majority were in support of such proposed interdisciplinary involvement. Eighty-three

percent of those who wrote letters to Mondale supported his plan to have a mix of "scientists, health practitioners, health science administrators, public administrators, economists, theologians, educators, sociologists, philosophers, and attorneys."[309] However, a few vocal physicians, which Rothman has focused on in his history, argued that they alone should have authority in decisions regarding medicine, including medical research.[310] On a related but different question, scientists held a range of views on the nature and level of their social responsibility, whether expertise gave them primary authority on the implications of their work, and how to fulfill any such responsibility while working as researchers. Despite vocal opposition from a small group of physicians and some objections by a few scientists at the hearings, the majority of those who testified wanted physicians to share authority, scientists to adopt more social responsibility, and both physicians and scientists to engage with scholars from outside biomedicine.

The minority view that physicians had sole responsibility was expressed most strongly by two surgeons involved in organ transplantation, Christiaan Barnard and Owen Wangensteen. Both believed that such a commission would infringe on the physician's authority to make medical decisions. Barnard argued that the patient-physician issues involved with heart transplantation were not new to medicine, and thus doctors and their staffs were capable of addressing these problems as they had done in the past.[311] When

[309] The percentage was calculated from the letters included in the Senate Hearings: Hearings on S.J. Resolution 145; the quote is from Senator Walter F. Mondale to James A. Shannon, January 10, 1968, Office of the Director Central Files, 443, Box 78, Folder 5, National Archives and Record Administration, College Park, MD.

[310] See testimony by Dr. Christiaan Barnard and Dr. Owen Wangensteen, Senate, *Hearings on S.J. Resolution 145*, 69-102; Rothman, *Strangers at the Bedside*, 168-189.

[311] This view was also echoed by Adrian Kantrowitz: Senate, *Hearings on S.J. Resolution 145*, 28-34;

Senator Ribicoff asked Barnard directly about the absolute authority of physicians:

> Do you think this matter is so open and shut, doctor, that the doctors only should decide between the multiplicity of patients, or do you think there is a matter of great social and ethical policy--that society has to do a lot of soul searching to determine how these decisions ultimately will be made?

Barnard replied:

> Sir, I do not think the matter is open and shut. I think it is difficult--we have difficult problems, but I would like to point out to you that a lot of these problems that you are seeing today, and a lot of people are mentioning today, these problems the doctors have had to handle for many years. These are not new problems. You cannot tell me one single new problem in our heart transplantation that we have not had for many years.[312]

When Wangensteen was asked by Mondale if he thought there were "nondoctors, persons not in the medical profession, who could bring to this problem useful insight,"

Wangensteen denied the usefulness of such "nondoctors," responding:

> If you are thinking of theologians, lawyers, philosophers, and others to give some direction here for the ongoing and for the development in this field, I cannot see how they could help. I would leave these decisions to the responsible people doing the work.[313]

Wangensteen stressed this point even more in a letter to Mondale on January 24, 1968:

> Senator, I would urge you with all the strength I can muster to leave this subject to the conscionable people in the Profession who are struggling valiantly to advance Medicine. We are living through an era in which the innovator is often under suspicion, being second-guessed by self-appointed arbiters more versed in the art of criticism than in the subject under scrutiny. We need to take great care lest the wells of creativity and the spring of the mind of those who break with tradition are not manacled by well intentioned but meddlesome intruders.[314]

Barnard and Wangensteen objected to the proposed commission primarily because they

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[312] Senate, *Hearings on S.J. Resolution 145*, 81.
[313] Senate, *Hearings on S.J. Resolution 145*, 100; Letter to Dennis Brezina, staff Assistant to Subcommittee on Government Research, March 22, 1968, Board of Medicine, Folder: Statements: Cardiac Transplantation in Man, National Academy of Sciences Archive, Washington, D.C.
[314] Senate, *Hearings on S.J. Resolution 145*, 98.

interpreted it as threatening doctor autonomy and authority.[315]

Rothman in his book *Strangers at the Bedside* argues that many, rather than a few, physicians found the prospect of the proposed commission "dismaying" and that the overwhelming opposition from physicians prevented Mondale's proposal from passing the Senate.[316] While he acknowledges at the beginning of his book that the medical profession had a range of views on these issues, he continues through his book to present the medical profession as a cohesive group that opposed outside involvement with only a few exceptions, such as Henry Beecher.[317] When Rothman discusses the "outsiders" to medicine, by which he means the ethicists, philosophers, lawyers, and social scientists, he describes them as trying to "bring new rules to medicine."[318] However the witnesses at the hearings seemed not to be trying to regulate medicine so much as open up issues to public discussion and introduce mechanisms for ethical and social consideration.[319]

Barnard's and Wangensteen's concerns about autonomy, authority, and meddlesome "outsiders," as described by Rothman, are rooted in a larger history involving attempts to create national health insurance and to establish government regulation of medicine in the United State during the twentieth century. During the

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[315] Rothman thoroughly describes how the physicians who opposed the proposed commission viewed the attempt to create such a commission, asserting that it was an attack on their authority and describing it as an attempt to rule medicine, see Rothman, *Strangers at the Bedside*, 168-189.

[316] Rothman, *Strangers at the Bedside*, 169.

[317] Rothman, *Strangers at the Bedside*, 4.

[318] Rothman, *Strangers at the Bedside*, 171.

[319] It is reasonable to expect that some members of the medical profession, certainly Barnard and Wangensteen, saw the outsiders in this way, but there is no motivation to explain why the "outsiders" would have wanted to take on the regulation of the whole medical profession on their own. While the "outsiders" did have a motivation to claim that their professions and expertise had something to lend to the discussions of biomedical research, which would be to improve the importance or significance of their fields, there was no benefit to them claiming total authority and taking on the full force of the AMA and the medical profession that had already proven its influence and authority in the debate over national health insurance. In fact the "outsiders" did not even make claims of this nature.

decades-long discussion over national health insurance, the American Medical Association lobbied in opposition to such plans based on the view that national insurance would lead to physicians losing their autonomy. Colin Gordon in this book, *Dead on Arrival: The Politics of Health Care in Twentieth Century America*, points out that

> The AMA's position, in effect, was that doctors were independent entrepreneurs vis-à-vis the state, entitled to autonomy from state regulation; but that they were selfless professionals vis-à-vis their patients, willing to provide care without regard to their compensation. This tension shaped medical politics throughout the twentieth century and proved especially troubling at a number of key junctures.[320]

Historian Dominique Tobbell has argued that the medical profession, along with the pharmaceutical industry, interpreted and presented the federal government's efforts to become involved in medicine as evidence of a movement toward socialized medicine, and they used that vocabulary to create a reaction in the general population.[321] Barnard's and Wangensteen's views are a reflection of well-established rhetoric already in place and reinforced by the AMA for physician autonomy and against government involvement in medicine. Thus Rothman's portrayal of the hearings in 1968 depicts only how those in opposition interpreted the efforts of outsiders and Congress, but does not represent how all of those in medicine viewed the proposed commission or how the "outsiders" and Congress saw things.[322] As described earlier, Harris and Mondale viewed the commission as preparing for the negative and positive implications of biomedical research, not about regulating biomedical research, although the two could obviously be interrelated.

Despite the power of the AMA's general opposition to legislation that appeared to

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[320] Colin Gordon, *Dead on Arrival: The Politics of Health Care in Twentieth-Century America* (Princeton: Princeton University Press, 2003): 158.
[321] Dominique A. Tobbell, *Pills, Power, and Policy: The Struggle for Drug Reform in Cold War America and Its Consequences* (Berkeley: University of California Press, 2011): 91.
[322] Rothman, *Strangers at the Bedside,* 168-189.

them to threaten physician autonomy, the majority of those who testified and wrote to Mondale supported sharing the responsibility of social implications; and some even directly countered the views voiced by Barnard and Wangensteen. A few physicians insisted that physicians should make up the majority of the membership of the commission thus reinforcing the idea that physicians had the greatest authority, while still acknowledging the need to hear from other experts.[323] Some went further in their support of interdisciplinary and argued that physicians and scientists needed such outsiders and their perspectives.[324] Norman Shumway, a surgeon, identified this idea of physician exclusivity as "ridiculous" and valued non-medical personnel.[325] John A. Anderson, Head of Pediatrics at the University of Minnesota Hospital, envisioned another kind of interdisciplinary relationship, saying, "I do think that there is now a need for a tripartite relationship-- Federal Government to medical schools, Federal Government to the community sector for delivery of services, and the community sector to medical schools."[326] Transplant surgeon and colleague of Wangensteen, John S. Najarian, disagreed with Barnard and Wangensteen that the proposed commission was a threat to physician autonomy and authority. Najarian suggested to Mondale in a letter that while

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[323] Adrian Kantrowitz's testimony: Senate, *Hearings on S.J. Resolution 145*, 28-34; John S. Najarian's testimony: Senate, *Hearings on S.J. Resolution 145*, 470-472.

[324] In addition those described above, see Dr. Henry Beecher's and Joshua Lederberg's testimony, also Professor David Krech's testimony where he expressed that physicians and scientists were not uniquely qualified to be answering the ethical and moral questions concerned with their research, See: Senate, *Hearings on S.J. Resolution 145*, 333.

[325] Shumway said: "Yes, I think so. I think the doctor won't do this all by himself. I think it is ridiculous to think that the surgeon or the surgeon and his team or group or even his school will be able to carry out the kind of work that is started now. He will need a lot of help. It is interesting to me how helpful nonmedical personnel can be. And I would guess that their contribution to such a committee would be extremely important with respect to the priority establishment." See: Senate, *Hearings on S.J. Resolution 145,* 152; Others who also shared this view were Dr. Ivan L. Bennett and Dr. Frank Hastings.

[326] Senate, *Hearings on S.J. Resolution 145*, 166.

the majority of the commission membership should be made up of physicians, there should also be members from law, physical and social science, theology, philosophy, ethics, and various government offices.[327] For those who did not share Barnard's and Wangensteen's view, the proposed commission would provide much needed assistance to physicians and scientists on issues that were complicated and new for medicine and society and which researchers were struggling to address on their own.

One witness, physician Henry Beecher was particularly vocal, disagreeing with Barnard and Wangensteen. He countered their argument that the issues in heart transplantation were not new and did not require the thoughtful advice of those outside medicine, observing:

> Surely there is a need for guidance as to who will be chosen and who won't be when facilities are sharply limited. It is evident that the transplantation of tissues is not purely a medical problem. Perplexing questions abound; some are medical or partly medical and some are not.[328]

When Mondale pressed Beecher on the question of the definition of death and whether it was more complicated than Barnard's description, Beecher responded carefully, saying "I certainly am not one to pit myself against Dr. Barnard's views." Yet Beecher did think the issue of defining death had become very complicated. He was so convinced that he had persuaded the dean of the Harvard Medical School to appoint an ad hoc committee on the definition of death, which Beecher chaired. This committee would produce a definition that included brain death and would thus re-define death a couple months later. In addition Beecher was so much in support of the interdisciplinarity of these discussions that he suggested that individuals serve on the commission from law, history of science,

[327] Senate, *Hearings on S.J. Resolution 145*, 471.
[328] Senate, *Hearings on S.J. Resolution 145*, 106.

medicine, philosophy, public health, social relations and journalism.[329]

In addition to debates about physician autonomy and responsibility, there were also discussions of scientists' responsibilities. Discussion of the social implications of scientific research and the active role of scientists had developed following the dropping of the atomic bomb on Japan in World War II, when physical scientists began to pay more attention to the implications of their nuclear research. As chapter 1 shows, growing scientific self-consciousness grew to involve the biomedical research fields by the early 1960s. Despite this burgeoning call for social responsibility among scientists by scientists themselves, the whole community had not reached a consensus and their range of opinions was reflected in the hearings.

The view that there was not a social responsibility distinct to scientists was expressed in the hearings strongest by geneticist Arthur Kornberg when he was questioned by the Democratic Senator Abraham A. Ribicoff. Ribicoff recalled the "soul-searching" by scientists who had been involved with the atomic and hydrogen bomb.[330] Then he asked Kornberg if someone in his position might also undertake soul-searching regarding the negative consequences that could come from genetics. In response Kornberg separated the internal moral examination from his scientific self and said that the soul-searching he did was as a citizen, not as a geneticist. In response Ribicoff asked "Is science amoral? Does science concern itself with the ethical, social and human consequences of its acts and its achievements?"[331] Kornberg's response was to reiterate his belief that the consequences were still remote and that the best protection against the

[329] Senate, *Hearings on S.J. Resolution 145, 472-473.*
[330] Senate, *Hearings on S.J. Resolution 145*, 46.
[331] Senate, *Hearings on S.J. Resolution 145*, 47.

misuse of genetics was to expand knowledge and share it freely. It was at this point that Ribicoff asked directly about scientists' social responsibility.

> Now I throw at you the larger concept of the responsibility of scientists to work in the exquisite fields that may affect mankind, individually and as a society as a whole. What responsibility do scientists have to try to forestall the evil consequences of politicians, or leaders, or anyone who might abuse the basic positive fruits of scientific research?[332]

Kornberg responded by arguing that all creative people, scientists, politicians, businessmen and others, have similar responsibility for the outcome of their work and that scientists were no better or worse at fulfilling this responsibility. While Kornberg objected to the idea that scientists had a distinct social responsibility, he did not object to the interdisciplinary nature of the discussions.

Kornberg also found it problematic for individual scientists to take time to evaluate applications and consequences. He explained that the demands of scientific research limited scientists' engagement in political and social issues:

> The biochemist who deals with molecules cannot afford any time away from them. Today I am not in the laboratory. I do not know what is going on at the bench. Tomorrow I will be less able to cope with the identity and behavior of molecules. The more I am estranged from the laboratory, the less competent I am to advise you regarding special problems in this field. The answer lies in discovering ways in which the Congress can catalyze the scientist's contact with the public. If the research worker were to become a public figure, it would destroy him as a scientist.[333]

Despite this frustration with his absence from the lab, Kornberg twice stated how happy and eager he was to be in the Senate testifying to help put the science in proper context. When Mondale mentioned that he thought these discussions beneficial for scientists and the public, and that scientists could not remain neutral on social problems, Kornberg

[332] Senate, *Hearings on S.J. Resolution 145*, 48.
[333] Senate, *Hearings on S.J. Resolution 145*, 51.

agreed, saying "I heartily agree with you. I assure you, I believe this is time very well spent on my part, and I hope it has been of some value to you."[334] This deference to Mondale may be a reflection of what sociologist Chandra Mukerji describes as the vulnerability of researchers during the post WWII period, which she asserts was a result of their dependence on federal funding. Yet these experts from science and medicine are also evidence of scientists speaking up to justify and legitimate policy, which Mukerji describes as "giving the voice of science to the state."[335]

Kornberg's caution was countered by the views of geneticist Joshua Lederberg, whose testimony followed. Lederberg was at a point in his career where he had transitioned away from bench science. He spent the majority of his time outside the lab and, instead, was focused on the relationship science had with the society, translating science for the public, and writing about science in popular media. The hearings were a natural fit for his interests and emerging persona as a public intellectual. However just as Kornberg had acknowledged the conflict between a scientist's ability to do science and advise on science, so too did Lederberg. He confided,

> I myself have become more concerned with exactly the issues you have raised to the extent that my own productivity as a scientist has greatly decreased. I do not regret that. I feel that it is important to maintain the kind of communication that you have indicated.[336]

Yet Lederberg was careful to explain that scientists held a range of views on whether they were responsible for considering the social consequences of their work. Lederberg had made a personal decision to attempt to fulfill this responsibly himself by creating

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[334] Senate, *Hearings on S.J. Resolution 145*, 52.
[335] Chandra Mukerji, *A Fragile Power: Scientists and the State* (Princeton: Princeton University Press, 1989): 85-104, 190-203.
[336] Senate, *Hearings on S.J. Resolution 145*, 56.

new mechanisms for communication between the scientific community and the public. These, he described, were his weekly column in the *Washington Post* titled "Science in Man," as well as the classes he was teaching on these topics.[337]

In addition to those in biomedical research who supported interdisciplinary, there were many outside medicine and science, particularly lawyers, philosophers, and theologians who were in full support of having an interdisciplinary discussion and thus in claiming some authority for themselves. Jerald C. Brauer, the Dean of the Divinity School at the University of Chicago, argued that "such a commission ought to have representatives of these various facets of society."[338] Everett Mendelsohn, a historian of science in the History of Science Department and a research associate at Harvard University's program on Technology and Society, stated:

> It seems clear to me that the scientists alone [are] not in a position to deal with the social issues arising from the increasing ability to manipulate and control behavior. This seems one area which could fruitfully benefit from concerted examination by a combination of biomedical scientists, legal scholars, and students of social behavior.[339]

Kenneth Vaux, a theologian from the University of Texas Medical Branch, argued that advancements in biomedical research were raising questions that were not just medical in nature but were theological and ethical. He argued that scientific outcomes were not value neutral but had consequences that society and scholars outside biomedicine had to

[337] Lederberg started his column in 1966 and would later write to Mondale explaining how useful and informative he thought the records from these hearings were, and requesting multiple copies of the hearing records so he could use them in a class he was going to teach on Biology and Human Affairs. See: NLM Lederberg papers, box 49, folder: Chronological Correspondence letters between Mondale and Lederberg.
[338] Senate, *Hearings on S.J. Resolution 145,* 303.
[339] Senate, *Hearings on S.J. Resolution 145*, 197.

address.[340]

In support of interdisciplinary discussions, Senators and non-physician witnesses frequently used the example of nuclear weapons research and the fictional book *A Brave New World* by Aldous Huxley as powerful rhetorical tactics. Both were cited to show what could happen if the societal consequences with biomedical research were not considered by those outside science and medicine. They were also used to argue for proactive rather than reactive discussions of the social implications. Senators Mondale and Ribicoff used their observations of society's experience with nuclear weapons research to justify public discussions and examination of the social implications of biomedicine.[341] In addition, some scholars outside biomedicine, such as Kenneth Vaux, invoked the case of atomic physicist Robert Oppenheimer and the example of the atomic bomb to warn that health scientists were following in the physicists' footsteps by not considering the social implications but concentrating exclusively on the scientific or medical aspects.[342] The dystopian novel, *A Brave New World,* was used to signify what would become of our society if action was not taken to oversee the unbridled applications of biomedical research.[343] Although published in 1932, Huxley's book detailed results in

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[340] Senate, *Hearings on S.J. Resolution 145*, 137-138.

[341] Mondale said "These new developments are as dramatic as the dawning of the nuclear age. And some of them, like genetic manipulation and behavior control, are potentially as dangerous. Their potential benefits to human physical and mental health are tremendous, of course. But our experience with the atom teaches us that we must look closely at the implications of what we do." See Senate, *Hearings on S.J. Resolution 145*, 5; Ribicoff said to Dr. Kornberg during the hearings, "I do believe that society does have a concern with the great breakthroughs that are taking place, and I think it is well that people worry about them now instead of both scientists and society in general waking up with a guilty conscience 20 years after the event. I think there are many of your associates who are going just through this process now, who you probably know very intimately, because of the work in the atomic energy field." See Senate, *Hearings on S.J. Resolution 145*, 52-53.

[342] Senate, *Hearings on S.J. Resolution 145*, 140.

[343] Jerald C. Brauer's testimony: Senate, *Hearings on S.J. Resolution 145*, 121; Professor David Krech also cited *A Brave New World*: Senate, *Hearings on S.J. Resolution 145*, 331-332.

reproductive technology that produced babies in hatcheries and raised them in conditioning centers, essentially a society in which "families" disappeared and deaths were not mourned. The consequences described in this book were used to suggest that scientists alone could not be trusted to envision and police the results of their creative research.

Where Should the Discussions be Held?

A second area of discussion that was frequently mentioned in the letters and in the hearings were the potential institutional sites for the commission and more broadly the appropriate venue for discussions on the ethical, legal, and social implications of biomedicine. Nineteen of the one hundred thirty-nine letter writers suggested that other groups besides the proposed commission might be able to address these ethical issues or were already working on these topics. Some were satisfied with the work being done at professional conferences and at academic interdisciplinary centers.[344] Still others suggested that specific topics were already being addressed by other organizations such as the NIH, the Public Health Service (PHS), the American Heart Association (AHA), and the National Academy of Sciences (NAS).[345] Wangensteen and his physiologist colleague, Maurice Visscher, of the University of Minnesota, argued that the PHS and the NIH had already established sufficient ethical controls over human experimentation. They cited the NIH-required university peer-review committees, which would become

[344] This includes the professional discussions described in chapter 1 and the STS centers described in chapter 2..

[345] Dr. John J. Conger, Vice President for Medical Affairs and Dean of the School of Medicine at the University of Colorado suggested that the proposed commission might work best being located in the National Academy of Science: Senate, *Hearings on S.J. Resolution 145*, 252-272.; Dr. James A. Shannon, director of the NIH pointed out the similar work already being done by the NIH: Senate, *Hearings on S.J. Resolution 145*, 341.

the Institutional Review Boards (IRBs), as providing sufficient protection for human subjects.[346] Wangensteen also pointed out that the Board of Medicine within the NAS was already engaged with the major issues in transplantation.[347]

Still others felt that such important discussions should not be held within the government agencies, for fear of political bias. Jesse Edwards, a pathologist at the Charles T. Miller Hospital in St. Paul, Minnesota and President of the American Heart Association (AHA), argued on behalf of the AHA that this professional association was addressing the concerns with heart transplantation and that ethical issues were best left to experts in the profession rather than a federal commission.[348] Many of the alternate locations suggested were organizations where the physicians and researchers could maintain their authority and autonomy over these discussions. Despite the few who suggested alternate sites, most did not resist a federal involvement and a few applauded the idea to use the executive branch because it implied higher visibility and influence.[349]

The Question of Public Involvement

A third area of discussion, and a significant feature of Mondale's proposed commission, was the openness to the public and the consideration of the views of the public. Mondale thought the discussions should not occur behind closed doors, but reach the public through media coverage and public meetings. Many inside and outside

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[346] Senate, *Hearings on S.J. Resolution 145*, 89; NAS BofM Folder: Statements: Cardiac Transplantation in Man Wangensteen Correspondence. Letter to Dennis Brezina, staff Assistant to Subcommittee on Government Research. March 22, 1968.

[347] Senate, *Hearings on S.J. Resolution 145*, 99.

[348] Senate, *Hearings on S.J. Resolution 145*, 308-323.

[349] Blythe Stanson, a professor of law at Vanderbilt Law School, who had previously taught electrical engineering at the University of Pennsylvania and the University of Michigan, saw the proposed commission as a higher court for the newly created institutional review committees that examined human subjects research: Senate, *Hearings on S.J. Resolution 145*, 129-131.

medicine supported this desire for public engagement.[350] Jerald C. Brauer, the Dean of the Divinity School at the University of Chicago, believed the commission should "promote the full, frank public discussion of all of these issues that are of such tremendous consequences for the whole of our society."[351] Judge David Bazelon, the Chief Judge of the U.S. Appeals Court in Washington D.C., a member of the American Orthopsychiatric Association and a lecturer on psychiatry and the law, testified that the government had a right to be involved in the ethical and social decisions about biomedical research. Bazelon suggested that the increasing role of the government in funding research grants, creating public hospitals, and the funding of Medicare and Medicaid meant that the government had the authority to oversee biomedical research.[352] Henry Beecher said, when asked by Senator Ribicoff if he saw a risk or was apprehensive about involving the public, that he "could not conceive that it would be harmful."[353] When Mondale asked Beecher if the public had a right to be included, Beecher said he agreed wholeheartedly that it did.

Perhaps not surprisingly, surgeon Christiaan Barnard disagreed with the claim that the public and government had a claim to being involved in these discussions. When Senator Ribicoff suggested that because the public was now paying the cost for the research and for patients to receive treatment they should also have oversight of both how the research is carried out and how the results are integrated into society, Bernard vehemently disagreed, saying:

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[350] Besides those listed below, See Dr. Henry Beecher's testimony detailed later in the chapter and that of Dr. Ivan Bennett, Professor Joseph Cooper, Dr. Theodore Cooper, and Dr. Frank Hastings.
[351] Senate, *Hearings on S.J. Resolution 145*, 123.
[352] Senate, *Hearings on S.J. Resolution 145*, 274.
[353] Senate, *Hearings on S.J. Resolution 145*, 116.

> Now, let me give you something to compare that with. Who pays for the cost of war? The public. Who decides where the generals should attack and how he should attack? The public[?] I do not think the public is qualified to make the decision. The general is qualified to make that decision. And, therefore, he is qualified to spend the public's money the best way he thinks it is fit to spend it. You cannot have control over these things. You must leave it in the people's hands who are capable of doing it.[354]

Barnard left no room for the opinion of anyone except doctors in these decisions. Mondale countered that, like Senators, medical professionals do not have the option of keeping the public out of their professional activities.

Importance of Public Education

One issue garnered considerable agreement, namely that the public should be educated about biomedical issues. This position even held among those who did not fully endorse the legislation. Mondale and Harris believed that public education on biomedical research was crucial because, without it, public funding for biomedical research would be difficult to achieve. Many of the researchers who testified shared this belief.[355] Norman Shumway, a cardiovascular surgeon who was educated and started his career at the University of Minnesota and had recently moved to Stanford University Hospital, reasoned that a better educated public would more likely accept the possibilities of research and be less likely to fear what researchers were doing. Such acceptance was critical to maintaining public funding, especially considering the trend at the time to reduce science funding.[356]

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[354] Senate, *Hearings on S.J. Resolution 145*, 82.

[355] Norman Shumway said "Transplantation of the heart, fortunately or unfortunately, cannot be done without public notice and public support." See: Senate, *Hearings on S.J. Resolution 145*, 149; Dr. William H. Stewart, the Surgeon General, Joshua Lederberg, Dr. Ivan Bennett, Professor Joseph Cooper, Dr. Theodore Cooper, Dr. Frank Hastings, and Dr. John S. Najarian also shared this view.

[356] This decreasing rate of federal funding for science during the end of the 1960s and early 1970s was noted in Chapter 2; Senate, *Hearings on S.J. Resolution 145*, 146.

While Mondale intended the education to enable direct public engagement, physicians and researchers like Shumway wanted didactic public education that would lead the public to trust biomedical researchers and support them financially. Many researchers, such as Kornberg and Najarian believed so strongly in the importance of public education that they used their testimony to describe and explain their science and medical practices to the legislators and the press. In addition, both testified that better dialogue between scientists and the public would improve scientific and medical literacy and ensure the public was capable of making informed judgments.[357] A commission of experts might offset the problem which Najarian pointed out, namely that the media had a "tendency to overdramatize things" and "raise false hopes," and could not be relied upon to educate the public about the nuances of scientific research.[358]

Purpose of the Commission

A fifth area, and the most pressing concern for those surgeons in organ transportation and scientists in genetics, was the purpose of the discussions and the commission: Was it to deliberate or to regulate? The worry that the commission would propose regulations was sufficiently prevalent that many who testified warned how problematic regulation would be to emerging research.[359] Along with Barnard, Kornberg reflected this concern when he stressed in his testimony that forbidding specific kinds of

[357] Senate, *Hearings on S.J. Resolution 145*, 24-25, 41.
[358] Senate, *Hearings on S.J. Resolution 145*, 24-25
[359] See Testimony by Dr. Christiaan Barnard, Dr. Owen Wangensteen, as well as Dr. John J. Conger, Vice President for Medical Affairs and Dean of the School of Medicine at the University of Colorado: Senate, *Hearings on S.J. Resolution 145*, 252-272; Dr. Seymour Kety, the director of the psychiatric research laboratory at Massachusetts General Hospital in Boston: Senate, *Hearings on S.J. Resolution 145*, 290; Dr. Jesse Edwards, a pathologist at the Charles T. Miller Hospital in St. Paul, Minnesota and President of the American Heart Association (AHA), expressed this concern on behalf of the AHA: Senate, *Hearings on S.J. Resolution 145*, 312; Dr. James A. Shannon, Director of the NIH: Senate, *Hearings on S.J. Resolution 145*, 346; Dr. Wilbur J. Cohen, director of the DHEW: Senate, *Hearings on S.J. Resolution 145*, 348-349.

research in the United States would not solve any of the problems but push the research to other countries.[360] Just as physicians and the AMA feared government involvement in regard to drug development, they also vigorously objected to government regulation of medical ethics decisions because they believed it would reduce physician autonomy.[361] Beecher critiqued the objections to regulation as a "fear of outside control," which he argued physicians needed to overcome.[362] Already in regard to human subjects research, cases of abuses had caused the federal government to become involved. Most notably the Public Health Service of 1966 required compliance with new policies on human experimentation that including consent from patients and volunteers in research.[363] The researchers most concerned about regulation were in the early stages of applying their research to medical care and at that crucial stage they feared getting negative pubic attention. Yet Mondale continuously pointed out that there was no intention to make the commission a regulatory body, despite misperceptions that saw it this way.[364]

Another concern was whether Congress would define research goals and influence funding priorities for biomedical research. Priority setting was a topic that interested Harris and Mondale based on their work in the Subcommittee on Government Research. A few scholars who testified agreed that the proposed commission could work

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[360] Senate, *Hearings on S.J. Resolution 145*, 47-48.

[361] The debates over health care legislation demonstrate the strong opposition held by the medical profession to government regulation of medicine. See Gordon, *Dead on Arrival*; and Tobbell, *Pills, Power, and Policy*.

[362] Senate, *Hearings on S.J. Resolution 145*, 117

[363] Advisory Committee on Human Radiation Experiments, "Part I Ethics of Human Subjects Research: A Historical Perspective," in *Final Report* (Washington, DC: Government Printing Office, 1995); Rothman, *Strangers at the Bedside*, 85-100.

[364] Henry Beecher wrote a letter to Mondale about this misperception. Henry K. Beecher Papers, correspondence, box 12, folder 17, letter to and from Mondale Oct. 23, 1968.; also box 12, folder 15, Harris letter March 20, 1968, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

on revising or establishing funding priorities for biomedical research.[365] Mondale and Harris felt that this was a good additional purpose for the proposed commission, but they did not see it as the commission's primary purpose. Ultimately this responsibility would not be adopted, in part because the responsibility for setting priorities already resided in the Department of Health, Education, and Welfare and the NIH.[366]

Topical Scope of the Commission

The final area of discussion involved delineating the scope of the commission, specifically the areas of biomedical research to be examined by the proposed commission. Many scholars, most notably physician Henry Beecher and scientist Joshua Lederberg, had expansive ideas about the range of topics.[367] In addition to transplantation and genetic manipulation, other topics suggested were human experimentation, population control, psychiatry, distribution of research funding, defining death, prolonging life, creating human life in the lab, neuropsychiatry, animal experimentation, press coverage of medicine, safety and efficacy of vaccines, biological warfare, overmedication of patients, and access to medical advances. Consideration of the controversial areas of human experimentation and genetic manipulation were resisted by those who argued that the former case was already being handled by other agencies and,

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[365] Professor Eli Ginzberg, from the Columbia University's Department of Economics: Senate, *Hearings on S.J. Resolution 145*, 239-247; Dr. James L. Dennis, from the University of Oklahoma's Department of Pediatrics: Senate, *Hearings on S.J. Resolution 145*, 247-248; Dr. John J. Conger, Vice President for Medical Affairs and Dean of the School of Medicine at the University of Colorado: Senate, *Hearings on S.J. Resolution 145*, 252-272.

[366] This view was expressed strongest by Wilbur J. Cohen, the acting Secretary of the DHEW, in a letter on April 12, 1968 to the subcommittee. Senate, *Hearings on S.J. Resolution 145*, 348-349.

[367] Beecher prepared so much information on the issue of human experimentation that some of it was submitted to the record without being read. His suggestions included topics that would become the focus of the National Commission in 1974: experimentation with children, research on prisoners, the use of incentives and coercion in recruiting volunteers, and the practical definition of informed voluntary consent, Senate, *Hearings on S.J. Resolution 145*, 103-118; Lederberg also listed topics in his testimony: Senate, *Hearings on S.J. Resolution 145*, 287-288.

in regard to the latter, argued that there were no immediate concerns with genetic manipulation.[368] The theologian, Kenneth Vaux, persisted in arguing for a broader discussion and a focus on the large ethical questions: Should man seek to control and construct his environment and himself? And, if so, what is proper for man to change?[369] The letters and the hearings on Mondale's legislation identified multiple ethical and social concerns, but the sheer number of topics would prove problematic for the proposed commission's passage.

The list of topics became so long that those testifying raised concerns that the scope of the commission was becoming too broad for its proposed term. They argued that the commission would be unable to address all of the areas and do quality work within its time constraints; i.e., the commission's proposed duration of a year was too short to achieve its multiple goals.[370] A few even suggested that the commission might best serve society as a standing committee.[371] Responding to the commentary over the seven days of hearings, Mondale revised his legislation to address this and other issues. He extended the commissions' duration to 90 days after its one year term, contending that this extra time would allow the commission to determine whether to recommend it continue as a standing committee, be renewed as a temporary committee, or be dissolved.

Some witnesses addressed the problem by suggesting that the commission's topics be prioritized or focused away from some areas. A few specifically argued to

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[368] See Testimony by John S. Najarian and Arthur Kornberg detailed later in the chapter; Professor Everett Mendelsohn's testimony: Senate, *Hearings on S.J. Resolution 145*, 200.
[369] Senate, *Hearings on S.J. Resolution 145*, 137-143.
[370] See Testimony by Joshua Lederberg detailed later in the chapter.
[371] Testimony by Dr. John A. Anderson, Head of Pediatrics at the University of Minnesota Hospital: Senate, *Hearings on S.J. Resolution 145*, 153-154; Dr. Seymour Kety, the director of the psychiatric research laboratory at Massachusetts General Hospital in Boston: Senate, *Hearings on S.J. Resolution 145*, 290 and 303.

eliminate genetics because the issues were speculative. This view was voiced by Kornberg and Lederberg. Kornberg denied any unique and immediate ethical or legal issues with genetics; rather he stated that the issues associated with genetics were "not well-defined and still so distant."[372] He admitted that the public's and congress' fears about the potential unexpected or negative prospects of genetic research were justified. But, as he saw it, genetic research was just like any knowledge or invention that could be "used for good or evil." Kornberg argued that the major issues with genetics were the lack of scientific knowledge and the need for more funding. Lederberg argued that the commission should not study genetics but rather focus on organ transplantation, which he argued had demonstrated ethical, legal, and social issues.[373] Najarian suggested that the commission prioritize its study based on areas that posed the most immediate issues, including his own field of transplantation , leaving genetics until later.[374] Both the geneticists and Najarian believed that the commission should be reactive rather than proactive in its selection of topics.

Conclusion

Mondale's proposal for a national commission received significant support, as demonstrated in the extensive hearing and letters. Many of the researchers who testified, including those generally against the commission, recognized that the proposed commission would play an important role in education and in providing a venue for discussions of ethical, social, and legal issues. Many researchers, as well as the Senators, believed that such conversations required the participation of multiple disciplines all

[372] Senate, *Hearings on S.J. Resolution 145*, 46.
[373] Senate, *Hearings on S.J. Resolution 145*, 482.
[374] Senate, *Hearings on S.J. Resolution 145*, 24-25.

sharing authority.

Nonetheless, concerns remained that would prevent the passage of the legislation. One was that the commission would create legislation that would regulate transplantation research. Despite Mondale's insistence that regulation was not his goal, the impression persisted.[375] He also resisted the exclusive focus on heart transplantation that grew from attention catching headlines, such as "Urges Ethics Study on Heart Transplant" and "Legislation on Transplants Should Begin with Specifics."[376] The second concern related to the breadth of the potential charge.[377] Because of the lack of clarity on just what would be studied, even supporters qualified their endorsement.[378] The lack of focus and boundaries for the proposed commission made it more difficult to get complete support, but Mondale was not willing to be more specific because he believed a general discussion of the social implications of biomedical research was necessary.

A third concern that other agencies and organizations were already addressing the issues was being reinforced by simultaneous efforts. By the end of the hearing, the NAS already had its Board of Medicine creating subcommittees to address several of the issues identified during the hearings. Along with the NAS, the American Heart Association also toward the end of the hearings set up its own committee to deal with the issues

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[375] Henry K. Beecher to Senator Walter F. Mondale, October 23, 1968, Box 12, folder 17, Henry K. Beecher Papers, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

[376] Philip Dodd, "Urges Ethics Study on Heart Transplants," *Chicago Tribune,* January 10, 1968; Joshua Lederberg, "Legislation on Transplants Should Begin With Specifics," *Washington Post,* January 20, 1968.

[377] Joshua Lederberg, "Legislation on Transplants Should Begin With Specifics," *Washington Post,* January 20, 1968.

[378] Draft Minutes of the Board of Medicine Meeting, April 10-11, 1968, Board of Medicine Collection, National Academies Archive, Washington, D.C.: 4

specifically with heart transplantation.[379] It seems that the political attention brought by Mondale's hearing forced these discussions into the wider public sphere and policymaking realm, which had the side effect of spurring professional organizations and new fields to take up such issues.[380]

Mondale's legislation never made it to a vote on the Senate floor in 1968 and would not do so until 1971. The opposition from a few prominent physicians and their influence in the press helped slow down the momentum. A consensus on authority, scope, public involvement, and placement in the government had not been reached, among the other problems that plagued the proposed legislation. Nonetheless, Mondale succeeded in establishing a precedent for these discussions to occur in the halls of Congress and he built Congressional support for the idea.[381] The proposed commission and the hearings on it began a public discussion of how the ethical, social, and legal issues with advancement in life sciences should be handled, who should be involved, who should have authority, what topics should be included, and where the discussions should take place. This influence was recognized by Professor David Krech toward the end of the hearings when he said: "While many of these questions have always been with us, they have rarely been raised so purposively and by so powerful a body as the U.S. Senate. Formerly implicit

[379] Summary Report of the April 10-11, 1968 Meeting of the Board of Medicine, April 17, 1968, Board of Medicine Collection, National Academies Archive, Washington, D.C.: 5

[380] This trend will be discussed further in chapter 4. Draft Minutes of the Board of Medicine Meeting, April 10-11, 1968, Board of Medicine Collection, National Academies Archive, Washington, D.C.: 15

[381] The number of co-sponsors for Mondale's legislation was significant and would hold stead over the years with 16 in 1968 to 21 in 1971 and 19 in 1973. In addition, Mondale had some house support on 1968 as Democratic Representative William Singer Moorhead from Pennsylvania introduced Mondale's proposal into the House on April 22 as H.J.Res. 1233.

problems are here being faced explicitly and we will all gain from this."[382] Krech recognized something had changed: new expertise was being sought on difficult issues with biomedical research and medicine, the problems were being addressed from the perspective of the public well-being rather than the individual patient or physician, and the discussions were now open to the public. The hearings and proposal crucially pointed out that there was no obvious answer to these questions and no one group to take on this responsibility. The topics identified through Mondale's hearings began to frame the emerging field of bioethics, and engage Congressmen, social scientists, biomedical scientists and physicians in interdisciplinary discussions of the social implications of biomedicine.

The literature on the history of bioethics has emphasized the importance of the ethical issues with human subjects research over other areas of bioethics in the fields development and has thus given Mondale credit only for beginning Congressional discussions on issues in biomedicine. Albert Jonsen, in his book, the *Birth of Bioethics*, notes that the hearings on Mondale's legislation served as a continuation of the airing of issues started by the medical conferences in the early 1960s.[383] Rothman describes Mondale's 1968 legislation as just another effort in the "war to rule medicine."[384] Yet the legislation and the hearings are much more influential than previous historical assessments might suggest. Mondale's effort to create the National Commission on Health Science and Society laid the foundation for citizens, bioethics scholars, the

[382] Hearings on S.J. Resolution 145, 328; In addition to Krech, Joshua Lederberg commented during the hearings how important and fascinating the discussions were, see Hearings on S.J. Resolution 145, 54.
[383] Jonsen, *The Birth of Bioethics*, 90.
[384] Rothman, *Strangers at the Bedside*, 168-189.

government to examine the ethical consequences of biomedical research and supplied the concept of an arena for public interdisciplinary discussion of the social, ethical and legal issues with biomedicine. The following chapter details how subsequent congressional activity built on the foundation Mondale and Harris set with the 1968 hearings.

Chapter Four:
Creation of a Federal Bioethics Commission, 1968-1974

Between 1969 and 1973, Mondale would revise and introduce three versions of his legislation to create a National Commission on Health Science and Society to the Senate. The structure, membership, and purpose of the proposed commission persisted during these revisions. Each time Mondale introduced his legislation it would progress a little further. In 1969, Mondale revised the legislation based on the 1968 hearings and reintroduced it into the Senate; however it went no further that year. In 1971, hearings were held again and the legislation passed the Senate but died in the House of Representatives. In 1973, hearings were held again as part of a larger discussion of abuses in human subjects research, and this time Mondale's proposal was incorporated into a much larger bill that year, which would be passed by both houses of Congress in 1974 and become known as the National Research Act. Its incorporation into the larger bill allowed it to ride the coattails of concern and outrage over human experimentation that were strong enough to force congressional action. The commission created by the National Research Act was similar in structure and membership to Mondale's; however, it was named the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research and is commonly referred to among bioethicists as simply "The National Commission." It was specifically charged with identifying the ethical and policy guidelines for using human subjects in research and also given the

broader charge to conduct a special study on the social, ethical, and legal implications of advances in all areas of biomedical research--Mondale's persisting intention. The intervening years between Mondale's initial proposal in 1968 and the passage of the act in 1974 were critical for shaping both the legislative views and the wider professional and public opinions that would enable Congress to swiftly create the Commission under the pressure of public opinion. This chapter will show how the continuing attention to these issues in Congress, academia, and professional forums justified and supported Congressional action to create a bioethics commission. Eventually, the National Commission would be created after the Tuskegee Syphilis Study catalyzed political action, despite opposition from the Department of Health Education and Welfare (HEW).

After the First Hearings, 1968-1969

Legislative Efforts and Continued Discussion of Biomedical Research

Following the end of the 1968 hearings on Mondale's proposal, the fate of the legislation seemed promising but it encountered roadblocks. As 1968 progressed, a number of political events developed that seemed to be more pressing than Mondale's proposal for a commission on science and society. One was the final passage of the Civil Rights Act of 1968, which among other outcomes enacted legislation on fair housing. This legislation received the Congressional support it needed only after Martin Luther King, Jr. was assassinated. The Vietnam War was another event that attracted much of the public's attention, especially as the war escalated with the Tet Offensive and military actions that led to a dramatic rise in the U.S. death toll and an increase in public opposition to the war. In addition, the shadow of the upcoming Presidential election in

November of that year and the assassination of Senator and presidential candidate Robert F. Kennedy captivated public and political attention. The election was particularly time consuming for Mondale and his staff, as Mondale was serving as the Co-Chairman, along with Senator Fred Harris, for the presidential campaign of Senator Hubert Humphrey.

Despite the important and high profile task of chairing the presidential campaign, Mondale, Harris, and their respective staffs worked hard during the first half of the year to get the proposal for a National Commission on Health Science and Society through Congress.[385] While the hearings were occurring in the spring, Mondale's staff worked to keep the momentum of the legislation going by preparing for the subcommittee's report, drafting amendments to the proposal, speaking with high ranking Senators and House members and their staffs, encouraging positive media attention, and trying to get the proposal out of the subcommittee and on to the floor of the Senate.[386] Legislative assistant Constance (Connie) Foshay informed Mondale by letter during the hearings that policymakers believed there might be sufficient votes in the Senate if the chairman of the Senate Committee on Government Operations, John McClellan, supported the proposal.[387] Yet a later memorandum from legislative assistant Duane noted that the "Hill opposes it after [the] session with Bernard and Wangensteen," and reported that Harris

[385] Mondale was not alone in pushing the legislation. Mondale wrote to Congressmen Henry S. Reuss that Harris was eager to move the proposal out to the full Senate Subcommittee and to the Senate floor quickly. See Letter to Henry S. Reuss from Walter Mondale, April 15, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.K.7.2F, folder on Health and Welfare 3: Health Commission 5b, Minnesota Historical Society, Saint Paul, MN.

[386] Various memorandums between Mondale and his staff members Constance Foshay and Duane [last name unknown], Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

[387] Memorandum from Connie to Walter Mondale Subject: Further Action on the Health Commission, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

wanted to hold the proposed legislation till the following year.[388] In an attempt to prevent the bill from stalling, Forshay proposed attaching the legislation to another piece of House legislation on regional medical programs, but that did not happen.[389] Trying another tactic, Mondale wrote to House Representative Henry S. Reuss suggesting Reuss discuss it in his subcommittee on Research and Technical Programs.[390] However, this did not work either, despite Reuss' supportive response. Senator Harris' subcommittee, where the hearings were held, published the hearings and drafted a report in which they called for the passage of the legislation, and argued that there were valid concerns that needed attention and no current forum to study such a broad range of issues.[391] Despite these efforts, by June the proposal had lost its momentum in Congress and no further action would occur in 1968.[392]

Even though the legislation had died, there was still attention and interest on the

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[388] Memorandum from Mondale's Congressional Assistant, Duane, to Walter Mondale, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

[389] The legislation was H.R. 15758, see Memorandum from Constance Foshay to Walter Mondale Re: Health Commission, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

[390] Letter to Henry S. Reuss from Walter Mondale, April 15, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.K.7.2F, folder on Health and Welfare 3: Health Commission 5b, Minnesota Historical Society, Saint Paul, MN.

[391] Draft Report of Subcommittee, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

[392] Mondale confirmed this in a letter R. Ronald Harris from Walter Mondale, September 17, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.K.7.2F, folder on Health and Welfare 3: Health Commission 5b, Minnesota Historical Society, Saint Paul, MN; David J. Rothman claims that the 1968 proposal did not pass the Senate for a variety of reasons, as I also argue, but that one of those reasons was that "the Nixon administration was unwilling to support the creation of a forum that would give liberals like Mondale, Harris and Ribicoff the opportunity to play farsighted policy analysts, or for that matter, to create a forum that would rival the executive department's own committees and review structures in the Department of Health, Education and Welfare." However, Nixon was not in power in 1968, so this explanation does not make sense and there is no footnote. See, David J. Rothman, *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making* (New York: Basic Books, 1991): 177-178.

topics the proposed commission would study. A stream of requests for copies of the publication of the hearings exhausted the supply by January 1969.[393] Newspaper articles continued to publish articles about the implications of research mentioned in the 1968 hearings, including on heart transplantation and the acquiring of organs for transplantation; psychological research on memory transfer between animals using chemicals; and genetics research that could be used to create biological weapons, alter human evolution, and identify criminal traits.[394] Professional discussions in conferences and symposiums also continued. A symposium in October of 1968 on "Biology and Ethics," sponsored by the Institute of Biology in England, was held at the Royal Geographical Society. At this symposium the researchers attempted to examine the ethical issues with various topics and make ethical arguments for what should happen in society. The topics included abortion, organ transplantation, biological weapons, reproductive rights in regards to overpopulation, and environmental pollution. A summary was later published in the weekly science and technology news magazine the *New Scientist*.[395]

Professional discussions also continued on researchers' responsibility to consider the ethical and social implications of work in their areas of expertise. At the Twelfth

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[393] Letter from Connie to Walter Mondale, January 25, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

[394] "Heart Transplants Worrying Vatican," *New York Times*, May 25, 1968; David Perlman, "The Search for the Memory Molecule," *New York Times*, July 7, 1968; Joshua Lederberg, "Swift Biological Advance Can Be Bent to Genocide," *Washington Post*, August 17, 1968; Robert Reinhold, "Medicine: When we Alter Genes - and Society," *New York Times*, September 22, 1968; Joshua Lederberg, "'Criminal Genetic Types' Pose a Research Dilemma," *Washington Post*, October 19, 1968.

[395] Graham Chedd, "The Ethics of Biology," *New Scientist* (October 3, 1968): 10-11, in Joshua Lederberg Papers, MS C 552, Box 193, folder on Ethics (1965-1970) 1 of 9, History of Medicine Division, National Library of Medicine, Bethesda, MD.

International Congress of Genetics in 1968, H. Bentley Glass spoke in a session on the future research on evolution. Glass commented that despite "values" being a topic that scientists preferred to avoid it was time for evolutionists and geneticists to pay attention to the ethics of their work. His comments caused a "heated debate" with one scientist, Dr. Herman M. Slatis of Michigan State University, arguing that scientists were "not trained to discuss values any better than anyone else."[396] Coverage of this professional ethics discussion made it to the *New York Times* and in the June 23, 1968 edition of the *Los Angeles Times*, Dr. John H. Dressauer, the Executive Vice President for Research and Engineering for Xerox Corporation, wrote a commentary on the professional obligations for the impacts of technological and scientific progress.[397]

Reintroduction and Revision of Proposed National Commission

On January 25, 1969, five days after Republican President Richard M. Nixon was sworn in as President, Mondale's legislative assistant Constance Foshay suggested that Mondale reintroduce the legislation for the National Commission. She argued that based on the continued interest in the public and among researchers it was worth another try.[398] Foshay was the legislative assistant in charge of researching the issues surrounding the National Commission proposal. She had a M.A. in Public Administration and had prior to working for Mondale's office worked for the Labor Department's anti-poverty program

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[396] Robert Reinhold, "Geneticists Urged to Face Ethical Issues Posed by Science," *New York Times* (August 22, 1968), in Walter F. Mondale Papers, Senatorial Papers, 153.K.7.2F, folder on Health and Welfare 3: Health Commission 5b, Minnesota Historical Society, Saint Paul, MN.

[397] John H. Dessauer, "Human Touch on the Push Button," Topical Comment: Obligations of Progress, *Los Angeles Times*, June 23, 1968.

[398] Letter from Forshay to Walter Mondale, January 25, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

in the small division on health. Foshay's interest in health issues would continue after she left her position with Mondale in 1969 and joined the National Institutes of Health's (NIH) Heart and Lung Institute; eventually she turned to a career as a hospital and health systems CEO.[399] Following Foshay's suggestion, Mondale announced on February 17, 1969 the reintroduction of his legislation and stressed the continuation of the issues in transplantation and genetics that had been discussed the previous year, as well as the support for his proposal from both inside the Senate and from those who testified. He also noted two "small" changes that were a result of suggestions from the hearings. The first change was to revise the name from being a "National Commission" to a "National Advisory Commission" so as "to make explicit the original intent of the measure that the Commission not regulate, but rather provide consultation to Congress and the President."[400] This change aimed to address a concern held by physicians and scientists who worried about regulation by non experts. The second change, also a concern expressed during the 1968 hearings, was to lengthen the term of the commission. Instead of a one year term the commission would serve three years.

While Mondale made revisions to address previous concerns, there was one remaining issue over the placement of the commission in the federal government that Mondale did not concede. In the statement reintroducing his legislation, he observed that "while most agreed that an independent organization was the best alternative, some

[399] Constance Foshay Row, interviewed by Frazier Benya, Private Residence, Edgewood, MD, April 25, 2011, transcript to be deposited at the National Library of Medicine, Bethesda, MD.

[400] Standard letter used for multiple audiences on the reintroduction of proposal for National Advisory Commission on Health Science and Society, Walter F. Mondale Papers, Senatorial Papers, 153.L.10.8F, folder on National Advisory Commission on Health and Society, Minnesota Historical Society, Saint Paul, MN.

thought that other possibilities ought to be explored." He "hoped" that hearings on the legislation could focus on this site issue in 1969.[401] The question was whether the commission should be created within other organizations rather than within the government. This was explored after the hearings by the American College of Cardiology in a report that reviewed the national effort in transplantation research. The report commented on the proposed National Advisory Commission, stating:

> A review of the economic, social, legal and ethical implications of biomedical research should be a continuing activity of a standing organization, either a new commission, or a responsive arm of a currently existing agency such as the National Academy of Science (or a National Academy of Medicine).[402]

The report also suggested the Federation of American Societies for Experimental Biology or the American Medical Association as other possible organizations to take on these tasks. Clearly not everyone wanted Congress or the Executive branches of government to be directly involved.

To demonstrate the intensifying need for some legislation, Mondale cited the recent advances in biomedical research and medicine that had occurred since 1968. His examples included the one hundred and sixty seven human heart transplantations that had been performed across the country and were now being used for children; research into the genetic link for criminal behavior being considered in criminal proceedings; and

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[401] Congress, Senate, Senator Mondale of Minnesota, introducing the Joint Resolution to Create a National Advisory Commission on Health Science and Society, on February 17, 1969, to the President of the Senate, S.J. Res. 47, 91st Cong., 1st sess., Congressional Record 115: 3439.

[402] The reference to a National Academy of Medicine reflects the discussions at the time regarding the creation of one within the National Academies. Eventually this idea was implemented in 1970 but it was called the Institute of Medicine, see Edward D. Berkowitz, *To Improve Human Health: A History of the Institute of Medicine* (Washington D.C.: National Academy Press, 1998); For the quote see Mondale, introducing S.J. Res. 47, 3441.

human eggs being fertilized in the lab as part of research on human development, leading to predictions that there would be "test tube babies" in the near future. Mondale also demonstrated that earlier issues not addressed had led to problems. A medical examiner in Richmond, Virginia removed organs without family consent and before the legal waiting period had elapsed while in Houston, Texas and Milwaukee, Wisconsin, defense lawyers had claimed that surgeons, who removed beating hearts from homicide victims, were responsible for the death of the victims.[403]

Many of these developments and advances in research were also listed in an article published in *The Atlantic Monthly* magazine in February 1969, which Mondale submitted into the *Congressional Record* when reintroducing his legislation. The article by historian Donald Fleming noted that a biological revolution was occurring and detailed the significant impacts genetics research was having and would have on society.[404] The article's appearance in a magazine on public policy spurred numerous responses that were published in the following issue. A few of these letters were from scientists and medical researchers including such well known figures as Joshua Lederberg, the geneticist who wrote a *Washington Post* series on Science and Man; Paul R. Ehrilich, the biologist and ecologist who in the late 1960s warned about the threat of population growth and limited resources in the book *The Population Bomb*; and Theodosius Dobzhansky, a geneticist and evolutionary biologist who was awarded the President's National Medal of Science in 1964.

[403] Mondale, introducing S.J. Res. 47, 3438-3439.
[404] Mondale, introducing S.J. Res. 47, 3441-3444.

Their responses focused on what role scientists should play in addressing the implications of the advances that Fleming had noted. Dobzhansky wrote that "biologists had better keep in mind that the application of these and other possible discoveries to man will raise a host of tough problems, which will be sociological, ethical, and even political, rather than primarily biological in nature."[405] These scientists were joined by anthropologists who wondered what scientists would fulfill this responsibility in practice. One of these non-scientists, J. P. Scott, Director of the Center for Research on Social Behavior at Bowling Green State University, wrote that

> What we need is a new breed of scientists who are aware of the complex and interdependent nature of biological and social processes, and who have the ability and motivation to cooperate with each other in attempting to understand and control these processes.[406]

Meanwhile L. Pearce Williams, Professor of the History of Science at Cornell University, raised questions about authority and autonomy of scientists, and the role of society in examining issues with biology. He asked:

> What are [Fleming's] qualifications for this task? What are the implications of publicly sponsored research being used to destroy the institutions of the society paying for the research? How much autonomy should be granted scientists when the results of their research have implications of fundamental importance to society?[407]

This discussion of scientific professional responsibility was also appearing in other media. A newspaper article published on March 9, 1969 was titled "Lack of Ethics in Science Is Feared," and it discussed the idea of a constitution and bill of rights for

[405] Congress, Senate, Senator Mondale of Minnesota, speech on the Biological Revolution, on February 25, 1969, to the President of the Senate, 91st Cong., 1st sess., Congressional Record 115: 4459.
[406] Mondale, speech on the Biological Revolution, 4459.
[407] Mondale, speech on the Biological Revolution, 4459.

science.[408] In an editorial for the American Chemical Society, risk assessments and evaluations of the implications of science were acknowledged as difficult for scientists to do, but the author asserted that such scrutiny could save wasted time and resources, and might result in the public being more favorable toward the researchers.[409]

These articles and letters on researchers' social and ethical responsibilities demonstrate that the debate over who had the authority, responsibility, and knowledge to examine and address these issues was persistent. It also maintained public and Congressional interest in biomedical research and breakthroughs, and thus sustained interest in Mondale's activities although not necessarily the details of his proposed legislation. Despite the attention, strong opposition from a few surgeons and some competing issues meant that no hearings were held in 1969.[410] The shift in political power from the Democratic party to the Republican party in Congress may have also been influential in the legislation not gathering much political traction.

Passing the Senate and the Formation of Bioethics, 1969-1971

The next time the legislation was considered by Congress was in March of 1971, when Mondale reintroduced it to the Senate for the third time. Mondale's proposal was again overshadowed by the many other political events. These included the beginning of the withdrawal of troops from Vietnam and continuing protests against the Vietnam War

[408] Israel Shenker, "Lack of Ethics in Science is Feared," in Joshua Lederberg Papers, MS C 552, Box 214, folder on Subject Files, Science (1958, 1965-1972, 1980-1982, 1988-1990), History of Medicine Division, National Library of Medicine, Bethesda, MD.

[409] Richard L. Kenyon, "An Underdeveloped Dimension: Scientists and Technologists Have Broader Opportunities in Their Service to Society and Science," *C&EN* (July 7, 1969): 9 in Joshua Lederberg Papers, MS C 552, Box 214, folder on Subject Files, Science (1958, 1965-1972, 1980-1982, 1988-1990), History of Medicine Division, National Library of Medicine, Bethesda, MD.

[410] The unresolved opposition was expressed originally by Christiaan Barnard and Owen Wangensteen on the authority of non-physicians to examine these issues. See Chapter 3.

including the deadly Kent State shootings. Yet Mondale's proposal did make it further along that year then it had ever before. The legislation was referred to the Committee on Labor and Public Welfare, where both Mondale and Senator Edward Kennedy were members. It was then sent to the Subcommittee on Health, which Mondale was on and which Kennedy chaired. Kennedy held one day of hearings on the proposed legislation on November 9, after which the subcommittee quickly produced a report on the proposal and recommend passage of the legislation to the Senate. The 1971 hearings and subcommittee report produced one significant change in the proposed legislation. Based on witness testimony and reinforced by Mondale's arguments in 1968 on the importance of public involvement in these discussions, the legislation was amended to have the commission include a member of the general public.[411] By December 6, 1971 the proposal had passed the Senate for the first time and been sent to the House Committee on Interstate and Foreign Commerce.

There were three differences between the situations in 1968 and 1971 that aided Mondale: the increasing number of scientific advances where there were clear ethical concerns about the potential implications of the research; the proliferation of ad hoc topic-focused discussions on bioethics occurring outside the government; and the institutionalization of bioethics with clear interdisciplinarity efforts. These three

[411] Senate Committee on Labor and Public Welfare, *The National Advisory Commission on Health Science and Society*, 92nd Cong., 1st sess., 1971, S. Rep. 517, 1-9; This interest in public involvement is consistent with the concerns at the time in Congress over making advisory committee activities more open to the public. These concerns would ultimately lead to the Federal Advisory Committee Act in 1972, which opened up the process by which advisory committees were created. See Sheila Jasanoff, *The Fifth Branch: Science Advisers as Policymakers* (Cambridge: Harvard University Press, 1990):46-48.

developments were acknowledged by those who testified during the 1971 hearings and will be detailed in the following sections.

Scientific Advancement and Human Experimentation

Between 1969 and 1971, multiple technological achievements demonstrated the amazing capacity of science and engineering to achieve goals but also to produce dangerous consequences for society. Some of the positive achievements included Boeing's launch of the first 747 airplane, Concorde's first test flight, and NASA's first two missions to the moon. At the same time there were also laws passed to protect the public from technology and its products, such as the Public Health Cigarette Smoking Act which banned television advertisements for cigarettes, and the Congressional order that created the Environmental Protection Agency, whose responsibility it was to oversee policy involving safe water and air among other things. In addition the nation-wide engagement with the first Earth Day, underscored the growing public concerns about the planet and the damage that technology was having on it. These three national developments focused on the impacts of technology, succeeded in part because of a large public engagement in the issues.

Mondale identified in his proposal both research on embryos in test-tubes and cloning research as areas with ethical and social implications that had the potential to spur public engagement. The embryo research had made the news in 1969, when the first successful fertilization of a human egg was achieved in a test-tube. The topic was still attracting attention in 1971 when geneticist and co-discoverer of the structure of DNA, James D. Watson, testified in the House Committee on Science and Astronautics about

the future possibilities of research with human eggs. Watson stated that researchers might soon be able to create an embryo in a test-tube and then implant it in a woman, bringing it to full term. He then commented that if it were to happen "all hell will break loose."[412] This comment was picked up by the *Washington Post* and reported in an article that warned about the uncontrollable capacity in contemporary biomedical research.[413] The prospects of embryo research was also reported in the *Washington Post* when a symposium on "Fabricated Babies: The Ethics of the New Technology of Beginning Life" was held by the Joseph P. Kennedy Jr. Foundation in October of 1971. It is noteworthy that the attendance at the symposium included the now well-known bioethics scholars, Leon Kass and Paul Ramsey, as well as James Watson.[414] During the 1971 hearings Daniel Callahan, a philosopher and co-founder of the Hastings Center (an early center for the study of bioethics), also brought up concerns with embryo research.

Cloning research, while not previously mentioned in hearings on Mondale's proposed commission, was not a new area of concern in 1971. The ethical and social prospects of cloning humans and the use of genetic research to engineer humans had been a topic of discussion among scientists and in the news media since the mid 1960s.[415] As research advanced, scientists like Watson invited public deliberation through his testimony in the House, and Callahan and Mondale picked up the topic in the Senate

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[412] Mondale, Introducing S.J. Res. 75, S 7670.
[413] "DNA and the Sorcerer's Apprentice," *Washington Post*, in Mondale, Introducing S.J. Res. 75, S 7676.
[414] Stuart Auerbach, "Test Tube Baby Study Spurs Ethical Dispute," *Washington Post*, October 17, 1971.
[415] Cloning attracted a large amount of public attention in 1967 following an article by Joshua Lederberg in the *Washington Post*, in which he argued that human cloning was a future possibility. The transition of cloning from a scientific discussion to a bioethical discussion is the focus of the fourth chapter of Nathan P. Crowe's, "A 'Fantastical' Experiment: Motivations, Practice, and Conflict in the History of Nuclear Transplantation, 1925-1970," (PhD diss., University of Minnesota, 2011).

hearings on the proposed commission.[416]

The issues over heart transplantation were mentioned in 1968 but in 1971 they were used to demonstrate how the predicted ethical problems were becoming a reality. In the 1968 hearings commentators had predicted that heart transplantation would lead to controversy about the assignment of organs available for transplant and to lawsuits in which doctors were alleged to be the responsible party for the death of an individual whose organ was removed. As Mondale noted in his introduction to his legislation in 1969 and again in 1971, and as Kennedy noted in the 1971 hearings, these legal and ethical problems were now evident in the three years after the first heart transplant.[417]

Another area that received increased attention in the 1971 hearings was human experimentation. While the 1968 hearings focused primarily on issues involving organ transplantation and genetics, they did also briefly discuss the ethical issues surrounding human experimentation. Concerns over the use of human subjects had been voiced within medicine and law since the Nuremberg Doctor's Trial following World War II and they focused on the risks research posed to uninformed volunteers and patients by physicians who abused humans in research for the sake of research results. Ever more sophisticated questions about the subtleties of what was involved in human experimentation were raised by early scholars of bioethics in the early 1970s, and politicians in Washington paid attention, prompted in part by a series of public scandals. They had the effect of focusing public concern and outrage on an area of biomedical research that had

[416] Senate Subcommittee on Health, *National Advisory Commission On Health Science and Society: Hearings on S.J. Res. 75*, 92nd cong., 1st sess., November 9, 1971.
[417] Mondale, introducing S.J. Res. 47, 3439; *Hearings on S.J. Res. 75*, 8; and Mondale, introducing S.J. Res. 75, S 7673-7674.

immediate implications and resonated with the dialog from the civil rights, consumer rights, and women's rights movements during the 1960s and early 1970s.[418] Daniel Callahan makes the point in his memoir on his career in bioethics:

> Over the years, practical moral problems of [immediate medical, policy, and legal issues] came to dominate the field. The larger initial question [about where new biology and medicine were taking us] came to be overshadowed. Foundations and the media, among others, were far less interested in the future of humanity under the impact of science than they were of ethics at the bedside, laws on care at the end of life, and specific policy recommendations on stem cell research. The larger speculative questions do not fare well in competition with the more immediate issues.[419]

Ultimately, as this chapter will show, abuses in human experimentation would produce enough outrage in 1973 that it would subsume the broader issues that had generated Mondale's proposed commission. Between 1968 and 1973 social and ethical implications of biomedical research became intertwined with medical ethics discussions just as a new field identified as "bioethics" was being formed.[420]

Henry Beecher, the anesthesiologist from Harvard who had raised issues with research involving humans in the 1966 *New England Journal of Medicine* article, became a regular commentator as he testified during the 1968, 1971, and 1973 hearings. Each time he spoke, he asserted his concerns with human experimentation in biomedical research and based his ongoing attention on what he perceived as abuses. In his 1968

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[418] Rothman, *Strangers at the Bedside*, 10; Renée C. Fox and Judith P. Swazey, *Observing Bioethics* (New York: Oxford University Press, 2008): 63-67.

[419] Daniel Callahan, "A Memoir of an Interdisciplinary Career," in *The Oxford Handbook of Interdisciplinarity*, ed. Robert Frodeman (New York: Oxford University Press, 2010): 427;

[420] Warren Thomas Reich, "The Word 'Bioethics': Its Birth and the Legacies of those Who Shaped It," *Kennedy Institute for Ethics Journal* 4, no. 4 (1994): 319-335; and Warren Thomas Reich, "The Word 'Bioethics': The Struggle Over Its Earliest Meanings," *Kennedy Institute of Ethics Journal* 5 no. 1(1995): 19-34.

testimony Beecher expressed his strong support for Mondale's proposal as a means by which these issues could be examined. Following each hearing, Beecher served as a vocal supporter of Mondale's proposal, he wrote to Mondale, Harris, and later Edward Kennedy and Hubert Humphrey encouraging their actions in response to certain practices of human experimentation.[421] Beecher's concern over medical ethics and human experimentation was shared by Eunice Kennedy Shriver. She wrote regarding her own concerns and urged that more physicians be trained in ethics and law, and more ethicists and lawyers be trained in medicine.[422] Shriver's views would eventually lead her to start the Kennedy Institute for Ethics at Georgetown University in 1971. Beecher's and Shriver's views represent the thread of the history of bioethics that arose out of medical ethics, theology, and law, which was concerned with medical decisions between patients and doctors and medical research's involvement with human subjects.

The attention to informed consent standards and patients' rights in medical decision-making has been documented thoroughly by David J. Rothman in his book *Strangers at the Bedside,* by Albert Jonsen in his book the *Birth of Bioethics*, and by the Advisory Commission on Human Radiation Experiments (ACHRE) in their final

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[421] Letters between Henry Beecher and Walter Mondale, April 8 and 11, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.K.7.2F, folder on Health and Welfare 3: Health Commission 5b, Minnesota Historical Society, Saint Paul, MN; Letter to Hubert Humphrey from Henry K. Beecher and Letter to Fred Harris from Henry Beecher, Henry K. Beecher Papers, H MS c64, Box 1, folder Correspondences part 1, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA; Letter to Edward Kennedy from Henry Beecher, April 23, 1971, Henry K. Beecher Papers, H MS c64, Box 12, folder 16: Correspondence with Edward Kennedy re Mondale Hearings, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA; and Henry K. Beecher, "Ethics and Clinical Research," *The New England Journal of Medicine* 274, no. 24 (1966): 1354-1360.

[422] Letters between Eunice K. Shriver and Walter Mondale, March 18 and 25, 1968, Walter F. Mondale Papers, Senatorial Papers, 153.K.7.2F, folder on Health and Welfare 3: Health Commission 5b, Minnesota Historical Society, Saint Paul, MN.

report.[423] All three also provide an explanation for how and when the medical ethics discussions became "bioethics." Rothman describes how "outsiders" entered medical decision making between 1966 and 1976.[424] He argues that the process began in the "laboratory." His reference is to cases that did not occur in laboratories but rather predominantly occurred in hospitals, and with human subjects who were often not volunteers but patients. Despite this, Rothman demonstrates clearly how concerns over human experimentation and patient rights transformed medicine into practice where physicians shared their authority with regulators, lawyers, ethicists, and patients.

Jonsen argues that a shift in medical ethics occurred when scientific and technological medicine took root in the post World War II period. He asserts that bioethics was born out of medical ethics, but only developed when the optimism over scientific medicine and the use of technology in medical care began to falter during the 1960s.[425] The ACHRE report makes no claims about the history of bioethics; however, it describes how medicine slowly incorporated regulations and codes of ethics on human experimentation, and how distinctions between healthy and sick human subjects were drawn, both of which contributed to the subsequent creation of the principles for human experimentation.

While medical ethics had for many years included discussion of the ethics of

[423] Rothman, *Strangers at the Bedside*; Albert R. Jonsen, *The Birth of Bioethics* (New York: Oxford University Press, 1998); Advisory Committee on Human Radiation Experiments, "Part I Ethics of Human Subjects Research: A Historical Perspective," in *Final Report* (Washington, DC: Government Printing Office, 1995).

[424] While he acknowledges that the "insiders," the physicians and medical researchers, did not all share the same opinion on the involvement of non-physicians in discussions and decisions on medical treatment and human experimentation, he proceeds to portray the history as a battle between physicians as "insiders" and politicians and ethicists as "outsiders." Rothman, *Strangers at the Bedside*, 4-5.

[425] Jonsen, *Birth of Bioethics*, 11-12.

human experimentation, Beecher's list of abuses and the Willowbrook State School experiment brought human experimentation ethics into the pubic and political realm.[426] Beecher's examples, while initially intended for the medical profession, were reported on by multiple newspapers in 1966, including the *New York Times*.[427] The Willowbrook experiment involved the testing of a possible immunization to Hepatitis C for children through the deliberate infection with a milder form of the virus. Critics charged that consent was coerced and ill informed, that the risks to the patients were too large, and that the benefits of the research were not imparted on those patients who took on the risk. These criticisms reflected the emerging ethical standards, and the issue that garnered particular attention was that researchers had deliberately infected patients.[428] Discussion of this case and debate over its ethics persisted in the medical community through 1971. A series of editorials discussing the ethics of the research were published in the British medical journal the *Lancet* in 1971.[429] In addition, the experiment was brought up in the 1971 hearings by Dr. John S. Najarian, when he emphasized that there was no standard code of ethics to guide human experimentation and essentially took the other side by

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[426] For further information about the history of human experimentation ethics within the medical profession see Susan E. Lederer, *Subjected to Science: Human Experimentation in America before the Second World War* (Baltimore: Johns Hopkins University Press, 1995); Susan E. Lederer, "Research Without Boarders: The Origins of the Declaration of Helsinki," in *Twentieth Century Ethics of Human Subjects Research: Historical Perspectives on Values, Practices, and Regulations*, ed. Volker Roelcke and Giovanni Maio (Stuttgart: Franz Steiner Verlag, 2004), 199-217; and Advisory Committee on Human Radiation Experiments, "Part I Ethics of Human Subjects Research: A Historical Perspective."

[427] Jane E. Brody, "Experiments and Risks," *New York Times*, June 19, 1966.

[428] Walter M. Robinson and Brandon T. Unruh, "The Hepatitis Experiments at the Willowbrook State School," In *The Oxford Textbook of Clinical Research Ethics,* ed. Ezekiel J. Emanuel (New York: Oxford University Press, 2008).

[429] Philp A. Pecorino, "Chapter 7: Human Experimentation, Case: Willowbrook Experiments," In *Medical Ethics*, City University of New York, http://www.qcc.cuny.edu/socialsciences/ppecorino/MEDICAL_ETHICS_TEXT/Chapter_7 Human_Experimentation/Case_Study_Willowbrook_Experiments.htm (accessed on May 9, 2012).

suggesting that the Willowbrook case, while ethically concerning, might have been the only way to achieve the valuable knowledge the research provided.[430] Less than a year after Najarian's public mention of the experiments, the television investigative reporter Geraldo Rivera produced an exposé on the Willowbrook State School.[431] The public outrage over this story would prove to be one of two exposés on abuses in human experimentation that compelled public and congressional action regarding human experimentation guidelines and regulation.

This attention toward human experimentation led to a shift in focus during the 1971 hearings away from Mondale's broad long-term agenda and toward the specific and apparently urgent issue of human experimentation. Senator Kennedy, as chair of the subcommittee, framed these hearings as part of "a series on health, science, and human rights."[432] The third phrase emphasized the importance of individual patient's and research subject's rights. This was in contrast to the 1968 hearings, which emphasized biomedical research's implications on public health, law, and society's beliefs and standards. The testimony during 1971 by Dr. Duval from the Department of Heath, Education, and Welfare (HEW) focused predominately on the rights of patients and research subjects, including the work and regulations that the HEW had developed for human experimentation.[433] Beecher's testimony unsurprisingly focused on continuing and recent issues in human experimentation, including describing two recent cases, one in

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[430] *Hearings on S.J. Res. 75*, 108.
[431] Beecher had not been allowed to name the research trials or the researchers in his 1966 article, so they remained somewhat anonymous until Geraldo's television report, see Pecorino, "Chapter 7: Human Experimentation, Case: Willowbrook Experiments."
[432] *Hearings on S.J. Res. 75*, 8.
[433] *Hearings on S.J. Res. 75*, 10-39.

which women in a birth control drug trial were given a placebo and another where air force personnel with strep throats were not given penicillin and allowed to develop the life threatening disease of rheumatic fever. Both of these cases struck Kennedy as so important that he asked Beecher to elaborate on them.[434] Daniel Callahan's testimony describing the broad range of ethical issues and social implications of biomedical research and technology also included cases of human experimentation ethics.[435] Callahan's combining of the social implications with the ethics of human experimentation is evidence of the blending of the two threads to create bioethics and was also evident in his new center for the study of bioethics, the Hastings Center. Yet it was the incorporation of urgent issues in human experimentation by Kennedy that bound the area of human experimentation with the social and ethical implications.

Social and Ethical Discussions

Between 1969 and 1971, the efforts to examine the ethical and social issues occurred in a variety of locations. Many organizations proposed, performed or funded investigation of specific topics and issues that had been identified during the 1968 hearings. The federal government, through the National Science Foundation (NSF) and the National Endowment for the Humanities (NEH), identified these as areas of interest. On March 29, 1969, the NSF asked Congress for $10 million to set up twenty university research centers on the study of societal problems, including the impact of science on

[434] *Hearings on S.J. Res. 75*, 99; The birth control case involved Mexican-American women who went to a clinic in San Antonio, Texas for contraceptives and were unknowingly enrolled in a clinical trial to test if the side effects of contraception were psychological or physiological. This involved some of the women being told they were taking birth control but were not actually. See Rothman, *Strangers at the Bedside*, 185; note that Rothman cites this case as occurring in 1972 but Beecher is describing it in 1971.

[435] *Hearings on S.J. Res. 75*, 115.

society; the problems of cities, crime, transportation and mobility; and patterns of community life.[436] At the same time, the NEH funded work at some of the first bioethics focused centers, including at the Hastings Center, the Kennedy Institute for Ethics, the Society for Health and Human Values, and a project at Case Western Reserve on Moral Problems in Medicine.[437] Later, in 1973, the NEH and the NSF would partner to provide funding of a project under the title "Involving Ethical and Human Value Implications of Science and Technology."[438]

Meanwhile the scientific and medical professions, through the National Academy of Science (NAS), were also focusing attention and taking action on the issues. The NAS's Board of Medicine (BOM) addressed the "ethical, moral, and legal issues from advances of biology and medicine." Between 1969 and 1970 the BOM collaborated with other professional organizations, including the American Academy of Arts and Sciences in their publication of a special issue of their journal *Daedalus* on the ethics of human experimentation. The members of the BOM also discussed these issues at professional conferences, such as the American College of Cardiology and the Symposium of the New

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[436] "New Centers to Study Problems of Society," *Business Week* (March 29, 1969), in Joshua Lederberg Papers, MS C 552, Box 214, folder on Subject Files, Science (1958, 1965-1972, 1980-1982, 1988-1990), History of Medicine Division, National Library of Medicine, Bethesda, MD.

[437] Hastings Center Records, 1969-1988, MS 1695, Box 8, folder on National Endowment Grant March 1970, Yale University Archives, Yale University, New Haven, CT; Letter from Samuel Gorovitz to Joshua Lederberg, December 10, 1971, Joshua Lederberg Papers, MS C 552, Box 193, folder on Ethics (Gorovitz)1971-1973, History of Medicine Division, National Library of Medicine, Bethesda, MD; Letter to Henry Beecher from Ronald W. McNeur, August 1, 1970, Henry K. Beecher Papers, H MS c64, Box 17, folder on The Society for Health and Human Values, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA; Jonsen, *Birth of Bioethics*, 26; M.L. Tina Stevens, *Bioethics in America: Origins and Cultural Politics* (Baltimore: Johns Hopkins University Press, 2000): 44.

[438] Notice, February 20, 1973, Hastings Center Records, 1969-1988, MS 1695, Box 8, folder on National Endowment for the Humanities - Notice to Colleges etc., Yale University Archives, Yale University, New Haven, CT.

York Academy of Sciences.[439]

In addition to the BOM, the NAS also examined ethical issues with science in 1970 through its Committee on the Life Sciences and Social Policy.[440] Starting in 1970, the committee's executive secretary was Leon Kass, whose career began to focus on bioethics and who later was the chairman of President George W. Bush's President's Council on Bioethics from 2001-2005. During Kass's tenure as executive secretary, the NAS committee focused its work on three topics: drugs and the nervous system, specifically LSD; death and dying; and genetic manipulation, with specific focus on sex determination and cloning.[441] Kass also wrote a report for the NAS committee on "Ethical Problems and Biomedical Advance" in June 1970.[442] By the end of the year the committee was discussing a project to produce a report on technology assessment of biomedical technology that would build on the results of an earlier NAS committee report titled "Technology: Process of Assessment and Choice."[443] At this time, the Congressional Office of Technology Assessment had not yet been created, but the idea

[439] Board of Medicine Annual Report 1968-1969, James A. Shannon Papers, MS c 363, Box 28, History of Medicine Division, National Library of Medicine, Bethesda, MD.
[440] This committee was established in 1967. See Chapter 1 for more details on the origins of this committee.
[441] Letter to Members of the Committee on the Life Sciences and Social Policy from Leon Kass, September 17, 1970, Committee on the Life Sciences and Social Policy Papers, Behavioral Sciences Collection, folder on Committee on Life Sciences and Social Policy, Correspondence, General, 1970, National Academy of Sciences Archive, Washington, DC.
[442] Leon R. Kass, "Ethical Problems and Biomedical Advance," in Committee on the Life Sciences and Social Policy Papers, Behavioral Sciences Collection, folder on Committee on Life Sciences and Social Policy, Background, 1970, National Academy of Sciences Archive, Washington, DC.
[443] Memorandum from Leon Kass to Henry David, Howard Freedman, and Milton Katz, November 19, 1970, Committee on the Life Sciences and Social Policy Papers, Behavioral Sciences Collection, folder on Committee on Life Sciences and Social Policy, Meeting Minutes 1970, National Academy of Sciences Archive, Washington, DC.

and need for such an office was already under discussion in the House.[444] The Committee's work in these areas continued through 1971, when it held a meeting that included discussion of in-vitro fertilization, sex determination, behavior modification, and the control of aging.[445]

Publishers responded to public interest and published books that surveyed and examined the implications of technology on society. Two were published in 1970. *The Children of Frankenstein: A Primer on Modern Technology and Human Values* by Herbert J. Muller presented the positive and negative impacts of technologies. *Toward Century 21: Technology, Society and Human Values* included articles by scientists and humanities scholars. This book was edited by C.S. Wallia, who was the director of a project at Stanford University on "Technology and Human Values" and who also was teaching a class on "Science, Public Policy and the Individual."[446] The chapters in the book came from a series of lectures held at Stanford over one academic year and six corresponding undergraduate seminars. Together they reflected the interdisciplinary interactions that were occurring more frequently between scientific researchers and humanities on campuses as well as among a more general public.

International discussions on science in society and on social responsibility were

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[444] Ken Hechler, *Toward the Endless Frontier: History of the Committee On Science and Technology, 1959-79* (Washington: U.S. Government Printing Office, 1980): 159 and 560.

[445] Tentative Agenda for Planning Meeting, June 25-26, 1971, Committee on the Life Sciences and Social Policy Papers, Behavioral Sciences Collection, folder on Committee on Life Sciences and Social Policy, Meeting Minutes 1971, National Academy of Sciences Archive, Washington, DC.

[446] Ward Madden, "Melodramatic Questions," *Science* 168 (May 8, 1970): 687-688; C. S. Wallia, ed., *Toward Century 21: Technology, Society, and Human Values* (New York: Basic Books, 1970); Herbert J. Muller, *The Children of Frankenstein: A Primer on Modern Technology and Human Values* (Bloomington: Indiana University Press, 1970).

initiated by the Ciba Foundation in June 1971.[447] The Ciba Foundation was a scientific society with the goal of "promoting international cooperation in medical, chemical, biological, and pharmaceutical research and in allied subjects."[448] The speakers at the symposium included a very interdisciplinary group with scientists and physicians in the minority, and philosophers, social scientists, scholars of science policy, and faculty from Science, Technology, and Society programs in the majority who discussed "Civilization and Science: In Conflict or Collaboration?" Among talks on science policy, anti-science sentiments, the economic aspects of science, and the role of science in civilization, there was also an underlying debate regarding the extent of the responsibility that scientists had to society, which culminated in a session led by June Goodfield-Toulmin on "The Responsibility of Scientists to the Community: a Discussion."[449] Toulmin commented that scientists had previously withdrawn from societal and political discussions "yet the profession is now involved up to the hilt with all these extraneous matters."[450] She argued that one could "name any contemporary problem and science touches it at some point."[451] Toulmin asserted that the scientific profession was "ill-equipped" for sustained and substantial interaction with members of society but that scientists needed to consider how

[447] The speakers also came from a variety of countries including Switzerland, England, the United States, France, India, Canada, Amsterdam, Venezuela, and Japan, see G. E. W. Wolstenholme and Maeve O'Connor, *Civilization and Science: in Conflict or Collaboration? A Ciba Foundation Symposium 1* (Amsterdam: Associated Scientific Publishers, 1972): vii-viii.

[448] The earlier activity of the Ciba Foundation on ethical and societal responsibility of scientists and the issues with new research are detailed in Chapter 1. Also see, Katharine Lee and Nancy G. Spufford, *Portrait of a Foundation: A Brief History of the Ciba Foundation and its Environment* (London: Ciba Foundation, 1993), vii.

[449] Wolstenholme and O'Connor, *Civilization and Science: in Conflict or Collaboration?, 61-76.*

[450] Wolstenholme and O'Connor, *Civilization and Science: in Conflict or Collaboration?,* 62.

[451] Wolstenholme and O'Connor, *Civilization and Science: in Conflict or Collaboration?,* 62.

and when to try.[452] The on-going debate over the responsibility of scientists provided the rationale to incorporate researchers in the conversations on ethical and social issues.

Formation of Bioethics

Mondale's argument during 1971 was that his proposed commission could serve as a vehicle for discussions of the ethical and social issues with biomedical research.[453] It did not take into account that in the two years since he had last introduced the legislation, new organizations, including the Hastings Center and the Kennedy Institute of Ethics, had sprung up to do research in these areas. These bioethics centers had even followed Mondale's proposed model of interdisciplinary discussion. The similarity between the centers and the proposed commission only added to the evidence that numerous conferences, meetings, and committees, some sponsored by the NIH and the NAS, were now in place. Concern about the duplication of efforts was brought up in the hearings by Dr. Merlin K. Duval, the Assistant Secretary for Health and Scientific Affairs in the Department of Health, Education and Welfare. Duval, who expressed the only opposition during the hearings, argued that the efforts already going on were sufficient to address these issues and that a short term federal commission would not provide much benefit, especially when long term efforts outside of the government might have more success..[454] His argument explains the shift in the NIH's and the HEW's support for the commission between 1968 to 1971.[455] Mondale and Kennedy countered the claims of duplication with

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[452] Wolstenholme and O'Connor, *Civilization and Science: in Conflict or Collaboration?,* 61.
[453] Mondale, Introducing S.J. Res. 75, S 7671.
[454] *Hearings on S.J. Res. 75*, 39-41.
[455] When Kennedy questioned Dr. Duval and Dr. James Marston, Director of the NIH, about the shift in support, they explained that they thought it was no longer necessary for the government to get involved because other non-governmental institutes were taking up the effort. Mondale believed that resistance

the argument that the commission's ability to provide a forum for public discussion made it distinct. Ultimately, even though Dr. Duval did not support the legislation, he shared a view with others who supported Mondale's proposal; they all agreed the issues needed attention.[456] Counter to Duval's argument of duplication, many believed that the institutionalization of bioethics and the early scholars of bioethics actually reinforced the rationale for Mondale's federal commission.

Society of Health and Human Values

An early case of the institutionalization of bioethics is the formation of the Society of Health and Human Values. It started around 1966 as a committee on Health and Human Values with a mailing list of about 130 people. The majority of those on the mailing list were "theologically trained person[s] engaged on medical school campuses" who worked in medical education rather than as chaplains.[457] In April of 1969 the committee become a Society, and elected Edmund D. Pellegrino President.[458] Pellegrino was a founding member of the Kennedy Institute of Ethics at Georgetown University and would much later serve as the chairman of the President's Council on Bioethics under President George W. Bush. The Society membership also included a number of people

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on the part of biomedical researchers and physicians was based on their reluctance to open these matters to the public. *Hearings on S.J. Res. 75*, 40-43; for information on the Harvard panel see: Senate Subcommittee on Government Research, *Hearings on S.J. Resolution 145*, 90th Cong., 2d sess., March 7-8, 21-22, 27-28, April 2, 1968, 472-473; Jonsen, *Birth of Bioethics*, 238-242; Stevens, *Bioethics in America*, 81-83; and Rothman, *Strangers at the Bedside,* 160-165.

[456] This view's counter intuitiveness was laughed at by Senator Dominick during the hearings. *Hearings on S.J. Res. 75*, 69.

[457] Letter from Ronald W. McNeur to Henry Beecher, October 23, 1968, Henry K. Beecher Papers, H MS c64, Box 17, folder on The Society for Health and Human Values, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

[458] Letter from Ronald W. McNeur to Henry Beecher, August 1, 1970, Henry K. Beecher Papers, H MS c64, Box 17, folder on The Society for Health and Human Values, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

who are referred to today as bioethicists: Henry Beecher; Daniel Callahan; Joseph Fletcher, the author of the pioneering book *Morals and Medicine* in 1954 and later *The Ethics of Genetic Control* in 1974; Renee C. Fox, a sociologist who was an active member in the early history of the Hastings Center; Jay Katz, a physician by training who worked on the legal issues of medicine and wrote the 1972 seminal book in bioethics *Experimentation with Human Beings: The Authority of the Investigator, Subject, Professions, and State in the Human Experimentation Process*; and a number of other theologians, ethicists, deans of medical schools, and physicians.[459] The main thread of the history of bioethics apparent in the beginnings of the Society for Health and Human Values was the interaction between medical ethics, theology, and law. This focus is emphasized by the Society's aim to improve medical education and medical care. As stated in their original by-laws from 1970, "The Society is organized as an international organization for the purpose of dealing with issues of human values as they relate to health services, medical education and research."[460] While it did not specify what "research," the topics they focused on suggest they implied *biomedical* research. The first annual meeting on October 19, 1970 was held in conjunction with the Association of American Medical Colleges, the first annual lecture was given by Dr. Bentley Glass, a geneticist. Though the Society's main focus was medical ethics, its early history

[459] The membership of the society was limited in number and each member had to be voted in by the Council of the Society. Letter from Ronald W. McNeur to Henry Beecher, August 1 and 6, 1970, and Letter to All Members of the Society from Ronald W. McNeur, October 7, 1970, Henry K. Beecher Papers, H MS c64, Box 17, folder on The Society for Health and Human Values, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

[460] Letter to All Members of the Society from Ronald W. McNeur, October 7, 1970, Henry K. Beecher Papers, H MS c64, Box 17, folder on The Society for Health and Human Values, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

demonstrates that it too was reflecting the merging of specifically medical concerns with the social implications of biomedical research.[461]

The Hastings Center

The development of the Hastings Center began at a Christmas party in 1968, when co-founder Daniel Callahan proposed his idea for the Center to Willard Gaylin, who would become the other co-founder. Callahan's proposal was for an interdisciplinary center that would analyze the social, ethical, and moral questions raised by biomedical research. The center's initial funding came from Callahan's mother, but within a year they had financial support from John D. Rockefeller III and Elizabeth Dollard, as well as from the NEH and the Rockefeller Foundation.[462] Starting in its early years the Hastings Center brought medical researchers and geneticists together with humanities scholars, theologians, lawyers, and social scientists to "help professionals see the impact of their work, and discuss it in a systematic way."[463] During the 1971 congressional hearings, Callahan testified to the need for this interdisciplinary work that he had started at the Hastings Center, saying that such activities would:

> ...mean that barriers between the professional disciplines must fall--physicians must learn to talk with philosophers, biologists with lawyers, historians with geneticists, social scientists with pediatricians. And all

[461] Letter to Henry Beecher from Ronald W. McNeur, August 1, 1970, and Letter to All Members of the Society from Ronald W. McNeur, October 7, 1970, Henry K. Beecher Papers, H MS c64, Box 17, folder on The Society for Health and Human Values, Center for the History of Medicine, Francis A. Countway Library of Medicine, Harvard University, Boston, MA.

[462] The history of the Hastings Center is detailed in the following sources: Jonsen, *Birth of Bioethics*, 20-22; Stevens, *Bioethics in America*, 46-74; Daniel Callahan, "The Hastings Center and the Early Years of Bioethics," *Kennedy Institute of Ethics Journal* 9, no. 1 (1999): 53-71; and Fox and Swazey, *Observing Bioethics*, 21-60.

[463] Letter from Daniel Callahan to John M. Musser, July 7, 1971, Hastings Center Records, 1969-1988, MS 1695, Box 5, folder on General Service Foundation, Yale University Archives, Yale University, New Haven, CT; and Callahan, "The Hastings Center and the Early Years of Bioethics," 57.

> together [they] must learn to talk with legislators, with the communications media, and with the man on the street.[464]

Callahan went on to suggest that Mondale's proposed commission could more easily achieve the component of talking with legislators and the public than even the Hastings Center, although the Center could help contribute to such efforts.[465] The Hastings Center had already been working on public engagement through media and, as Stevens claims, by 1971 the Hastings Center's "professional reputation was secure, as was an agreeable and enduring relationship with the press."[466] Stevens also asserts that the Hastings Center defined its role as that of "mediator, translating between contending lines of thought," and "as coming to grips with the social implications of the biological revolution."[467]

The interdisciplinarity that Mondale and Callahan had envisioned separately is evidenced by the Hastings Center's board membership and staff in the first few years, which included people from various fields, several of whom had been active in these broad discussions already, such as physician Henry Beecher, geneticist Theodore Dobzhansky, bacteriologist René Dubos, philosopher Hans Jonas, and Leon Kass. Others were newcomers, such as pharmacist and theology student Robert M. Veatch, physiologist Marc Lappé, philosopher Robert Neville, intellectual historian Peter Steinfels, Christian ethicist Paul Ramsey, theologian Bruce Hilton, and law student

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[464] *Hearings on S.J. Res. 75*, 118.
[465] He made this point when he stated that the Hastings Center had been "working very hard to bring these issues out into public discussion." But he followed that by saying that "It seems to me a commission would be one very effective way of publicizing the issues." *Hearings on S.J. Res. 75*, 118.
[466] Stevens, *Bioethics in America*, 54.
[467] Stevens, *Bioethics in America*, 47.

Alexander M. Capron.[468] This collaboration was so important to the Hastings Center that during Callahan's presidency he stipulated that no one discipline could have more than two representatives on staff.[469] The Hastings Center also gathered a group of "fellows" from across the country who would consult on various projects, or as they called them, task-forces.[470] These task-forces addressed the broad range of topics the Center tackled in its first few years, encompassing behavior control, population control, death and dying, genetic counseling and genetic engineering, and medical ethics.[471] The inclusion of not just medical ethics and patient consent issues but also the societal effects or impacts of genetic screening and population growth, signify the broadening of the agenda.

Callahan's connection to Mondale began when Callahan contacted John Fletcher on April 3, 1969 asking for information on the hearings on Mondale's 1968 proposal, writing that he was interested "since it might provide leads about issues, names, and possible sources of money."[472] Fletcher responded on April 30, attaching his only copy of

[468] Callahan writes that in the early days they "recruited a number of distinguished scientists," and he notes that all had been educated in Europe through a gymnasium system that included education in the humanities. He argues that this predisposed them to considering the social and ethical problems with their work and were often willing to discuss the issues, compared with the next generation of scientists who were educated in America and had almost no humanities education. See Callahan, "A Memoir of an Interdisciplinary Career," 426; Hastings Center Records, 1969-1988, MS 1695, Box 1, folder on Minutes of the Meetings of the Board of Directors, Yale University Archives, Yale University, New Haven, CT.

[469] Callahan, "A Memoir of an Interdisciplinary Career," 422; and Callahan, "The Hastings Center and the Early Years of Bioethics," 63-64.

[470] Stevens, *Bioethics in America*, 49.

[471] Letter from Daniel Callahan to John M. Musser, July 7, 1971, Hastings Center Records, 1969-1988, MS 1695, Box 5, folder on General Service Foundation, Yale University Archives, Yale University, New Haven, CT; Jonsen, *Birth of Bioethics*, 21.

[472] Hastings Center Records, 1969-1988, MS 1695, Box 17, folder on A-K Correspondence 1969-1970, Yale University Archives, Yale University, New Haven, CT.

the hearings and commenting on how valuable he found them to be.[473] Later that year Mondale started serving on the Center's Advisory Council.[474] While Mondale never attended any meetings, his relationship with the Hastings Center, even if just on paper, helped both of their causes. Mondale lent political clout and authority to the Hastings Center. While the Center provided Mondale with a demonstration of how issues could be addressed by carefully selected teams of specialists. They each reinforced the other's arguments that the complex issues needed to be examined interdisciplinarily and in a sustained manner.[475] While the Hastings Center had adequate initial funding, Callahan quickly realized that much of it was for specific projects, and that it was difficult to get infrastructure support for the development of the Center.[476] The problem appeared to be partially solved by a three year matching development grant from the NEH in 1971; however, the matching funds were never raised, and the Center only received half the

[473] Hastings Center Records, 1969-1988, MS 1695, Box 17, folder on A-K Correspondence 1969-1970, Yale University Archives, Yale University, New Haven, CT.

[474] Hastings Center Records, 1969-1988, MS 1695, Box 17, folder on L-Z 1969-1970 Correspondences, Yale University Archives, Yale University, New Haven, CT.

[475] Callahan argued that the early bioethics commissions also helped the Hastings Center without direct involvement, by giving bioethics high visibility and engaging the public in these discussions, which in turn made funding easier for the Center to gather. See Callahan, "The Hastings Center and the Early Years of Bioethics," 62.

[476] Letter from Daniel Callahan to Barnaby Keeney, March 19, 1970, Hastings Center Records, 1969-1988, MS 1695, Box 8, folder on National Endowment Grant March 1970: 1970 Grant Proposal, Yale University Archives, Yale University, New Haven, CT; and Letter from Daniel Callahan to Herbert McArthur, NEH, December 30, 1971, Hastings Center Records, 1969-1988, MS 1695, Box 8, folder on National Endowment Grant 1971, Yale University Archives, Yale University, New Haven, CT; Albert Jonson asserts that the National Endowment for the Humanities was crucial for the funding of bioethics, as it not only funded projects at the Hastings Center but also at the Kennedy Institute for Ethics, and the Society for Health and Human Values, see Jonsen, *Birth of Bioethics*, 26; M.L. Tina Stevens argues that the Hastings Center's struggles to ensure institutional longevity were complicated by their desire to safeguard autonomy and integrity, see Stevens, *Bioethics in America*, 46.

money they had anticipated.[477] The grant allowed the Hastings Center to develop new projects and to expand its list of fellows. The Hastings Center's problems served as further evidence of the need for sustained support, which might come through a federal commission.

Mondale and Callahan continued their connection through 1971, when Callahan testified in support of the proposed commission at the hearings held by Senator Kennedy. That same year Callahan also wrote Mondale, inviting him to a meeting at the Hastings Center on "Public Policy and the Life Science," which Mondale was unable to attend.[478] The Hastings Center, as evidenced by its task-forces and conferences, examined many of the issues and topics of the earlier hearings and it combined them with the discussions over medical ethics and human experimentation. One example of this was on the topic of genetic research and testing, which was the focus of two symposia hosted by the NIH in conjunction with the Hastings Center.

NIH Fogarty Symposia

The NIH sponsored two symposia, a May 18-19, 1970 symposium on "Early Diagnosis of Human Genetic Defects: Scientific and Ethical Considerations" and an October 10-14, 1971 symposium on "Ethical Issues in Human Genetics: Genetic Counseling and the Use of Genetic Knowledge." The proceedings of the two meetings were published by the NIH as part of a series devoted to the impact of scientific research

[477] Letter from Daniel Callahan to Ronald Berman, Chairman of the NEH, November 14, 1973, Hastings Center Records, 1969-1988, MS 1695, Box 8, folder on National Endowment Grant 1971, Yale University Archives, Yale University, New Haven, CT.

[478] Letter from Daniel Callahan to Walter Mondale, March 23, 1971, Hastings Center Records, 1969-1988, MS 1695, Box 18, folder on Correspondences M, 1971-1974, Yale University Archives, Yale University, New Haven, CT.

on society.[479] The NIH's John E. Fogarty International Center for Advanced Study in the Health Sciences had been established in 1968 to fulfill the goal of the deceased Senator to create an international health research institute.[480] The first symposium, as explained during the welcoming remarks, was to help inform NIH funding decisions on controversial research and to fulfill its public responsibility to the Congress, the Administration, and the American people by examining the ethical issues with research they funded.[481]

The majority of the participants at the initial symposium were physicians or scientists, many familiar to the NIH. Additional participants included Daniel Callahan; theologians Reverend John Fletcher, who was already publishing on human experimentation ethics in 1967; Canon Michael Hamilton; and legal scholars Harold P. Green of the National Law Center at George Washington University and Daniel Singer from the Federation of American Scientists. The symposium's membership was heavily weighted to the medical and biological sciences, and thus reflected the participation of the conferences held earlier during the first years of the 1960s, which also devoted multiple sessions to the ethical and social issues. For example, in this symposium along with lectures on "Cytogenetic Problems in Antenatal Diagnosis," and "Use of Amniotic Fluid and Reliability of Diagnostic Procedures," there were also lectures on "The Law

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[479] Maureen Harris, ed., *Early Diagnosis of Human Genetic Defects: Scientific and Ethical Considerations*, Series of Fogarty International Center Proceedings, No. 6 (Washington D.C.: U.S. Government Printing Office, 1971); Bruce Hilton, et al., eds., *Ethical Issues in Human Genetics: Genetic Counseling and the Use of Genetic Knowledge*, Fogarty International Proceedings No. 13 (New York: Plenum Press, 1973).

[480] "History of the Fogarty International Center," National Institutes of Health, http://www.fic.nih.gov/About/Pages/History.aspx (accessed May 2, 2012).

[481] Harris, ed., *Early Diagnosis of Human Genetic Defects: Scientific and Ethical Considerations*, 3-4.

and the Unborn Child: A Brief Review of Emerging Problems" and "Ethical Issues Resulting from Prenatal Diagnosis."[482] Even before the proceedings of the first symposium were published, the NIH Fogarty Center had already begun planning the second symposium.

This next symposium would "wrestle with the value problems" of early genetic diagnosis and reflect the progress that had been made in forming the field of bioethics.[483] In the fall of 1971, the second symposium, titled "Ethical Issues in Human Genetics: Genetic Counseling and the Use of Genetic Knowledge," demonstrated how institutionalized bioethics had become through its co-sponsorship between the NIH and the Hastings Center. Their joint sponsorship shifted topical focus and participation as it dealt with the social implications and ethical issues with genetic testing; there were no lectures on the science of genetic testing, in contrast to the first symposium sponsored only by the NIH. More than identify problems and issues, it used the expertise of attending scholars to attempt to resolve these ethical and societal problems.[484]

The participant list reflected the growing collaboration being institutionalized at the Hastings Center. The group included a large number of scholars who would become leaders in the field of bioethics, including: Alex Capron, from Yale Law School; James M. Gustafson, of the University of Chicago Divinity School; Leon Kass; Paul Ramsey; Robert M. Veatch; Daniel Callahan; and John Fletcher. One of the participating scientists was Robert L. Sinsheimer of California Institute of Technology, who had argued in the

[482] Harris, ed., *Early Diagnosis of Human Genetic Defects: Scientific and Ethical Considerations*.
[483] Harris, ed., *Early Diagnosis of Human Genetic Defects: Scientific and Ethical Considerations*, 10.
[484] Hilton, et al.,eds., *Ethical Issues in Human Genetics*.

scientific literature during the late 1960s for scientists in the biological sciences to fulfill a social responsibility and to warn the public about the implications of their research.[485] This symposium demonstrated how the various threads of activities in law schools, religion departments, STS programs, the NIH, the Hastings Center, and the National Academy of Science had became woven together in the emerging field of bioethics. The rhetorical and professional arguments were repeated in the preface of the symposium proceedings by Peter G. Condliffe, of the Fogarty International Center, and Daniel Callahan: "We are indeed in a situation analogous to that of the physicists following the discovery of nuclear fission by Han and Meitner, after which it was certain that an atomic bomb could be constructed if sufficient effort was made."[486] The other lines of development involving medical ethics, law, religion, and STS were expressed through lectures that presented perspectives on the issues from sociology, law, medicine, and theology.

The collaboration of the various fields at the symposium was not an accident. The deliberate intention was expressed as a response to the first symposium, which was noted in the preface to the 1973 proceedings:

> At the close of the meeting in 1970, the chairman, in agreement with other members of the conference, pointed out to the Fogarty International staff that with one exception, a lawyer, all the invited speakers had been medical research workers....While several ethicists and lawyers were invited to participate, the composition of the conference clearly reflected a not-unusual situation in which scientists who are the first to know of developments in the laboratory and clinic, discuss the societal aspects of their work among themselves and only later enter into a dialogue with

[485] For more on Sinsheimer's earlier activities see Chapter 1.
[486] Hilton, et al., eds., *Ethical Issues in Human Genetics*, x.

> their colleagues in the law, the social sciences, the humanities, and letters.[487]

To achieve this interdisciplinary participation earlier in the process, the Fogarty Center teamed up with the Hastings Center to produce a new model. The second symposium reflected the interdisciplinary ideals of the Hastings Center, especially when three of the five member of the program committee for the conference were from the Hastings Center.[488] By October of 1971, when this second symposium was held, the interdisciplinary nature of bioethics was more accepted and several key areas of bioethics established. Both provided more support and justification in the Senate for Mondale's proposed commission, because it made Mondale's interdisciplinary idea normal, or at the very least not unprecedented, as it had seemed in 1968.

Kennedy Institute of Ethics

The second center for bioethics was the Kennedy Institute of Ethics (KIE) at Georgetown University. It was the idea of André Hellegers, in collaboration with both Eunice Kennedy Shriver and R. Sargent Shriver, and the couple funded the center at the Catholic university through the Joseph P. Kennedy Foundation. When it opened its doors on July 1, 1971 it was named the Joseph and Rose Kennedy Institute for the Study of Human Reproduction and Bioethics, but the name was changed to its current title within a few years.[489] The original title does however reflect a significant event in the history of the field, that of the beginning of the use and definition of the term "bioethics." As Warren Thomas Reich asserts, the term had only been coined in 1970 and was still

[487] Hilton, et al., eds., *Ethical Issues in Human Genetics*, ix.
[488] The three Hastings Center members were Daniel Callahan, Leon Kass, and Robert S. Morison.
[489] Jonsen, *Birth of Bioethics*, 22.

gaining acceptance.[490]

The makeup of the KIE leaned slightly more toward medical ethics than the Hastings Center did. Hellegers was a physician who conducted research on fetal physiology, and it was his investigation of prenatal causes of mental retardation that connected him with the Kennedy Foundation.[491] In KIE's first few years of existence, its faculty consisted of either physicians or theologians, including Mennonite theologian LeRoy Walters; Catholic theologian Warren Reich; theologian James F. Childress; and of course Hellegers. Even the visiting scholars were all theologians.[492] It would not be until a few years later that philosophers by training were added to the faculty.[493] KIE's interdisciplinarity was different from the Hastings Center's. While the KIE included physicians and theologians, later adding some philosophers, the Hastings Center added biological scientists, humanists, and social scientists. The Hastings Center and KIE also differed in their intellectual location; KIE lived within a religious university setting connected to a medical school, while the Hastings Center lived independent of any university and strove for autonomy. Despite these differences both held conferences or workshops that spurred discussion and consideration of the ethical and social issues with biomedicine.

The KIE started its first year with a symposium in October of 1971 to announce

[490] The term "bioethics" was so new that it was not even mentioned once during the hearings in 1971. The history of the origins and definition of the term are detailed in Reich, "The Word 'Bioethics': Its Birth and the Legacies of those Who Shaped It," 319-335; and Reich, "The Word 'Bioethics': The Struggle Over Its Earliest Meanings," 19-34.

[491] Jonsen, *Birth of Bioethics*, 22.

[492] Jonsen, *Birth of Bioethics*, 23.

[493] Jonsen, *Birth of Bioethics*, 24; and Tom Beauchamp, interviewed by Frazier Benya, Georgetown University, Washington, DC, April 27, 2011, transcript to be deposited at the National Library of Medicine, Bethesda, MD.

the Institute and host discussion; it was titled "Choices on Our Conscience." The event was advertised as including discussions on human rights, retardation and research.[494] The "launching pad and centerpiece" of the symposium was a thirty minute documentary film depicting a pediatric case that had occurred at Johns Hopkins University, in which an infant with Down syndrome and with a repairable intestinal block was allowed to die by starvation from the intestinal block at the request of the parents.[495] Physician and founding members of the KIE found the actions the physicians at Hopkins to be immoral and this came through in the video demonstrating the case. As Renée Fox and Judith P. Swazey assert in their book *Observing Bioethics*, the video was biased toward moral disapproval of the parents and stirred moral concern over the treatment of people with mental retardation.[496] Beyond the film discussion, the other symposium sessions focused on physician-patient decisions regarding mental retardation, and on the role that genetics in medical care and reproduction might have on children born with mental retardation.

Despite the narrow focus of the symposium and the medical theological emphasis of the KIE, the symposium reflects the intertwining of the thread of medical ethics and the social and ethical implications of biomedical research. Mondale served on the group of panelists that commented on the video presented at the symposium.[497] Senator Kennedy's involvement in both the symposium and the subsequent November hearings in 1971 brought attention to human experimentation and the societal impacts of cloning and assisted reproduction. Kennedy stated that the hearings were "intended to carry forward

[494] Fox and Swazey, *Observing Bioethics*, 77.
[495] Fox and Swazey, *Observing Bioethics*, 79.
[496] Fox and Swazey, *Observing Bioethics*, 80-81.
[497] Fox and Swazey, *Observing Bioethics*, 81.

the important work begun at the symposium, and to determine specific policies and legislative proposals which are needed to cope with these problems."[498] Kennedy believed the proposed commission was a valuable supplement to the excellent work of his family's new bioethics center, a thought which Mondale also seconded during the hearings.[499] Both Senators argued that the centers for bioethics and the narrow and short-term efforts occurring throughout academia and the government were not sufficient to address all the issues with biomedicine.

A Public and Centralized Vehicle for Ethics Discussion

These on-going activities ultimately led Mondale and many of the witnesses at the hearings to refine their arguments to emphasize how the commission could complement the other efforts. Thus they underscored the commission's public, comprehensive, continuing, proactive, and official characteristics, in contrast to other ad hoc, academic, and professional activities. Mondale stated that while

> I do welcome the greatly increased interest in the form of new institutes to study these issues… I think we need something far more official and far more public if we are to reach agreement on the ways in which society is to organize itself to handle these unprecedented problems.[500]

Kennedy argued that these discussions needed to be public because the research was federally funded:

> I think this has to be a public process…in a free society, the public must be a part of it. We obviously are. The Congress appropriates fantastic quantities of money for American medicine, which produces many of

[498] *Hearings on S.J. Res. 75*, 2.
[499] *Hearings on S.J. Res. 75*, 9.
[500] *Hearings on S.J. Res. 75*, 9.

> these technological breakthroughs. I don't see how we can be neutral on the matter.[501]

Mondale argued for the public process more emphatically than he had in the 1968 hearings, saying:

> This cannot be--and should not be--a private process. The public's stake is too great. And the need for consensus as to how society should deal with these profound problems is too clear. We cannot depend entirely on studies by academics, health professionals, and learned societies.[502]

In addition, Mondale, in his 1971 speech reintroducing his legislation, argued that the interdisciplinary and public discussion his commission could provide could be the "vehicle" for the needed communication and discussion on the implications of biomedical research.[503]

Witnesses at the hearings made the arguments for the commission's distinctive role even more explicitly than the Senators. Beecher commented that despite the efforts at the NIH, he did not believe that there was any specific group within the NIH working on all the issues. He contended, just as he had in 1968, that the commission could provide valuable guidance on the variety of issues with biomedical research.[504] Abram Chayes, professor of law at Harvard University, pointed out that "unless one can get sustained work over a considerable period with a critical mass of people, we are not going to make much progress."[505] He then stated that he strongly supported the proposed commission. His argument was significant, considering his experience serving as co-chairman of the

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[501] *Hearings on S.J. Res. 75*, 8.
[502] *Hearings on S.J. Res. 75*, 9.
[503] Congress, Senate, Senator Mondale of Minnesota, introducing the Joint Resolution to Establish a National Advisory Commission on Health Science and Society of 1971, on March 24, 1971, to the President of the Senate, S.J. Res. 75, 92th Cong., 1st sess., Congressional Record 117: S 7671.
[504] *Hearings on S.J. Res. 75*, 89.
[505] *Hearings on S.J. Res. 75*, 90.

Salk Institute's Commission on Law, Biology, and Ethics, which was started three years earlier and which Duval had argued was sufficient. Chayes went on to assert that the proposed commission could contribute the most by allowing for careful thought and reflection on the issues and by "stimulating a far-reaching and informed dialog."[506] He explained: "I would prefer a commission, because I would prefer the sense of focus, the sense of public attention, public importance that a commission of this distinction appointed under a resolution, a joint resolution of Congress, will give."[507] In a response to Dr. Duval's assertion that the current efforts made the commission unnecessary, Chayes argued that those efforts "are all sort of at the level of seminars, struggling to get some interconnection between them, struggling for a wider scope of action, and that, it seems to me, is one of the things that the commission can provide."[508] At the conclusion of his testimony, Chayes stressed how essential it was to be proactive on these issues with great societal impacts.[509]

Daniel Callahan also asserted that it was important the commission be public and believed it would not be a duplication of the efforts already occurring. Callahan laid out the reasons for public deliberation:

> Public examination and discussion is essential for a number of reasons: to establish scientific priorities, which will bear heavily on the allocation of research and delivery funds; to bring some common wisdom to decisions which are too often unnecessarily private and isolated; to established [sic]

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[506] *Hearings on S.J. Res. 75*, 92.

[507] To reinforce his point about the significance of national commissions, he cited the examples of a special commission on Cancer and the Defense Department's Marshall and Gates Commission, which he asserted had provided something more that the other private efforts. *Hearings on S.J. Res. 75*, 94 and 97.

[508] *Hearings on S.J. Res. 75*, 96.

[509] *Hearings on S.J. Res. 75*, 97-98.

> ethical and social norms for assessing technological developments; and, finally, to enable the public to understand the exact nature of the issues at stake.[510]

He then followed with a statement that the proposed commission would be a "very effective way of publicizing the issues and, perhaps most importantly, trying to bring some systematic thought and investigation to the problems."[511] A second member of the Hastings Center, Hans Jonas, who was a professor of philosophy at the New School for Social Research in New York, also testified to his support of a proactive federal commission to consider the ethical and social issues with biomedicine. In response to the concern about the duplication of efforts, Jonas argued that this was not a problem because the "worry in these matters is on the increase and there is not a surfeit of channels for that but rather a scarcity."[512] Ultimately, out of the seven witnesses who testified in 1971, five saw no problem with potential overlap of efforts between the efforts begun by the new institutes and societies of bioethics and the proposed national commission. Yet those two who did express concern were from the NIH and HEW, and their opinions, along with the various other political activities captivating attention that year and in 1972, help explain the legislation's death in the House after passing the Senate.

1972-1974: Getting Approval in Congress and Establishing the National Commission

During 1972, congressional concerns over ethical and societal issues and the need for examination of the issues continued. Another Senator, John V. Tunney, a democrat

[510] *Hearings on S.J. Res. 75*, 116.
[511] *Hearings on S.J. Res. 75*, 118.
[512] *Hearings on S.J. Res. 75*, 122.

from California, picked up on Mondale's call for consideration of the ethical issues with federally funded science and made his own proposal on August 8, 1972. His proposal called for one percent of biomedical research funding to go toward the study of the possible social consequences of the research, particularly those ethical, social and philosophical. This proposal shared an uncanny similarity to the plan that James Watson would propose and implement in 1988 as part of the Human Genome Project and which continues today as the ELSI program (Ethical, Legal, and Social Implications).[513] Tunney's proposal was never discussed in hearings or voted on. Significantly, his proposal referred to the process by which the ethical, legal, and social issues would be examined as "technology assessment."[514] This term was prevalent in Congress that year because debates were being held over an eventually successful proposal to create a Congressional Office of Technology Assessment (OTA), which was signed into law on October 13, 1972.[515] The OTA was an effort by House Representative Emilio Q. Daddario, chair of the Subcommittee on Science, Research and Development, to create an office that could serve as an "early warning" system for technology by examining technology's societal implications.[516] The effort to create the OTA relied on many of the same arguments that Mondale used for his national commission, and so the creation of the OTA partially reduced the need for Mondale's commission. However, by assuming

[513] Eliot Marshall, "The Genome Program's Conscience," *Science* 274 (1996): 488-489; Nancy S. Wexler, "Climbing the Ladder of Life: James D. Watson and the ELSI Years," in *Inspiring Science: Jim Watson and the Age of DNA*, ed. John Inglis, Joseph Sambrook, and Jan Witkowski (Cold Spring Harbor: Cold Spring Harbor Laboratory: 2003), 403-412.

[514] Congress, Senate, Senator Tunney of California, introducing the Bill to amend the Public Health Service Act, on August 8, 1972, to the President of the Senate, S. 3894, 92st Cong., 2d sess., Congressional Record 118: 27220 and 27228.

[515] Hechler, *Toward the Endless Frontier*, 560.

[516] Hechler, *Toward the Endless Frontier*, 159.

this responsibility, the OTA facilitated the commission's shift away from the analysis of problems and toward the resolution of immediate ethical issues, like human experimentation through guidelines and regulation.[517]

Human Experimentation and Immediate Risks Take Center Stage

On July 26, 1972 the *New York Times* published a story by reporter Jean Heller that aroused public outrage not seen in reaction to any other cases of abuse in human experimentation since the Nazi doctor's experiments in WWII. The article described a research trial, known as the Tuskegee Syphilis Study, that had been on going since 1932 to study the natural history of the disease. A group of African American men who had syphilis were deliberately not given treatment for the disease even when penicillin became available. The men were not told that they were in a research trial or that they had syphilis. What was particularly shocking was the effort that the researchers took to prevent the subjects from receiving treatment, either through enlistment in the military or through seeing other doctors. Since the patients were unaware they were in a trial or that they had a disease, a nurse working for the trial followed patients to other doctors and informed the doctors of the situation. The researchers also got a dispensation from the draft board to keep the subjects out of the military during World War II, which also prevented them from being treated.[518] The trial was conducted under the U.S. Public

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[517] The Daddario Subcommittee would examine many issues in science and technology in the years it was supporting the creation of the OTA. One example is the request by the subcommittee for the Congressional Research Service to produce a report on genetic engineering, see "Congressional Research Service, *Genetic Engineering: Evolution of a Technological Issue,* prepared for the Subcommittee on Science, Research, and Development (Washington: U.S. Government Printing Office, 1972): iii.

[518] For more details on the experiments see James H. Jones, *Bad Blood: The Tuskegee Syphilis Experiment* (New York: Free Press, 1993); Susan M. Reverby, *Examining Tuskegee: The Infamous Syphilis Study*

Health Service. Although findings from the research were published in the medical literature throughout its duration, the details of the experiment were not known to the general public until the *New York Times* article was published.[519] The condemnation from the public over the details of the experiment was amplified by the racial implications of the case. The research had been performed on a population of poor African Americans in Alabama, and the revelation came after President Johnson's war on poverty and in the midst of the civil rights movement.

Beecher and others had begun to tally the questionable practices in human experimentation, making the Tuskegee Syphilis Study not just one case of irresponsible or unethical doctors, but simply an extreme case in a long list. In addition to the other cases mentioned in the 1971 hearings, which were described earlier in this chapter, the 1973 hearings also detailed the use of prisoners in pharmaceutical research in which they were given little reimbursement and received no medical benefit. This situation was also revealed by a journalist in 1972.[520]

In response to the public anger over its complicity, the PHS created an Ad Hoc Panel on August 24, 1972. The Committee was assigned to determine if the study should continue, if doing the research after penicillin was established as a known cure was

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and Its Legacy (Chapel Hill: University of North Carolina, 2009); and Jonsen, *Birth of Bioethics*, 146-148; and Fox and Swazey, *Observing Bioethics*, 46-48.

[519] Jonsen, *Birth of Bioethics*, 147; and Fox and Swazey, *Observing Bioethics*, 46.

[520] Jessica Mitford, "Experiments Behind Bars: Doctors, Drug Companies, and Prisoners," *Atlantic Monthly* 23 (January 1973): 64-73; and Senate Subcommittee on Health, Committee on Labor and Public Welfare, *Quality of Health Care--Human Experimentation, Part 3*, 93rd Cong., 1st sess., March 7-8, 1973, 794-797.

justified, and if there were adequate protections in place for research subjects.[521] This action was not enough to mitigate the concern, especially in Congress. Senator Jacob Javits of New York introduced legislation in August to protect human subjects by restricting funding for research to only those researchers that followed certain ethics policies.[522] Meanwhile Senator Hubert Humphrey introduced a bill in September to establish a National Human Experimentation Standards Board, an independent agency of the executive branch to consider the medical, social, and ethical questions related to experimentation involving human subjects.[523] In October, the PHS Ad Hoc Panel called for the termination of the study, and within a month it was concluded. It would take until April of 1973 for the panel to publish its final report. In the meantime Congress pursued the issue, with Senator Kennedy starting hearings on human experimentation in February of 1973.[524]

While 1972 was full of concern about and legislation on human experimentation with adults and even children, research with fetuses was also raising alarm, especially in the context of the debate over legalized abortion.[525] The fetal research mentioned was

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[521] Jonsen, *Birth of Bioethics*, 148.

[522] Congress, Senate, Senator Javits of New York, introducing the Bill to Amend the PHS Act to provide for restrictions on funds for experimental use, on August 17, 1972, to the President of the Senate, S. 3951, 92st Cong., 2d sess., Congressional Record 118: 28634.

[523] S.3951 would be reintroduced again in 1973 and included in Kennedy's hearings on human experimentation. Congress, Senate, Senator Humphrey of Minnesota, introducing the Bill to establish a National Human Experimentation Standards Board, on September 5, 1972, to the President of the Senate, S. 3951, 92st Cong., 2d sess., Congressional Record 118: 29316 and 29318-29321.

[524] Jonsen, *Birth of Bioethics*, 148; and Fox and Swazey, *Observing Bioethics*, 48.

[525] Constance Holden, "Biomedical Advances Confront Public, Politicians, as well as Professionals with New Issues," *Science* 175 no. 4017 (Jan. 7, 1972): 40-41.

being performed on fetuses that had been aborted and kept alive in laboratories.[526] With the *Roe v. Wade* Supreme Court ruling in January 1973, abortion became a central issue in society during 1972 and 1973. By April 1973 the NIH declared a ban on research using their federal funding for research that used live aborted human fetuses.[527] The abortion debate was also raising issues with in-vitro fertilization research and nuclear transfer research in embryos (increasingly being referred to as cloning).[528]

Meanwhile, basic research on genetics raised concerns that led geneticists at a Gordon Research Conference on Nucleic Acids to write a letter in 1973 to the NAS. The letter asked the Academy to examine the developing techniques in the field of recombinant DNA (rDNA) research for potential hazards.[529] The geneticists published this letter in the September 21, 1973 issue of *Science*.[530] Ultimately, the NAS would assign chemist Paul Berg to examine the issue. He initiated a meeting in April 1974 at which his colleagues came to the unprecedented conclusion that they should request the international genetics community to uphold a moratorium on certain kinds of experiments involving rDNA. This would lead to the Asilomar conference, where scientists allowed journalists and lawyers into a discussion about how to handle the ethical issues and risks

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[526] Senate Subcommittee on Health, Committee on Labor and Public Welfare, *Quality of Health Care--Human Experimentation, Part 2*, 93rd Cong., 1st sess., February 23, March 6, 1973: 567-575, 581-584, 602-625.

[527] Harold M. Schmeck, Jr., "Research on Live Fetuses is Banned," *The New York Times*, April 18, 1973, 30.

[528] Holden, "Biomedical Advances Confront Public, Politicians, as well as Professionals with New Issues," 40-41

[529] Charles Weiner, "Drawing the Line in Genetic Engineering: Self-Regulation and Public Participation," *Perspectives in Biology and Medicine* 44, no. 2 (Spring 2001): 208-220.

[530] Maxine Singer and Dieter Soll, "Guidelines for DNA Hybrid Molecules," *Science* 181 (September 21, 1973): 1114.

with rDNA research.[531] At the end of 1973, attention from inside and beyond the scientific community supported the arguments that biomedical research needed federal examination of the ethical and social issues.

Kennedy and Catalyzed Congressional Action

The legislation that had stagnated after passing the Senate in 1971, was eventually taken up again in 1973, when Senator Kennedy began a series of hearings that lasted from February to July. The hearings, titled "Quality of Health Care--Human Experimentation," consisted of four parts, each with a different focus. The first three parts of the hearings were held in connection with four legislative proposals. S.878, introduced by Senator Javits, was intended to restrict research funding to ensure that a review of the risks to human subjects was performed for all research funded by the Public Health Service (PHS). A second proposal by Jarvis, S. 974, proposed to amend the PHS act to increase the training provided to health professionals on ethical, social, legal, and moral implications of advances in biomedical research and technology. S. 934, proposed by Senator Hubert Humphrey, mirrored his earlier proposal to establish within the executive branch an independent Human Experimentation Standards Board which would create guidelines for experiments involving humans. Interestingly, Humphrey's proposal strongly resembled the recommendations by the HEW Tuskegee Review Panel.[532] The fourth piece of legislation was Mondale's proposed National Advisory Commission on

[531] Weiner, "Drawing the Line in Genetic Engineering: Self-Regulation and Public Participation," 210.
[532] Letter from Charles McCarthy to Study Group for Review of Policies on Protection of Human Subjects in Biomedical Research, "Significance of Current Legislative Proposals," May 3, 1973, MS 443, box 77, folder 2 PHS/HEW Tuskegee Syphilis Study AD HOC Advisory Panel, 1972-1973, Office of the Director Central Files, National Archives and Record Administration, College Park, MD.

Health Science and Society, S.J. 71. The first three pieces of legislation were introduced between 1972 and February of 1973 in response to the abuses in human experimentation being uncovered, and specifically in response to the Tuskegee Syphilis Study.

The first series of hearings focused on the widespread and off-label prescribing of DepoProvera and DES (Diethylstilbestrol) as a form of birth control, which was occurring without doctors informing patients of the non-approved use or physicians gathering consent for this experimental use.[533] They next turned to psychosurgery and the "past accomplishments and future prospects of biomedical research," on techniques that had earlier been considered in the 1968 and 1971 hearings on Mondale's proposal.[534] The third part of the 1973 hearings examined human experimentation with a focus on the use of prisoners as research subjects, and contained testimony on the current regulations and policies in place for human experimentation.[535] During this third part of the hearings testimony was heard from two of the men who had been research subjects in the Tuskegee Syphilis Study and other testimony considered medical device legislation, citing a case where intrauterine devices were implanted into pregnant women and resulted in severe medical consequences.[536]

Mondale chaired part of the third set of hearings during Kennedy's absence. This

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[533] The situation involving the use of DepoProvera as a contraceptive occurred in Tennessee at the Maternal Health Family Planning Program in which the patients were not informed that the drug was not approved for use as a contraceptive. The situation involving DES included the drug being used off label as a morning after contraceptive and early evidence developing that linked it to cancer occurrence. Senate Subcommittee on Health, Committee on Labor and Public Welfare, *Quality of Health Care--Human Experimentation, Part 1*, 93rd Cong., 1st sess., February 21-22, 1973; and Senate Committee on Labor and Human Resources, *National Research Service Award Act*, 93rd Cong., 1st sess., 1973, S.Rep. 381, 12-13.

[534] Senate Subcommittee on Health, *Quality of Health Care--Human Experimentation, Part 2*, 481.

[535] Senate Subcommittee on Health, *Quality of Health Care--Human Experimentation, Part 3*.

[536] Senate Committee on Labor and Human Resources, S.Rep. 381, 15-16.

allowed Mondale to discuss his proposed commission and the changes since it was last proposed in 1971. Bernard Barber, chairman of the sociology department at Barnard College and a member of the Human Subjects Review Committee at Columbia University, testified that the current practices in human experimentation "take us beyond a study, into some kind of commission" which could monitor, guide, and set standards.[537] Mondale queried Jay Katz: "Like the previous witness, I gather you feel that the evidence is so strong that we should go beyond a study commission and get into the field of action, investigation, and establishment of rules and regulations." Katz replied:

> Yes. Senator Mondale, I am familiar with the bills you have introduced and the various statements you have made on this subject. I believe we can now go beyond study commissions and begin to think about how to implement some of the recommendations you have made.[538]

Katz continued that despite the claims made in 1971 that the medical and research professions were instituting new standards for human experimentation, they had not actually followed through on those claims. The testimony revealed that while the proposal to study the issues and suggest legislation had seemed proactive and beneficial to most in 1971, by 1973 views had shifted and it seemed necessary to act quickly to establish policies and laws that would prevent the abuses like those publicly revealed during 1972 and 1973.

In between the third and fourth parts of the hearings, Kennedy introduced a new piece of legislation, which combined the four legislative proposals from the first three hearings into what he titled the Protection of Human Subjects Act. This legislation, S.

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[537] Senate Subcommittee on Health, *Quality of Health Care--Human Experimentation, Part 3*, 1047.
[538] Senate Subcommittee on Health, *Quality of Health Care--Human Experimentation, Part 3*, 1054.

2072, created a National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research; it was tasked with identifying the guiding principles for ethical research with human subjects. The design of the commission and its interdisciplinary membership reflected Mondale's original proposal. It stipulated that the membership be from "the general public and from individuals in the fields of medicine, law, theology, biological science, physical science, social science, philosophy, humanities, health administration, government, and public affairs."[539] Kennedy added a requirement that, of the eleven members of the commission, those who had performed human experimentation could only make up five of the positions on the committee. Kennedy also, as the name implies, gave the commission a more specific charge than Mondale had ever intended, in an effort to respond to the public outcry over the revelations about the Tuskegee Syphilis Study. Thus human subjects research took center stage, while Mondale's broad survey of the ethical and social issues with biomedicine took a back seat in the legislation as a separate task for the commission to perform. Regarding this task the legislation stated: "the Commission shall undertake a comprehensive investigation and study of the ethical, social, and legal implications of advances in biomedical and behavioral research."[540] Because this mandate remained, it would provide the broad scope that later bioethics commissions would be based on in their examinations of a wide variety of ethical issues with research.

The fourth set of the hearings lasted five days and began with further discussion

[539] Senate Subcommittee on Health, Committee on Labor and Public Welfare, *Quality of Health Care--Human Experimentation, Part 4*, 93rd Cong., 1st sess., April 30, June 28-29, July 10, 1973, 1299.
[540] Senate Subcommittee on Health, *Quality of Health Care--Human Experimentation, Part 4,* 1301.

of the Tuskegee Syphilis Study. The second day of hearings were held in conjunction with the Veterans Committee on the use of psychosurgery in Veterans Administration Hospitals. The remaining three days of hearings heard testimony in regard to Kennedy's S. 2071, a provision about National Research Awards, and S. 2072, the Protection of Human Subjects Act. The last day of the hearings included testimony on one more case of abuse in medicine and human experimentation. This case involved the sterilization of two women without consent in Montgomery, Alabama, at a family planning clinic using government funds.[541]

The hearings did not emphasize the broad and sometimes long-term ethical and social issues that had been focused on in the 1968 and part of the 1971 hearings.[542] Rather they emphasized the immediate and disturbing revelations about the abuse of patients and human research subjects. Kennedy stated that

> during the course of the hearings it became clear that the human subjects of biomedical and behavioral research are in too many cases inadequately protected, and that the same inadequate protection also in many cases places recipients of health services at grave risk.[543]

Jay Katz, at the time considered an expert on human experimentation, further testified that there were inadequate regulations in place at both the HEW and PHS.[544] Kennedy would identify the theme of the hearings as "let the patient beware."[545] The human stories

[541] Senate Committee on Labor and Human Resources, S.Rep. 381, 18-19.
[542] Rothman noted about the 1968 hearings that "the focus of the hearings was not the doctor-patient relationship--no one made a single reference to this subject or to allied ones like truth telling… Rather, the primary concern was with the potential misuse of the technology--framed by the assortment of anxieties and ambivalent feelings that technology raised in other, nonmedical settings." See, Rothman, *Strangers at the Bedside*, 179.
[543] Senate Committee on Labor and Human Resources, S.Rep. 381, 23.
[544] Senate Committee on Labor and Human Resources, S.Rep. 381, 24.
[545] Senate Committee on Labor and Human Resources, S.Rep. 381, 24.

and specific accounts of abuse were particularly effective in promoting legislation on human experimentation and biomedicine that was proposed in Congress in 1972 and 1973. Beyond the Senate, there were proposals from the House in 1973 on various issues, including the medical, technical, social and legal problems with organ transplantation; the creation of a commission on medical technology and death; the prohibition of psychosurgery in federal health care facilities, and the prohibition of federal funds to conduct research on human fetuses.[546]

Despite the significant interest in overseeing or studying biomedical research in Congress, the HEW, represented by Henry Simmons, the Deputy Assistant Secretary for Health and Scientific Affairs, did not support the creation of a commission to establish guidelines on human experimentation. Simmons testified on the last day of the hearings, asserting that while he agreed with the intent of the Protection of Human Subjects Act, the HEW was handling the issues and had the authority to do so adequately. He stated that the HEW had already begun a review process of their policies concerning human experimentation and that they anticipated those results in April 1974. He stated that the HEW did not support the legislation because it would "deter the progress" they were

[546] These included the Artificial Organ, Transplantation and Technological Development Act of 1973 by Representative Edward R. Roybal, House Resolution to Establish a Commission on Medical Technology and Dignity of Dying by Representative Tim Lee Carter, H.R.6852 and H.R. 5371 to prohibit psychosurgery in federally connected health care facilities by Representative Louis Stokes, and H.R. 7850, 8778, 8779, and 9488 to prohibit the use of appropriated funds to carry out or assist research on living human fetuses by Representative Angelo D. Roncallo. All of these proposals were included in House hearings. See House Subcommittee on Public Health and Environment, *Biomedical Research Ethics and the Protection of Human Research Subjects: Hearings on H.R.10403, H.R. 1111, H.R. 1112, H.R. 2655, H.R. 5371, H.R. 6852, H.R. 7850, H.R. 8778, H.R. 8779, H.R. 9488, and H.R. 10573*, 93rd cong., 1st sess., September 27-28, 1973.

making.[547]

Interestingly, this opposition from HEW went against the strong recommendations of the NIH, which was overseen by HEW and which had urged the HEW not to oppose all legislation concerning the protection of human subjects. This disagreement between the HEW and NIH was noted in a letter from Charles McCarthy, in the Office of Legislative Analysis at the NIH, to the HEW's study group reviewing human experimentation policies, the very one that Simmons had mentioned in his testimony. McCarthy explained that the NIH did not support the Humphrey bill, which resembled the recommendations of the HEW's Tuskegee panel; but, if legislation was inevitable, the agency preferred Mondale's legislation for a National Advisory Commission. He observed that some legislation was inevitable because the Watergate Affair had generated "a strong sentiment against trusting the Administration to regulate delicate ethical issues" and because Congress was "increasingly skeptical" of the arguments by the HEW that their study group was handling the matter.[548]

Rothman writes in his history that "the hearings' ultimate goal was to demonstrate that no wing of the medical profession could be trusted to keep its house in order--that medicine required a new kind of oversight."[549] However, as McCarthy's letter and the hearings demonstrate, Congress only believed it was justified in stemming abuses that

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[547] Senate Subcommittee on Health, *Quality of Health Care--Human Experimentation, Part 4,* 1460; and Senate Committee on Labor and Human Resources, S.Rep. 381, 18.

[548] Letter from Charles McCarthy to Study Group for Review of Policies on Protection of Human Subjects in Biomedical Research, "Significance of Current Legislative Proposals," May 3, 1973, MS 443, box 77, folder 2 PHS/HEW Tuskegee Syphilis Study AD HOC Advisory Panel, 1972-1973, Office of the Director Central Files, National Archives and Record Administration, College Park, MD.

[549] Rothman, *Strangers at the Bedside*, 184, 182-187

occurred with federal dollars, not all of medicine. The Senators, Kennedy and Mondale, were not waging war against physicians as a whole group, rather they had relied on support from medical researchers and physicians to argue for the proposed commission. Kennedy expected physicians to work with "outsiders" to establish guidelines and standards for human experimentation; his legislation stipulated that in regard to federally funded research this collaboration must occur.

Ultimately, McCarthy was correct about Congress. The Senate and the House enacted legislation that included Mondale's proposal and parts of Humphrey's proposal despite HEW opposition. However, the legislative path to the creation of the National Commission was not straight forward. The final legislation started as a House bill designed to increase funding for research fellowships and training in the biomedical sciences. This bill, H.R. 7724, was gradually amended to include regulations and provisions for ethical research on human subjects, and eventually added the provision to create Mondale's national commission.

During a House floor discussion about H.R. 7724 on May 31, 1973, Representative Teno Roncalio proposed an amendment that would forbid research on human fetuses that were "outside the uterus of its mother and which has a beating heart."[550] This was an amendment based on Roncalio's own previously introduced

[550] While the abortion debate was going on at the time, Roncalio did assert that the legislation was not about abortion, because he argued his prohibition did not deal with how a fetus came to be removed from a uterus, just that it should not be used for research and should be allowed to die peacefully. Yet the goal to protect fetuses from a controversial and recently legalized procedure was certainly connected with the abortion debate. Congress, Senate, Senator Roncalio of Wyoming, offering an amendment to the National Biomedical Research Fellowship, Traineeship, and Training Act of 1973,

legislation, which proposed to prohibit fetal research. The amendment was overwhelmingly approved by the House, and following that amendment the legislation was passed by the House with the same overwhelming approval. The next day it was sent to the Senate and referred to the committee that housed Kennedy's subcommittee. The bill was then included in the fourth part of Kennedy's hearings on human experimentation. When the Senate committee reported on the hearings and pieces of legislation, it recommended that the House bill, H.R. 7724, be amended to incorporate the Protection of Human Subjects Act (S. 2072), the piece of legislation Kennedy had compiled from Mondale's, Javits', and Humphrey's legislation. The Senate passed H.R. 7724 with the addition of the policy from the Protection of Human Subjects Act on September 11, 1973, and then amended the title of the bill to include the human subjects protection component. At this point H.R. 7724 had two sections to the legislation: the National Research Service Awards and the Protection of Human Subjects. The latter adding the Special Study of Biomedical Research, which was Mondale's proposed commission with a different title. After passing the bill, the Senate insisted the amendments stay in the bill. Senators asked to have a conference with the House to resolve their differences. This was eventually carried out in 1974, with the Senate and House passing the legislation and President Richard Nixon, almost one month before he resigned the Presidency, signing the bill into law on July 12 as the National Research Act.

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on May 31, 1973, to the President of the Senate, H.R. 7724, 93rd Cong., 1st sess., Congressional Record 119: 17468.

Conclusion

During the early 1970s, concerns over the implications of research and over the use of humans in medical research intensified, as members of Congress and federal agencies drew attention to ethical issues with biomedical research and technology, and as new experts in bioethics argued increasingly, through writing or through their activities, that these concerns needed to be examined publicly and immediately. Between 1968 and 1973 public attention focused on the specific topic of the use of humans in experimentation, rather than general social and ethical issues. Reich emphasizes this in his history when he contends that it was the André Hellegers, and the Georgetown Kennedy Institute of Ethics definition of "bioethics" that took off, rather than Van Rensselaer Potter's global and environmentally focused definition.[551] Nonetheless, specific and apparently immediate concerns were merging with the broader social and ethical implications of biomedical research in conferences and in the early centers of bioethics. Daniel Callahan shares this view that different threads of bioethics combined to form the field, writing:

> Over the years, in fact, two distinct streams have emerged in bioethics, going back to its very beginnings… One of them, the earliest, came from worries and speculations on the part of the leading scientists in the 1960s about where the new biology and medicine were taking us… The other stream focused on some more immediate medical, policy, and legal issues.[552]

Conversely, Anne Balsamo and Carl Mitcham argue that the turning of medical ethics into bioethics was a result of medicine engaging with and being transformed by research

[551] Reich, "The Word 'Bioethics': The Struggle Over Its Earliest Meanings," 19-34.
[552] Callahan, "A Memoir of an Interdisciplinary Career," 427.

in biology and the life sciences, which though different than the combining of two ethical threads, still reflects the intersection of medicine with biological research.[553]

This melding of the two discussions occurred simultaneously with the establishment of interdisciplinary academic centers on Science, Technology, and Society and interdisciplinary ethics centers. The merging of the topics in bioethics and the interdisciplinarity marked the formation of the field of bioethics. Yet this did not alone justify the creation of a federal bioethics commission. The circumstances to do so had been created by leading Senators, who gathered evidence that standards and guidelines were not sufficient to protect people from medical experimentation and advances in biomedicine. It took the outrage over the Tuskegee Syphilis Study to provide the needed exemplar of abuse to amplify the need for federal action under the adept handling of Senator Kennedy. As a result, the proposed commission gained both momentum and power to develop guidelines and regulations alongside identification and analysis of biomedical research issues. Thus Mondale's goal of a broad, interdisciplinary, and unifying commission on social and ethical implications of biomedical research, modified in detail but with its major intentions intact, became a reality. As later sessions of Congress and Presidents created new bioethics commissions, the inclusion of Mondale's National Advisory Commission on Health Science and Society can be seen as a precedent that helped define the duties of later commissions and outlined the scope of the field of bioethics.

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[553] Anne Balsamo and Carl Mitcham, "Interdisciplinarity in Ethics and the Ethics of Interdisciplinarity," in *The Oxford Handbook of Interdisciplinarity*, ed. Robert Frodeman (New York: Oxford University Press, 2010): 262.

Conclusion

The National Commission for the Protection of Human Subject of Biomedical and Behavioral Research was only the first in a series of federal bioethics commissions. Six commissions have been created and disbanded in concert with the change in presidential administrations. As this dissertation shows, an emphasis on the Tuskegee Syphilis Study as the reason for the passage of legislation creating the National Commission conceals the long-term origins and impetus for a federal bioethics commission. This dissertation investigates the history of professional and public discussions during the 1960s and 1970s that coalesced around Senator Walter Mondale's congressional proposal for a national commission on the ethical, social, and legal implications of biomedical research. By analyzing the involvement of researchers and congressmen in discussions of the social implications of biomedicine, we gain new insights into the development of bioethics and the changing sensibilities about scientific social responsibility emerge. Thus, this dissertation reveals the relationships among scientists, physicians, bioethicists, and policymakers; the underpinnings of attitudes and policies that shaped understandings of researchers' social responsibilities; and the precedent for the active role of the government in bioethics.

Although histories of the beginning of bioethics often emphasize debates over the responsible actions of physicians, this dissertation demonstrates how deeply scientists, especially biomedical researchers, were engaged and influential in its development. As the first chapter illustrates, a growing number of biomedical researchers, influenced by atomic scientists, expressed the belief that they had a social responsibility to warn the public about potential outcomes of their work. This group of outspoken researchers,

epitomized by Joshua Lederberg, spurred public and professional discourse over scientific social responsibilities in journals and in newspapers, while also identifying and summarizing social and ethics deliberations on biomedical research through professional conferences and symposiums in the 1960s. To these researchers, the scientists' role in society was to pursue knowledge that benefitted society. This fundamental goal of societal benefit obligated them to consider the effects of their work and to warn of risks from the applications of the knowledge they produced.

In contrast to the resistance that the medical profession expressed toward involving non-physicians in medical ethics in the 1950s and early 1960s, the biomedical researchers in the latter decade increasingly pursued interdisciplinary discussions of ethical and social issues. Presented in chapter one and in the last two chapters, the history illustrates the evolution of support for collaboration among scientists, physicians, legislators, theologians, philosophers and early bioethicists. The last two chapters also illuminate researchers' views on the implications of their work and their responsibilities, which they expressed throughout the hearings on Senator Mondale's proposal for a national commission. These chapters reveal that scientists were responsive, both positively and negatively, to the concerns of Senators and engaged in the issues at hand.

The history of scientists' discussions about their social responsibility provides evidence that many of them did consider themselves to have such responsibility, and that specifically biomedical researchers were among the group of scientists who were vocal supporters. In these turbulent times, they identified research areas where scientists particularly needed to consider the implications of their work. Such attention is not easy or even rewarded. Often in today's research environment scientists' participation is

discouraged or not supported because of the prevailing institutional system, which either reinforces strong competition in research at the cost of many other aspects of scientists' obligations, or separates scientists from the ethical and social considerations of their research.[554] While grant proposals include requests for broader significance statements, these are primarily intended to provide justification for why the research is important enough to fund, not to identify what the implications may be for society in the future.[555]

Perhaps the most notable examination of ethical and social implications led by the scientific community in the last thirty years has been within the Human Genome Project's Ethical, Legal, and Social Implications Program, know as ELSI. Yet very often the study of these issues and funding of these topics has been separated from the scientific research and the researchers themselves.[556] More recent changes to the Canadian version of the U.S. ELSI program are altering this pattern by embedding the ethical and social considerations and bioethicists into the research teams and the scientific grant funding. The evidence of scientists arguing for and fulfilling scientific social responsibility in the 1960s and 1970s is a reminder of a recurring need to rethink mechanisms as biomedical researchers once again get involved in the ethical and social discussions of their work.

The political environment and key actions by congressmen during the 1960s and 1970s are detailed in the last three chapters. The influence of Congress, politicians, and

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[554] Melissa S. Anderson, et. al., "The Perverse Effects of Competition on Scientists' Work and Relationships," *Science and Engineering Ethics* 13 no. 4 (2007):437-461.

[555] J. M. Ladd, M. D. Lappé, J. B. McCormick, A. M. Boyce, and M. K. Cho, "The 'How' and 'Whys' of Research: Life Scientists' Views of Accountability," *Journal of Medical Ethics* 35, no. 12 (2009): 762-767.

[556] Frazier Benya, "Considering the Social Implications of Science with the Scientific Research in the U.S. and Canada: What Role Should Integration Play?" (M.A. thesis, University of Minnesota, 2011): 39-49.

government agencies has largely been overlooked in the histories of bioethics, but these actors were crucial to raising bioethics issues to the national stage and coalescing the various concerns into one commission's responsibility. Chapter two illustrates the political origins of the interest on the results and effects of federally funded science research and reveals the beliefs that guided Senators Harris and Mondale to focus on the impacts of biomedical research. A desire to create a better informed or better advised Congress led them to pursue the involvement of the social sciences and other fields in policy decisions, including individuals who had expertise in sociology, theology, philosophy, and ethics.

Chapters three and four emphasize how Mondale, Harris, and Kennedy reframed the concerns over biomedical research, directed hearings to uncover a broad range of ethical and social concerns with biomedicine, and asserted that non-physicians and non-scientists had valuable contributions to make in examining these issues and developing policy in biomedical research. The Senate hearings organized by these congressional leaders served as forums for researchers, policymakers, and the public to discuss their views on the consequences of biomedicine, and to hone these views through debate, confrontation, and sometimes collaboration. Congress and political leaders also played an important role in the movement to create an interdisciplinary and authoritative field of bioethics in the United States. While Kennedy played a large role in piecing together the legislation and getting it passed in the Senate in 1973, the passage of the National Research Act was contingent upon the work of Senators Mondale and Harris during the previous decade. Ultimately, the fourth chapter reveals how the work of key Senators and the hearings established the role of the federal government in examining the social

implications of biomedical research.

In contrast to much of the existing history of bioethics literature, which depicts the National Commission's creation as an immediate and direct response to the Tuskegee Syphilis Study, this dissertation argues that the creation of the first bioethics commission in 1974 was the outcome of nearly a decade of attention by Congressional leaders. These Congressional leaders systematically worked with a wide range of biomedical community leaders and early bioethics scholars to identify and uncover the implications of biomedical research, consider the frameworks and methods to address them, and build interdisciplinary relationships and arenas for these activities to continue. It was these efforts that were catalyzed by the revelation of abuses in human experimentation and allowed the relatively quick passage of the legislation to create the National Commission.

The influence of Mondale and Kennedy on the development of bioethics is also illustrated by their participation in the early centers of bioethics, the Hastings Center and the Kennedy Institute for Ethics at Georgetown University, for which they either joined the centers' advisory boards, spoke at their conferences, or supported them by lending their political endorsement. In addition to the efforts of these key Senators, government agencies, namely the National Science Foundation, the National Institutes of Health, and the National Endowment for the Humanities, provided financial and intellectual support for the early activities in bioethics, including conferences on genetics and ethics and the funding of new interdisciplinary centers on Science, Technology, and Society, and on Bioethics. Through the involvement of Congress, bioethics scholars began to inform public policy discussions, legislation, and the public from the 1970s through the present.

Ultimately in this dissertation I argue that a broad social perspective on the ethical

implications of biomedical research must be viewed as an equally important aspect to the history of bioethics as were the discussions on medical ethics and human experimentation ethics, which have been detailed in other histories. All four of the chapters of this dissertation describe in detail the multiple levels of attention to societal impacts from biomedical research that eventually converged in Senate hearings. Most significantly, chapters three and four demonstrate that the initial and continuing impetus for creating the first bioethics commission focused on social concerns with biomedical research; the goal was to have public discussions rather than to limit important research. While this focus was obscured because National Commission largely concentrated on human experimentation during the 1970s, the opinions and issues discussed in the initial 1968 hearings were reflected in the commission's charter and they would shape the structure and function of subsequent bioethics commissions.

Mondale's original intent and goal for his commission can thus be seen in the later bioethics commissions. The engagement of the public in bioethics and discussions of the social implications of biomedicine have been a primary focus of these federal bioethics commissions. They have produced public reports, held public hearings, and sought the opinions of public citizens. The topics of these commissions have also been broad, covering all of biomedicine. Many were identified during the 1968 hearings, including embryo transfer, in vitro fertilization, genetic screening, genetic engineering, securing access to health care, defining death, and fetal tissue transplantation. In addition, later bioethics commissions continue to uncover new areas of research that benefit from examination of their social and ethical implications, most notably cloning, stem cell research, nanotechnology, and neurological research. The memberships of these later

commissions have also reflected the composition proposed by Mondale: medicine, science, law, theology, and ethics. The structure and placement of bioethics discussions in the federal government, as advocated by Mondale, have been retained even as new presidents have created new bioethics commissions. In revealing the significance of societal implications concerns in the history of bioethics, this dissertation justifies and amplifies arguments for bioethics to focus on these topics.

In this dissertation I have sought to illuminate the mid-century discussions of the social, ethical, and legal implications of biomedical research, the arguments about scientific social responsibility, and, very specifically, the role of Congress in the formation of the field of bioethics. Such a historical perspective reveals the foundational values and practices that shape bioethics and interdisciplinary discussions today in relationship to emerging areas of scientific research. In doing so, my research strengthens the arguments for researchers to consider the social and ethical impacts of their work, emphasizes the role bioethics may play in shaping public policy, and reinforces the thorough incorporation of societal implications into the field of bioethics.

Figure 1: Co-Sponsors of Legislation 1967-1973

NFSS: National Foundation for the Social Sciences (Harris)

CTHE: Committee on Technology and Human Environment (Muskie)

CSA: Council of Social Advisors (Mondale)

NC 1968: National Commission on Health Science and Society 1968 (Mondale)

NC 1969: National Advisory Commission on Health Science and Society 1969 (Mondale)

NC 1971: National Advisory Commission on Health Science and Society 1971 (Mondale)

NC 1973: National Advisory Commission on Health Science and Society 1973 (Mondale)

	NFSS	CTHE	CSA	NC 1968	NC 1969	NC 1971	NC 1973
Bayh, Birch (D)	X			X	X	X	X
Brooke, Edward (R)					X	X	X
Byrd, Robert (D)	X			X			
Case, Clifford (R)						X	X
Clark, Joseph (D)	X		X	X	n/a	n/a	n/a
Cranston, Alan (D)	n/a	n/a	n/a	n/a		X	X
Eagleton, Thomas (D)	n/a	n/a	n/a			X	X
Fong, Hiram (R)					X	X	
Fulbright, James (D)	X						
Goodell, Charles (R)					X	n/a	n/a
Gruening, Ernest (D)	X	X			n/a	n/a	n/a
Harris, Fred (D)	X	X	X	X	X	X	n/a
Hart, Philip (D)	X		X	X	X	X	X
Hatfield, Mark (R)	X						
Hughes, Harold (D)	n/a	n/a	n/a	n/a	X	X	X
Humphrey, Hubert (D)	n/a	n/a	n/a	n/a		X	X
Inouye, Daniel (D)	X	X	X	X	X		
Javits, Jacob (R)		X				X	X

Figure 1 -Frazier Benya

Kennedy, Edward (D)	X		X	X		X	X
Kennedy, Robert (D)	X	X		X	n/a	n/a	n/a
Kuchel, Thomas (R)	X				n/a	n/a	n/a
Mansfield, Michael (D)	X	X					
McCarthy, Eugene (D)	X		X		X	n/a	n/a
McGee, Gale (D)	X	X	X	X	X	X	X
McGovern, George (D)	X			X	X	X	X
Mondale, Walter (D)	X	X	X	X	X	X	X
Monroney, Almer (D)	X		X		n/a	n/a	n/a
Moss, Frank (D)		X		X	X	X	X
Mundt, Karl (R)	X						n/a
Muskie, Edmund (D)	X	X	X				
Nelson, Gaylord (D)	X	X	X	X	X	X	X
Pell, Claiborne (D)		X			X	X	X
Proximire, William (D)		X	X	X			
Randolph, Jennings (D)		X		X		X	X
Ribicoff, Abraham (D)	X						
Schweiker, Richard (R)	n/a	n/a	n/a	n/a	n/a	X	X
Stevens, Theodore (R)						X	X
Stevenson, Adlai (D)	n/a	n/a	n/a	n/a	n/a	X	X
Tydings, Joseph (D)	X	X			X	n/a	n/a
Williams, Harrison (D)				X	X		X
Yarborough , Ralph (D)	X			X	X	n/a	n/a
Total Count	24	15	12	17	18	22	21

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Appendix: Legislation Overview

1968:

S.J. Res. 145 to create a National Commission on Health Science and Society

-Introduced to the Senate on Feb. 8

-Senate Subcommittee Hearings held on Mar. 7-8, 21-22, 27-28, and Apr. 2

1969:

S.J. Res. 47 to create a National Advisory Commission on Health Science and Society

-Introduced to the Senate on Feb. 17, no action taken

1971:

S.J. Res 75 to create a National Advisory Commission on Health Science and Society

-Introduced to the Senate on Mar. 24

-Senate Subcommittee Hearings held on Nov. 9

-passed the Senate, referred to the House on Dec. 2

1973:

93 S.J. Res. 71 (Mondale) to create a National Advisory Commission on Health Science and Society

-Introduced to the Senate on Mar. 6

-Included in Senate Subcommittee hearings on Feb. 21-23, and March 6-8

-Legislation incorporated into S. 2072 sponsored by Senator Edward Kennedy on Jun. 26

93 S. 878 (Javits): Public Health Service Act to provide for Restrictions on Funds for Experimental Use to ensure that the review of risk to human subjects is performed. It resembled the current IRBs but with added functions to establish guidelines for human experimentation and provide compensation to victims of experimentation that did not follow guidelines.

93 S. 974 (Javits): To amend the Public Health Service Act to provide, in the training of health professionals, for an increased emphasis on the ethical, social, legal, and moral implications of advances in biomedical research and technology.

93 S. 934 (Humphrey): To establish within the executive Branch an independent

Human Experimentation Standards Board to establish guidelines for experiments involving human beings.

93 S. 2071 (Kennedy): National Research Service Award Act: To amend the Public Health Service Act to provide for the establishment of National Research Service Awards; Committee on Labor and Public Welfare. -not relevant to ethics.

93 S. 2072 (Kennedy): Protection of Human Subjects Act: To amend the Public Health Service Act to assure maximum protection for human subjects of Biomedical and Behavioral research.

-Compiled from S.J. 71 (Mondale), S. 878 (Javits), S. 974 (Javits), and S.934 (Humphrey).

93 H.R. 7724: To amend the Public Health Service Act to establish a program of National Research Service Awards to assure the continued excellence of biomedical and behavioral research and to provide for the protection of human subjects involved in biomedical and behavioral research and for other purposes.

-Amended in the Senate to include S. 2072 (Kennedy)

1974:

National Research Act, H.R. 7724

-Joint Conference Committee approves S.2072 addition to H.R. 7724

-Passed House and Senate on Jun. 27-28

-Signed in to law on July 3