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THE USE OF RACE CATEGORIES AS A RESOURCE IN MEDICINE:
THE CASE OF TUBERCULOSIS AND NATIVE AMERICANS, 1900-1990

A THESIS SUBMITTED TO THE FACULTY
OF THE GRADUATE SCHOOL
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THE MASTER OF ARTS DEGREE
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BY
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CHAPTER 1

INTRODUCTION

Knowledge is shaped, produced and reproduced via the way that it is used. One way to explore this is to focus on the practices in which knowledge was used in a concrete way by a community that was trying to make sense of a particular problem. In this study, I focus on scientific knowledge and its use of the concept of race in medical texts. Rendering knowledge into texts is a central activity of scientists. Scientists use established, shared practices that constrain and enable the construction of textual knowledge. Experiential knowledge (for example, field work or a laboratory experiment) is endowed with facticity through its reification in texts. Race as a system of classification has been continually used in the scientific community over the past two centuries. I examine the concept of race as a conceptual resource in the scientific literature to unpack its historically contingent character. To do this, I analyze how the concept of race was used by physicians and researchers who worked with and reported on patients and research subjects in one race category, Native Americans. In particular, I focus on twentieth century texts dealing with tuberculosis.

The concept of race has historically been and continues to be integral to the organization of knowledge in many fields. In the United States, every social
indicator -- crime, education, income, and many more -- are reported by race categories. This is no less true in medical science where race is used to organize information about morbidity (incidence) and mortality (death) rates for various diseases, as well as to measure life expectancy. Historically, the concept of race has been used to explain differences in morbidity and mortality rates tuberculosis (and other diseases) between racial groups. I will show how these explanations were used and how the concept of race has changed in meaning and use over the course of the twentieth century.

In this chapter, I introduce the research problem, set the theoretical frame, and outline the plan for this study. First, I establish the theoretical frame for this study within the sociology of knowledge and the social studies of science. I show how scientific knowledge is the product of concerted action on the part of a community with shared norms, practices, and conceptual resources. I link the scientific text to the sociology of knowledge and describe the analytical strategy that I use to understand the content of texts.

Next, I discuss the benefit of qualitative, descriptive analysis of normal science. While there are ample cases of scientific abuse of subordinated groups, it is through understanding the kinds of power-moves that are possible within the boundaries of normal science that we can understand how it is that abuses are thinkable.

In the third section, I explain why I chose Native Americans for this study.
In the history of race as a system of classification, racial groups have differential status within a hierarchy (Stepan 1982). I explore the benefits of studying a racial category that has not historically been viewed as quite as different from whites as have African Americans.

Next, I present an overview of the tuberculosis problem, which might be called a "possible history of the field" (Gilbert and Mulkay 1984). Historically, race categories preceded their use in the medical literature. The observed and reported differences between races in tuberculosis morbidity and mortality rates preceded the need to explain those differences. In order to understand how researchers used particular explanatory strategies, it is useful to clarify the way the problem was seen and defined.

In the fifth section, I summarize Vanessa Northington Gamble's (1989) study of the use of the concept of race as a resource in explaining the higher tuberculosis morbidity and mortality rates (compared with white rates) of the African American community in the early part of the twentieth century (1900 through 1940). Gamble's study will be used as a basis of comparison for the case of Native Americans for the same period.

Finally, in the last section, I preview each of the chapters that follow. In it, I describe the objectives and major themes of each of the components of this study.
Knowledge and Scientific Knowledge

The vast majority of knowledge is embodied, experiential, and unproblematically "known as 'reality' in ... everyday, non- or pre-theoretical lives" (Berger and Luckmann 1967, 15). This is no less true of scientists and their knowledge, even when the everyday world is the laboratory, the examination room, the library, or the classroom. Since the publication of Kuhn's (1970) work on scientific revolutions, there has been a shift in the way that science is understood in Western scholarship. "Post-Kuhnian stories" about science show how the material conditions of scientific work and the social relationships of scientists and institutions shape the substance of knowledge (Clarke and Gerson 1990; Harding 1986; Traweek 1988). The social studies of science demonstrate how scientific knowledge is embedded in the broader culture and is the product of social processes within scientific institutions and communities. Communities of scientists are constituted by a shared body of knowledge and set of practices.

What constitutes scientific knowledge as science, rather than as something else, is that it is produced within the boundaries of what is normative in scientific communities and uses the conceptual resources of scientific communities. A defining practice of the scientific community is that knowledge is constructed via shared discursive practices. Science is what scientists do.

Scientists learn, through the process of socialization of the scientist into the scientific community, the practices that constitute science as science. Discursive
repertoires comprise the stock of conceptual resources that can be used by scientists. Discursive repertoires "structur[e] the interpreted world to make some things visible and others invisible; to make certain conclusions inevitable and others unthinkable" (Hicks and Potter 1991, 477). That is, in order for one's work to count as science, one must select from a finite set of theories, practices, and objects of research. After all, if one did not adhere to the norms of the scientific community, one would not be doing science.

Modern medicine can be understood as a particular case of scientific knowledge (Clarke and Gerson 1990, 192-193). Medicine links the science of human biology with technology of a certain kind. It is an applied knowledge (Freidson 1988). Over the course of the twentieth century, medicine and medical research have increasingly emulated other sciences in methodology, with the goal of establishing the same kind of authority Freidson 1988).¹ In medicine and in medical literature, biology, pharmacology, and diagnostic technology intersect.

One of the practices that constitutes science as science is the production of scientific texts. Modern science is possible because of the text:

One consequence of the . . . exactly repeatable visual statement was modern science. Exact observation does not begin with modern science. For ages, it has always been essential for survival among, for example, hunters and craftsmen of many sorts. What is distinctive of modern science is the

¹Some researchers in the social studies of science include medicine unproblematically in the category of science as in, for example, Harding's (1993) edited volume.
conjuncture of exact observation and exact verbalization: exactly worded descriptions of carefully observed complex objects and processes. (Ong 1982, 127)

The production of texts is a constituent element of contemporary scientific practice. Stabilized in the late nineteenth century, the scientific text with its "depersonalized authorship" places the "emphasis on the factuality of nature . . . [and] rendered it problematic for the nonscientific writer and reader and successfully circumscribed the process of contestation" (Stepan and Gilman 1993, 174). Scientific texts are seen as doors to "truth."

Scientists' shared discursive practices enable them to render their experience with and beliefs about the object of their researches into abstractions in texts. Through the production of texts, scientists transform embodied knowledge into theories and their attendant concepts and systems of classification, endowing them with objective status. Science would not be science without its particular genre of texts.

In addition to its particular function in the scientific community, the production of texts now serves two broader functions. First, it is a means by which experts demonstrate and develop their expertise. Careers depend upon publishing (Hicks and Potter 1991). Second, the production of texts is an important way that embodied, experiential knowledge is constructed as universal knowledge by the scientific community (Gilbert and Mulkay 1984; Latour and Woolgar 1986; Smith 1990; Stepan and Gilman 1993).
What we can learn from the analysis of texts is what communities of scientists believe is important about their field. Texts contain "repeatable regularities" (Denzin 1971). Texts contain knowledge that results from shared norms negotiated in the scientific community. By analyzing texts, I can show which theoretical tools were available as conceptual resources to scientists. Texts, then, are the outcome of the concerted action of the scientific community. The objective of analyzing texts is to understand which concepts and theories are normative in a scientific community.\(^2\)

In order to examine the contents of texts, we need an analytical strategy and a theory of knowledge. In this study, I use a definition of knowledge in which it is understood as consisting of categories linked together in networks (Law and Lodge 1984). Networks have two components. First, there is extension, or how categories are related to one another. Categories are referential and rely on comparative and contrasting attributes in their construction. Second, categories are assigned attributes that describe their members. This is called intension. While generally related, intension and extension can change independently. We can bring into focus what is taken-for-granted in systems of classification by examining shifts in and debates about the intension and extension of categories in

\(^2\)I am not here trying to analyze the social processes that produce texts. Those processes are embodied, local, specific, and often include tacit knowledge. An analysis of the production of texts would be better done via ethnography (see for example, Latour and Woolgar 1986).
networks of knowledge.

Systems of classification are arbitrary and historically contingent (Foucault 1970, xv; Law and Lodge 1984). However, this does not preclude their material utility. The historical persistence of certain systems of classification over others attests to their productivity in organizing the social world. The concept of race as it has been and continues to be used in science is one system of classification that continues to have productive, and some contend, predictive and explanatory power. But race has not historically been nor is it currently an unproblematic system of classification in science (Feinleib 1992; Haraway 1989; Harding 1993; Lewontin et al. 1993; Lieberman and Reynolds 1991, 1984; Osborne and Feit 1992; Phillips 1992; Provine 1973; Reynolds 1992; Rose 1986; Stepan 1982, 1985, 1986). It is precisely because of the controversy around the construction and use of race categories that it is suitable for analysis. It is when there is dispute that the tacit becomes explicit (Latour 1986; Law and Lodge 1984).

**Discourse Analysis of Normal Science**

Abuse studies are characterized by an approach in which the researcher locates victims and then exposes the practices of researchers or physicians. These are often framed as "good science, bad scientists." But, perfectly reasonable research questions -- that is, what was thinkable within the bounds of normal science -- can result in methods that create abuse. How is scientific authority
structured so that abuse is possible? As Barnes (1985) notes, "the 'authority' of the experimenter ... [can be seen as] the cause of obedience in the experiment, [but there remains] the question of how it operates and in what range of circumstances it will remain effective" (Barnes 1985, 77). We need, therefore, to approach understanding of power in science in another way. To look at the individual researchers and physicians, or even institutions, deemed responsible for abuse ("bad science and immoral scientists") does not help us understand how abuses are thinkable in normal science.³ In order to develop analyses that help us understand how scientific discourse makes abuses thinkable, we need to understand, in detail, how the systems of classification through which these differences are constructed are used at the level of everyday scientific practice.

As we saw above, we can think about scientific knowledge in terms of discursive repertoires and practices. Discourses are constituted by modes of

³Another way that abuses and non-normative science is handled is through the analytical move that categorizes them as "pseudo-science." There are broader epistemological issues related to this, but these aside, it is important that we do not simply attribute abuses and failed branches of science as pseudo-science. Science studies cannot be concerned with whether particular knowledge is "true" or "false" (Woolgar 1988). Understanding science as pseudo-science is only possible as a retrospective project. Phrenology is a particularly good example (see Cooter 1984; Gould 1981, 1993). Its practitioners followed the scientific conventions of their time and worked within the norms of the scientific community. It was post hoc that phrenology came to be seen as "bad science." In fact, phrenology was a system of classification and a set of practices that simply did not work out. Phrenologists were unable to reproduce the productive power of their methods and theories.
talking, behaving, and writing within normative boundaries of a community. Conceptual categories, vocabularies, and analytical methods comprise discourses (Foucault 1970). Medical discourse is constituted by scientific knowledge, professional demeanor, and technologies of the body (Freidson 1988). Becoming a physician requires a lengthy socialization process in which the discursive repertoire is learned (Becker et al. 1977).

How can we probe discourses? In a study of scientists working on bioenergetics, Gilbert and Mulkay (1984) examined research papers, literary products (letters exchanged by scientists), and scientists' talk. Qualitative analysis of published research papers is a method that permits historical analysis, since these are readily and consistently available for longer periods than individual lives.

I have already discussed the importance of texts in the previous section. They are the product of concerted action and they reify the experience and knowledge of scientists. In addition, the production of texts is indispensable to the functioning of institutions, including scientific communities, in the twentieth century (Smith 1987; Smith 1990). The categories that render human beings manageable by institutions are dependent upon texts (Smith 1990). In medicine, for example, the human being is variously constructed as a patient or as a case. This construction abstracts the person from the particularities of her life and embed her in institutional categories -- whether doctor's office, hospital, sanitorium, or other medical situation. So abstracted, other categorizations
become possible. One case of a disease can be compared with another because of this process of abstraction. Abstracted, compared, and generalized, human beings are rendered into texts in medical discourse.

Studies of scientific abuses of subordinated people have made a significant contribution to our understanding of the power of science, its knowledge, and its institutions. While not limited to racial groups, abuses involving racial groups are often the most visible, such as the Tuskegee syphilis experiments (Jones 1981), studies of German Nazi doctors' experiments (Proctor 1993), and studies of involuntary sterilization of women of color in the United States and abroad (Dillingham 1977a, 1977b and 1978; Women of All Red Nations 1992; McDonald 1989; National Council of Negro Women and Communications Consortium Media Center 1991; Shapiro 1985).

Race: Black, White, and Other

The study of the concept of race (and racism) in the United States have tended to be studies of the race relations of blacks and whites. The politics of race in the United States, because of the "peculiar institution" of slavery, has

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4In doing this research, I used a computerized library program. It includes abstracts of articles so that the range of selection is much greater than if using a subject or title search. Still, most articles in which the terms race and science appear are studies of African Americans. For example, an article with the promising title, "Race and universalism in the scientific community" was a story about black scientists and their obstacles to university placement and their apparent lower productivity compared with white scientists (Pearson 1978).
foregrounded African Americans. "[A]lmost nowhere in the United States is there any doubt that there at least two 'major races': namely, the Negro race and the white race" (Marshall 1993, 118).

Approaching the study of race as a black and white binary analytic is less useful than an approach that problematizes the notion of race in its entirety. Racial systems of classification, as they developed in the nineteenth century, were usually portrayed as hierarchies, with each of the many races having their places in a "great chain of being" (Stepan 1982). Whites were on the top and Blacks were on the bottom of this hierarchy. Supporting the top and the bottom were those races constituting lesser beings than whites, but greater than blacks. We can unpack the complexity of the concept of race in science by analyzing these subtler distinctions between race categories. Further, we can use a comparative analysis of two non-white race categories (along with the implicit comparison to whites) to explicate the kind of resource that race as a system of classification was in science. Therefore, I foreground Native Americans in this study.

Historically, Native Americans have had a unique relationship to the United States Federal government, compared with any other group. It is not my intent to summarize the entire history of white-Native American relations here.\(^5\) It is

\(^5\)There are numerous sources for exploring the history of white-Native American relations. The uninitiated would do well to see Brown (1970), Custo and Henry (1977), and Deloria and Lytle (1983).
important to note, however, that they were viewed as racially and culturally inferior since the earliest European contacts (Berkhofer 1978).

The nineteenth century scientific community, in particular anthropologists, debated the theory of polygenetic (multiple) origins of human beings in which the existence of Native Americans figured as prominent evidence (Bieder 1986). The representations of biological race by scientists was used to justify particular political courses, often violent encounters between Native Americans and whites. The belief in the racial superiority of whites permitted the construction of Native Americans as obstacles to the manifest destiny of the nation to span the continent (Prucha 1986).

...whites, in their expansion westward, were able to deprive Indians of their rights and exterminate them "with singular felicity, tranquilly, legally, philanthropically, without shedding blood and without violating a single great principle of morality in the eyes of the world." Indeed he [de Tocqueville] remarked, it was impossible to destroy men [sic], with "more respect with the laws of humanity." (Takaki 1990, 81)

Enclosure on the reservations was completed by the end of the nineteenth century. At the same time that the United States put an end to its "peculiar institution" (slavery), it created another, the reservation. The historical particularities of the relations between whites and Native Americans makes the study of the medical literature about this racial group a rich site for understanding how a racial category was used to explain disease.

When race is used as a descriptor, groups are constituted as unique
categories within the system of classification of race. The relationships between categories in a network (its extension) are constructed out of difference. In the case of knowledge about race, the difference is usually constructed with physical markers such as skin color, hair, body type, and so on. The intension of race categories must then involve differential attributions. What are these differences between the races as scientists use these categories? To find out, we can compare two race categories. By comparing the way race that race is used to explain differences in disease, we can begin to explore the complexity of the concept of race as a system of classification.

The tendency to foreground African Americans in studies about race in science in the United States has fortuitously provided me with ample research to use as a basis of comparison. In this study, I use Vanessa Northington Gamble's (1989) study of the way that race was used to explain the relatively higher rates of tuberculosis among African Americans from 1900 to 1940. Before summarizing Gamble's findings, I outline the tuberculosis problem.

**Tuberculosis**

As a site for the study of medical classification, tuberculosis provides us with a rich source of evocative material. Today, we understand tuberculosis as a disease that results from infection by the tubercle bacilli. Like any bacteria, it can attack any organ in the body, although we are most likely to think of pulmonary
tuberculosis, in which the bacillus lodges in the lungs. In the early part of the twentieth century, after germ theory had become widely accepted, public health measures emerged that were intended to prevent the spread of the disease, largely through the confinement of the sick to sanitoriums but also through sanitation and other reforms (Musto 1988; Teller 1988). In the nineteen-forties, an antibiotic for treating tuberculosis, the drug isoniazid, was discovered in Waksman's lab at Rutgers University (Musto 1988; Ryan 1993; Waksman 1966). While it took some time for the therapy to become wide-spread, prevention campaigns had already reduced incidence.

Such developments have obscured the emotive story of tuberculosis. "We have all but forgotten the terror tuberculosis aroused earlier in this century. The death rate for tuberculosis in 1900 exceeded today's death rate from cancer and accidents combined" (Musto 1988, 76). It was widespread, and though incidence and death rates for tuberculosis were different for various social groups, it cast its shadow over the whole community.

As Gamble (1989) notes, information on rates from the early part of the century is unreliable. Diagnosis was often problematic prior to the development of the skin test in the nineteen-thirties and, later, x-ray technology. As late as the nineteen-fifties, persons who lived in remote rural areas were unlikely to ever see a physician (Jones 1981). Further, it is likely that tuberculosis was under-reported, because there were often serious consequences -- such as job loss and the inability
Problems of reporting aside, something of the differential morbidity and mortality rates is known. Gamble compares the morbidity rates in 1920 of white Americans and African Americans. The morbidity rate per 100,000 was 85.7 for white Americans and 202 for African Americans. In the medical literature about Native Americans' tuberculosis for the early part of the century, morbidity and mortality rates were always estimated by comparing whites and Native Americans, and were sometimes estimated by including African Americans in the comparative framework. Ferguson (1928) estimated the rate of infection of Native Americans in western Canada as twenty times that of whites in the surrounding community. In a synthesis of the then current research, Long (1937) wrote that average mortality rates per 100,000 persons were 57 for whites, that the African American rate was three to four times the white rate, and that the Native American rate was estimated at three to four times that of African Americans (Long 1937, 1).\footnote{When he wrote this article, Long was associated with the Henry Phipps Institute in Philadelphia. The Phipps Institute was a central player in the story about tuberculosis in the early part of the twentieth century. Through the Phipps Institute, physicians established clinics and treatment programs for African Americans, in addition to research programs (Gamble 1989; McBride 1989). Evidence in the medical literature about Native Americans' tuberculosis indicates that the Institute was involved in training physicians who worked with Native Americans and with evaluating x-ray test results for those physicians.}

Incidence and death from tuberculosis declined in the general population over the course of the century. According to Ryan (1993), however, in his history...
of the scientific research aimed at discovering a cure for tuberculosis, a new strain of resistant tubercle bacillus has recently developed. Because the course of isoniazid treatment is quite lengthy, at least a month and sometimes more, some patients, when they began to feel better, did not complete the entire course of therapy. The emergence of the recent strain of isoniazid-resistant tuberculosis is attributed to patients not completing chemotherapy, thereby allowing the tubercle bacilli to develop a resistance to it.


In the history of tuberculosis, there is a noticeable parallel with the present day definition of the AIDS problem. In both cases, incidence is highest among marginalized groups. Further, there is striking similarity in the public discourse and sentiment about how non-infected people ought to be "protected" from the infected (McBride, 1991; Musto 1988). Language about the protection of the non-infected from the menace of the infected is a metaphor for the social geography of proper places for races, classes, and other categories of marginalized people
Explaining the African American Tuberculosis Problem

Because tuberculosis provides us with such a rich literature, it has already provided the benefit of one study of racial categorization, that by Vanessa Northington Gamble (1989), who studied the issue with respect to African Americans for the period 1900 to 1940.

According to Gamble, the relatively higher tuberculosis morbidity and mortality rates among African Americans in the early part of the twentieth century were accompanied by divergent views about its cause. While none of the participants in the debate openly refuted germ theory, they each sought to identify "contributory factors" which could explain differences in incidence. 7

Gamble identified three kinds of causal explanations proffered by physicians for the more severe African American tuberculosis problem. First, hereditarians (who were white) argued that biologically-based racial inferiority was the cause of the African American problem. They believed that "blacks were inherently susceptible to certain diseases" and that they were "structurally

7 The advent of germ theory in the late nineteenth century marked the beginning of new explanations and approaches to the causes of numerous diseases, including tuberculosis (Quétel 1990). Koch isolated the bacillus by 1882 narrowed the field from "an undetermined something, . . . [to] a tangible parasite" (Koch in Teller 1988, 17). The tuberculosis movement in the United States during the early twentieth century contended with germ theory, its attendant notion, contagion, and tried to make sense of differential morbidity and mortality rates (Teller 1988).
maladapted to live in northern cities."

A second group focused on "lifestyle and environmental considerations." But, this group had two very different components. In particular, many white physicians treated lifestyle as a "code" for moral deficiencies and individual actions. Gamble argued that these researchers meant that "[i]mmorality was a principal factor that influenced the health of a people." Frequently, such researchers implicated the end of slavery in the increased problem, since emancipation was portrayed as giving free rein to "debauchery and immorality" which in turn caused the decline of African American health.

African American physicians, public health experts, and activists by contrast, used an environmental approach to implicate broader socioeconomic factors. They pointed to the need for "improved sanitary conditions, improved education, and better economic opportunities" to improve African American health (DuBois in Gamble 1989). African American physicians attributed higher morbidity and mortality rates to the "social pathology" of "poverty and discrimination."8 Gamble concluded that "[t]he black community viewed its health problems as a social dilemma of monumental proportions that jeopardized the race's social, political, and economic advancement."

And finally, a third position drew upon the "interplay of racial

8Many white physicians concurred with this assessment (McBride 1989).
characteristics and environmental factors." For this group, both biological and environmental theories were used, in sometimes contradictory ways, to explain African Americans' higher morbidity and mortality rates from tuberculosis.

A prime theme of Gamble's chronology is the replacement of biological explanations by socioeconomic ones. By the late nineteen-thirties, Gamble argues, hereditarian arguments had been largely supplanted by environmental and socioeconomic theories. With the increased acceptance of socioeconomic theories, "... theories of racial susceptibility had not vanished, but they were no longer viewed by the mainstream medical and public health community as evidence of black inferiority and as the primary determinants of black health status."

One of the concerns that the African American community had with hereditarian explanations was that, if African Americans were seen as inherently susceptible, then the white community would see no reason to do anything about it. Environmental, lifestyle, and broader socioeconomic theories, by contrast, offered the possibility of intervention. African American physicians, public health experts, and activists sought to ally with the white community which had far greater resources. To build this alliance, advocates, both African American and white, used the rhetoric of white self-interest. This was a powerful rhetoric which evoked "[t]he image of hordes of diseased blacks with 'death-dealing microorganisms at their hands.'" In order to protect themselves from tuberculosis,
whites would have to aid the African American community.

Programmatic solutions to the tuberculosis problem were embedded in the logic of what was believed cause the problem. For example, when immorality was understood to cause a problem, then program designers proposed moral education that would teach the virtues of hygiene, thrift, sobriety, and chastity. According to Gamble, advocates proposed five kinds of solutions to the tuberculosis problem among African Americans. They were environmental solutions, educational programs, changes in health care delivery (especially increased access), increased numbers of African American health care professionals, and self-help programs.

For physicians and others who were concerned about the African American tuberculosis problem in the early part of the twentieth century, race as a category was a powerful, flexible resource which was used in more than one kind of causal explanation. In hereditarian explanations, race as biological difference meant inferior resistance to disease compared with whites. Biologically-based racial inferiority was a theory that was difficult to maintain in light of germ theory because early use of germ theory focused on the invading rather than the invaded organism (Quétel 1990). And, although it was a theory in decline, it persisted throughout the period.

In environmental explanations for the cause of the more severe African American tuberculosis problem, two different groups used race in their explanations in different ways. For the first group, largely African American but
also some white physicians, race was implicated as the cause of the tuberculosis problem via the politics of race which limited economic and social opportunities. For the second group, however, cause of the problem was located squarely with individual immorality and ignorance.

However, regardless of the kind of explanation advanced, Gamble persuasively shows how race was a central category for understanding the nature, cause, and possible solutions to the African American tuberculosis problem in the early part of the twentieth century.

The Plan of this Study

In the chapters that follow, I examine how race as a system of classification has been used in the medical literature about Native Americans' tuberculosis. I trace the themes that were identifiable in the representation of Native Americans as a racial category, where racial attributes were used to explain some aspect of their situation with respect to disease. In the use of race as a resource, physicians and researchers show us just what it was about race that was salient for them. I show that the intension of the category (how it is constructed internally) changes over the course of the twentieth century. These data suggest that the extension of the race (how categories are related to each other) as a system of classification is transformed over the century as well.

Chapter 2 outlines the methodology I used to carry out this research. Here,
I link qualitative research methods to discourse analysis. I also detail the data, its problems, and the consequences of methodological choices.

In Chapter 3, I trace two themes -- biological and cultural -- that persisted in the early part of the century (1900-1940). Two explanations were offered for the Native American tuberculosis problem. In one, Native Americans were characterized as biologically susceptible to tuberculosis. In the other, environmental explanations for the extreme rates of incidents were offered, and this was the dominant view for the period. When environmental explanations were used, researchers explained the reservation environment as the result of the cultural primitivism of Native Americans. But even when the Federal government was seen responsible for improving reservation conditions, changing Native Americans was always the remedy. I compare the use of race as a system of classification for Native Americans during this period with Gamble's (1989) findings.

In Chapter 4, I follow the careers of both biological and cultural explanations for Native Americans' tuberculosis problem in the latter part of the century (1941-1990). Explanations that relied on the theory of biologically-based racial susceptibility were quickly disposed of in the nineteen-forties. Cultural explanations persisted, even if transformed over the period. In the early nineteen-fifties, the concept of primitivism was replaced by a view that the differences between white physicians and their Native American patients were rooted in
language, which produced differing conceptual frameworks about the cause and appropriate treatment for disease. Strategies to induce Native Americans to seek out medical services involved alliance building. In the late nineteen-eighties, strategies again changed, proposing the integration of traditional Native American practices into physicians treatment plans.

In Chapter 5, I draw conclusions about the shifting use and explanatory power of race as a system of classification over the course of the twentieth century as it is linked to understanding the production and use of scientific knowledge. I link the study of normal science to the problem of abuse and scientific authority. In addition, as with any research project, not every interesting theme or provocative issue within these data could be elaborated upon here. I note some of these themes and issues, and make suggestions for further research.
CHAPTER 2

METHODOLOGY

In this chapter, I outline the method that I used to understand the use of the concept of race in medical literature. I begin by discussing how I linked qualitative analysis to textual sources. Next, I discuss an ancillary component of the research, citation analysis. Third, I define the boundaries of the present study. In a brief conclusion, I summarize the methodology and my objective in implementing it.

Qualitative Analysis and Documentary Sources

In this study, I employ "descriptive analysis" of historical phenomenon through the examination of texts (Glaser and Strauss 1967, 162). As I showed in Chapter 1, experiential knowledge is transformed into scientific fact via its rendering into texts. The content of texts contains what communities of scientists believe to be important and salient about the object of their studies. As with social behavior, texts contain "repeatable regularities" (Denzin 1971, 169).

Content analysis, the method of research frequently used with documentary sources, often transforms stories into a form that renders them suitable for
quantitative analysis (for example, see Banks 1976). The researcher counts words and phrases to learn about the prevalence of an idea within texts. When this approach is used, the resulting story is likely to be without the interpretative power of qualitative analysis. I have analyzed textual sources the way that ethnographers would analyze field notes. I approached texts as if they were notes from participant observation, observation, or interviews. In doing so, I was able to make the meaning of the ideas within texts the object of research. Taking texts as an outcome of a particular social action (the making of texts), I problematize their content. "Words [in texts] are not a preliminary to an investigation of reality, they are a reality in their own right" (Silverman 1985, 149).

The coding scheme used in this analysis is a hybrid of content analysis and qualitative data analysis coding. On the one hand, I did not seek out words or phrases to count, as is often the procedure of content analysis. On the other, I did not approach the texts with an "open coding" procedure, permitting the coding categories to emerge from the texts; I brought the central coding categories to the texts and did "selective coding" (Strauss 1987, 62, 69).

Because a portion of this study is comparative, I needed to bring a basis for comparison to the data. The first procedure was to analyze the logic and

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9 Counting has its place in qualitative research; it can aid in understanding the relative prevalence of a quality in a research site (Silverman 1985; Becker et al. 1977).
components of Gamble's (1989) research. In a sense, I "coded" her work. Unremarkably, the categories that I constructed reflect the organization of and argumentation within her study. Next, I constructed categories that would assist in rendering the social structural components of the story concrete. That is, I constructed categories to capture the specifics of by whom, with whom, where, and how the reported research reported was conducted. Third, I constructed categories which would facilitate comparative operations. It was necessary to compare, for example, the health status and tuberculosis morbidity and mortality rates of or descriptions of clinical pathology of tuberculosis for white Americans, African Americans, and Native Americans.

The categories constructed, I then developed a form for use as a data collection instrument. This instrument was used in the analysis of each article within the bounds of the study.

I divided the data into two groups. The first, 1900 through 1940, replicates the time period of Gamble's research and permits comparison between the two race categories -- African Americans and Native Americans -- within a single time

10Prior to linking Gamble's study with the medical literature about Native Americans for a research project, I had familiarity with both. A description of the process through which I made this link would be more intellectual biography than methodological procedure. I therefore omit it.

11Appendix 1 contains detailed information about the coding categories that I used in data analysis.
period. The second group of data is for the period 1941 through 1990. With this group, I extend the study by doing a temporal comparison for a single race category, Native Americans.

Finally, once I completed extracting notes from the data onto the data collection instrument, I combined them within categories. With this method I was able to analyze each text as a unit, and to analyze multiple texts within a single category. Data analysis and coding are an iterative process. Through analyzing the data, new coding categories emerged and I continually tested them against the notes created via the data collection instrument and against the original text.

Citation Analysis

Citation, in this project and as it is generally used in scholarly literature, is one of the methods that authors employ to bring authority to texts: "I am the author, and I use all these articles to help me out" (Latour 1987, 38). Citation is a political move "distributing honour [sic] and shame, disabling some, strengthening others, borrowing without qualification from still more papers, and so on" (Latour 1987, 38-39). Quantitative citation analysis (also called bibliometric analysis) has become a major industry in which it is used for, among other things, evaluating research output (Hicks and Potter, 1991) and understanding the social structure of and influence within a field (Stokes and Hartley 1989).

In this study, I do not use extensive quantitative bibliometric techniques to
analyze the patterns of alliance within the field I am studying (see Stokes and Hartley 1989). However, I do use fundamental principles of citation studies to explore patterns of alliance and dispute. For all of the literature in this study, I asked, 'who cited this author,' 'who is cited by this author,' and 'how is the citation used?' This exercise permitted me to allocate relative weight to a particular author and his work. However, I did not use the results of this procedure in a deterministic way and this analysis does not constitute my findings. Citation analysis informed rather than structured the results I present here.

Using a method based on citation analysis, I analyzed the institutional affiliations of researchers. Through this procedure, I was able to identify the network of agencies and organizations that constituted the researchers' spheres of influence and resource base.

The Boundaries of the Study

In my introduction to the medical literature about Native Americans, I became intrigued by the characterizations of Native Americans by the researchers whose work was indexed in Index Medicus. After an exploratory study of the categories used to index research reports about Native Americans, I undertook to define the universe of medical literature about Native Americans. I quickly

12The term Index Medicus is used here to refer to three indices, Index Medicus (1879-1899, 1903-1927), Quarterly Cumulative Index Medicus (1927-1956), and Cumulated Index Medicus (1960 through the present).
became cognizant of the necessity to delimit any study which would take this literature as its object of analysis.

*Index Medicus* is a comprehensive guide to literature that is of interest to medical researchers and practitioners. The index dates back to 1879. Beginning in 1903, social categories began to appear in the index.⁴³ That is, instead of indexing strictly on biological categories, such as a particular disease, organ or physiological process, indexing was also done on categories such as racial or ethnic groups (for example, the categories Jews, Negroes, Persians, and Peruvians) and social behaviors (for example, the categories magic, occultism, and witchcraft). In 1903, the category "Indians (North American)" makes its first appearance in the index within the category of "Anthropology, Biology." Medical articles about Native Americans do not appear until 1915.

Categories for Native Americans have varied over the years within the index. All of the possible categories and the years in which they appear are:

- Indians (1917, 1919, 1920-1921)
- Indians, American (1918, 1923-1956)
- Indians, South American (1960-1990)

The number of articles for all of the above categories from 1893 through 1990 is 2,808. Clearly and quickly, a means of limiting the scope of the study became

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⁴³The exceptions to the exclusion of social categories from the index prior to 1903 are the categories for women and for children.
both desirable and necessary.

By adopting a comparative framework with the use of Gamble's study, I was able to place a boundary around the data and to develop a sampling strategy. This can be thought of as purposive sampling -- selection on the basis of theoretical purpose -- from the universe of all possible medical articles about Native Americans (Bailey 1987, 94-95).

I searched each year of the index within the category "Indians," "Indians, American," or "Indians, North America," depending upon the editorial practices in use by the compilers of the index for year under scrutiny, for articles relating to tuberculosis. I found seventy-five articles for the period from 1900 through 1990. I then acquired all of the articles for preliminary analysis.

In the initial phase of obtaining articles, I eliminated none. In the next phase, after I examined each article, it became apparent that not all of them were suitable for this study. I eliminated ten articles that were in foreign languages, were duplicates, or were mistitled (see Appendix 2 for detailed information about exclusion criteria for specific texts). The final sample, then, consists of a total of

14 I excluded the years 1957, 1958, and 1959 because the index was not published during those years (Miles 1982).

15 One exception was a Spanish language article that was in a periodical that was not owned by any library in the United States. See Appendix 2.

16 Appendix 2 shows the criteria for the exclusion of an article from the project.
sixty-five articles. For the period from 1900 through 1940, there are twenty-five articles and for the period from 1941 through 1990 there are forty articles.

Using this method of sample selection meant that research reports were included about Canadian, and in one instance, Central American, Native Americans. I considered excluding these articles and limiting the study to Native Americans in the United States. I did not because of patterns that I found in the data. It was not until the middle of the nineteen-twenties that the first articles about Native Americans' tuberculosis appear and these were authored by researchers in Canada, not in the United States. Ferguson's (1928) research report about the Cree, Assinboines, and Blackfeet was, compared with the usual length of a research report, a tome (it is more than fifty pages). It was also the most often cited piece from 1900 through 1940. Further, Ferguson's work was cited in the later period as well. References to his work appear as late as 1988.17 The Canadian influence in the United States, as represented by Ferguson's work, was clearly important in the body of work about Native Americans' tuberculosis in the United States.

One problematic aspect of the method is the exclusion of government documents from the analysis. Indeed, an alternative methodology might have been designed that relied primarily on government documents. This would have been a

17Ferguson's 1955 Studies in Tuberculosis was often cited after it was published. His 1928 research article was last cited in 1961.
powerful resource, since health care was dispensed to Native Americans largely through government agencies. Even more important, because I do not use government documents as a data source, I consequently omit from this study the work of Aleš Hrdlička. Hrdlička, a U.S. government ethnologist, was recognized as the leading authority about Native Americans by his peers and was a key figure in establishing a biological theory of Native American susceptibility to tuberculosis in the early part of the century (Blakely 1987; Buikstra 1981).

The methodological decision to omit a systematic examination of government documents was two-fold. First, this research required being do-able and is constrained by the bounds of what counts as a thesis. I would have had great difficulty obtaining the needed documents. Time and money are scarce resources. Second, there is the problem of comparability for the early part of the century. For the case of the health problems of African Americans, as Gamble's research showed, health professionals and other activists were able to extend the discussion of the tuberculosis problem beyond the professional literature and to ally with non-medical institutions, such as philanthropic foundations. In the case of Native Americans' health, the closest thing that there was to public debate was constituted by the articles in Index Medicus. While there wasn't widespread, public access to this literature, in theory at least, all health professionals had access to it. Government documents would have had a more limited circulation than did the articles in Index Medicus.
Conclusion

The focus of this study is to understand a particular category, race, its use and shifting meaning, and how it was used in the medical literature to explain a specific problem, disease. I sample the literature theoretically via the disease tuberculosis. Qualitative analysis is used, taking texts as data, to observe "repeatable regularities" in texts. I ground this method in the idea that the concept of race as it was used in these data, was an outcome of the concerted action of a community with shared knowledge and norms.

Using this methodology, I compare the way that the concept of race is a resource in the debate about and research into tuberculosis in two ways. First, I compare its use with African Americans and Native Americans, for the period from 1900 through 1940. And, I compare its use among Native Americans for the periods 1900 through 1940 and 1941 through 1990.
CHAPTER 3

RACE AND RACE DIFFERENCE IN
NATIVE AMERICANS' TUBERCULOSIS IN
THE MEDICAL LITERATURE, 1900 THROUGH 1940

All of the researchers reporting on the Native American tuberculosis problem from 1900 through 1940 agreed that the problem was quite severe (see Chapter 1). During this period, the concept of race was always used to explain why Native Americans had high morbidity and mortality rates. In this chapter, I examine two explanations constructed out of the premise of race difference -- biological and cultural. Researchers used both of these to account for the relatively greater severity of the Native American tuberculosis problem compared with whites.

The concept of race was flexible enough to be used in two different theories. One gave primacy to biology and the other to culture as the underlying cause of the problem. There is no evidence in these data that the notion of biological race was problematized during the early twentieth century. No one probed the definition of an "Indian." Further, no one made distinctions between tribal cultures. The relationships between Native Americans and the Bureau of Indian Affairs along with the social geography of the reservation made the
identification of an "Indian" a simple matter.18

The theoretical link between biology and culture, as it was understood in the nineteenth and early part of the twentieth centuries (Stepan 1985), was not stated, yet was always essential to researchers' arguments about the cause of the Native American tuberculosis problem. Biology and culture were not viewed as autonomous. Biology was seen as underlying or causing culture (Stepan 1985).

The concept of race was used to explain the tuberculosis problem in two ways. First, low resistance was posited as an inherited racial trait. Second, race was implicated in environmental explanations. Researchers believed that Native Americans' apparent maladaptation to reservation life was the result of forced change consequent to white encroachment. Non-flexible culture, then, was an often used explanation for the problem.

There were instances of biology and culture being simultaneously implicated as the cause of the tuberculosis problem. In these instances, researchers usually preferred the biological model, with varying degrees of accommodation to environmental factors.

Two themes in the data are representative of the two approaches to

18 The specific government agencies charged with carrying out United States policy with respect to Native Americans, including the administration of the health care delivery system, had different names and were under different departments at different times (U.S. Department of Health, Education, and Welfare, Public Health Service 1957, 2). For the sake of simplicity, I simply use the contemporary term, Bureau of Indian Affairs.
explaining the Native American tuberculosis problem and it is these which I examine in this chapter. I begin with what in these data is called blood quantum.\textsuperscript{19} Blood quantum was a way of talking about the genealogy of individuals, the inter-marriage of Native Americans and whites in previous generations.\textsuperscript{20} As a concept, blood quantum was primarily used as a way of measuring attenuated inherited susceptibility to tuberculosis, since decreased susceptibility to tuberculosis would be conferred, it was believed, by the "white blood." "Full-bloods" were thought to be more susceptible than "mixed bloods," who were more susceptible than were whites. Thus, blood quantum measurement correlated with tuberculosis rates were used to support the theory of inherent biologically-based racial susceptibility. The concept of blood quantum, as an approach in using a biological theory to explain the tuberculosis problem, captures the all of elements of biological theories of race difference.

\textsuperscript{19}I cannot use the idea of blood and blood quantum without noting that in itself, it is a concept packed with complexity. It is the predecessor to what has become in the late twentieth century, the politics of genetics. While I take it at face value, as it were, in exploring the use of the race concept in these data, it is a notion that merits much greater attention (see Chapter 5).

\textsuperscript{20}"Admixture of white blood" effectively locates how many generations back the inter-marriage took place. That is, one-half white would most likely mean a parent was white; one-quarter would most likely mean a grandparent; and one-eighth would most likely mean a great grandparent. This raises many questions about the idea of blood as a metaphor for social relations, since mixed bloods were seen to be more like whites culturally and socially in addition to biologically (as we will see below).
The second theme in the data is that of cultural primitivism. Throughout the early part of the twentieth century, a linear, hierarchical view of social development comprised the dominant thought about social change. The idea of cultural primitivism was premised upon a comparison of Native Americans' cultures to American culture. As Fabian (1983) has observed, anthropological constructions of "primitives" gave researchers the opportunity to do a sort of time travel in which they could learn about the white past from the "primitive present." Within this framework, it was only logical to conclude that the differences between white and Native American tuberculosis morbidity and mortality rates were the product of the lesser evolved civilization of Native Americans. Still, it is important to remember that primitivism was not strictly a cultural construct, since biology was generally seen as the basis for culture.

In the United States prior to the mid-nineteen-thirties, Native Americans were primarily of cultural interest, the province of anthropologists and the United States Department of Ethnology. It was not until after 1930 that reports about the tuberculosis of Native Americans in the United States began to be published in the medical literature. The development of the Bureau of Indian Affairs and its employment of physicians to work on reservations was, no doubt, an important factor influencing the advent of publication on this topic. An analysis of the institutional affiliations of the authors of publications for the period showed that all of the authors were tied in some way to federal agencies that were chartered to
carry out U.S. policy towards Native Americans at the local level on reservations.

**Blood Quantum**

In the early part of the twentieth century, researchers believed populations acquired resistance to the disease through continuous exposure over many generations. The theory of Native Americans' biologically-based racial susceptibility to tuberculosis was premised upon the thesis that they did not have contact with the tubercle bacillus until their contact with Europeans in the late fifteenth and early sixteenth centuries. Further, other diseases, such as small pox that had clearly been introduced by Europeans, had devastated the indigenous population in the Americas (Diamond 1992).\(^{21}\) The severity of the Native American tuberculosis problem, it was believed, could be accounted for by its relatively recent appearance in the Americas. Historians of medicine, the sources relied upon by researchers publishing in the medical literature, had utilized early accounts of Native Americans by explorers and missionaries. From these accounts, historians found little that indicated that Native Americans were tuberculous prior to European contact.

\(^{21}\)Early accounts of the effect of diseases introduced by Europeans to the Americans include Cotton Mather who reported death tolls between ninety and ninety-nine percent in New England in the early seventeenth century (Mather 1977; also Manierre 1964). Also see Gordon (1949) for a collection of reports of the effect of small pox on Native Americans in the colonies during the early seventeenth century.
Blood quantum, or admixture of white blood, was a theory which argued that there would be an attenuated susceptibility to tuberculosis for the offspring produced by the intermarriage between Native Americans and whites. Researchers measured blood quantum, and used the differences in prevalence among the groups with varying degrees of white and Native American blood to demonstrate that poor resistance to tuberculosis was heritable. Those who used this approach uniformly found that prevalence rates increased as the amount of Native American "blood" increased. Thus, the theory and its method provided empirical evidence for the claim of Native Americans' biologically-based racial susceptibility.

The theory of biologically-based race difference in susceptibility to tuberculosis persisted throughout the nineteen-thirties. Although it was not the dominant view about the reasons for Native Americans' extraordinary rate of infection, it was an important debate because of its relationship to the eugenics movement. Blood quantum research reports implicitly utilized the theory of eugenics and explicitly used its methodology, family studies. Among researchers who favored blood quantum differences as theoretically sound, about half reported that the effect of "white blood" on Native Americans was in social behavior, rather than biological susceptibility to disease.

The earliest published reports in this data set are from the nineteen-twenties and they are premised upon and give primacy to the notion of biologically-based race difference. For example, Ferguson (1928) considered the altered social
conditions of Native Americans' -- their removal to reservations -- problematic because they were biologically unsuited to settled life. He compared the shift to reservation life "with the change in life of the equally virile and majestic lion, who, when removed from his natural feeding-ground to that of the zoo, not only loses his physique and morale, but begets a poorer type of cub, difficult to raise and susceptible to disease" (Ferguson 1928, 40). And while Ferguson noted that "half-castes" (individuals of "mixed blood") were less prone to tuberculosis, he expressed concern over the social and cultural problems that these individuals would encounter as a result of their biological status.

In 1932, four of the six published reports take up the issue of inherited susceptibility and use blood quantum or family studies data to either dispute or to support the theory (Burns 1932; Warner 1932; Gillick 1932; Crouch 1932). There were two arguments about blood quantum in the literature. One elaborated biological logic for attenuated susceptibility with greater degrees of "white blood." The other developed a logic in which lifestyle would be more approximate that of whites with greater degrees of "white blood" and in turn, incidence would be reduced.

Following the course established by Ferguson (1928), Crouch (1932) and Warner (1932) premised their research and found evidence for an association between blood quantum and prevalence. Crouch found that "full bloods" were more susceptible (as measured by prevalence), and that this lent support to his
stated assumption that "racial susceptibility . . . [was] the chief factor" in incidence (Crouch 1932, 1907). In his own research, Crouch found lifestyle differences, but he eschewed these in favor of the biological explanation. Similarly, Warner (1932) assumed that there were biologically-based race differences. Yet, Warner argued that the blood quantum difference was more important in the "mentality and psychology" of Native Americans (Warner 1932, 512). Increased "white blood" meant increased earning power, the increased likelihood of seeking out medical advice, and a lifestyle more approximating that of whites. These factors, he argued, would decrease incidence (Warner 1932, 511-512).

The theory of differences in the prevalence by blood quantum was disputed by Burns (1932), who argued that family studies data (which he did not cite) did not support this conclusion. Family lifestyle, he argued, was more important in differences in incidence (Burns 1932, 503). Gillick (1932) disputed the idea that racial predisposition was a factor in tuberculosis for Native Americans. He placed himself in the direct opposition to that theory, naming Aleš Hrdlička as its leading proponent (see Chapter 2). He argued instead that social and economic factors caused higher prevalence (Gillick 1932, 208).

The appearance of reports which disputed biologically-based race difference in susceptibility after Ferguson's (1928) report, appears to have spurred Ferguson to publish again. The tone of his 1933 report was strident in his reassertion that the blood quantum thesis was correct and that other theories were
false. Native Americans, he argued, were a "non-resistant people" and he garnered every bit of evidence to support the theory that biologically-based racial factors were of foremost importance (Ferguson 1933, 94). His evidence includes family studies, blood quantum studies, boarding school data, and historical data about generational exposure to the disease (Ferguson 1933, 100-103). At the same time that he asserted that incidence might be reduced through environmental changes, such as improved sanitation and educational programs, he held tenaciously to the theory of biological predisposition (Ferguson 1933, 94, 101-102).

During the latter half of the nineteen-thirties, the reports in the medical literature became increasingly sophisticated in the use of statistical presentation of data. Reports detailed incidence by presenting tables and graphs in relationship to variables, such as gender, age, and blood quantum. The details of blood quantum measurement and the use of sophisticated statistical presentation were used to fortify the case for biologically-based racial susceptibility. It is possible that the dissent about biologically-based racial susceptibility of the early nineteen-thirties spurred researchers publishing later in the decade to use more thorough methodology. It is more likely that sophisticated statistical presentations used by blood quantum advocates were a part of an overall trend in data presentation in medical literature for the decade. Regardless, conclusions about blood quantum were no longer presented in summary form, but in detailed tables that generally included multiple categories corresponding to varying degrees of Native American
Increased technicality of method and data presentation did not impact the overall view about biologically-based racial susceptibility. Three of the reports (less than half) published between 1935 and 1939 (inclusive) engage the blood quantum theory in any way (Toone 1936; Long 1937; Korns 1936). When the biological theory was used, blood quantum was the favored method for organizing data that supported it.

But, biological theories were waning in the nineteen-thirties. And, blood quantum as a tool in a theory of race was not employed exclusively to explain susceptibility to disease. It was also used to explain another dimension of the Native American tuberculosis problem, primitivism. That is, blood quantum was used to explain both social and cultural differences that were implicated in the high prevalence of tuberculosis. This was possible because of the link between biology and culture that predominated in theories about race during the early part of the twentieth century. Even without the biological link, cultural primitivism was an important explanation for the origins and persistence of the Native American tuberculosis problem. Researchers reporting in the medical literature

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22 Only in one case was blood quantum accepted as a theoretical frame without arguing the case for heritable resistance to tuberculosis. The purpose of the report was to show that the microscope could be of positive value in diagnosing tuberculosis. In this instance, the measurement of blood quantum was used as a device for data presentation (Toone 1936).
used ideas that I have called primitivism more often than they used biological models to explain the Native American tuberculosis problem.

**Primitivism**

Native Americans were viewed as primitive compared with the whites virtually from the beginning of contact at the end of the fifteenth century and well into the twentieth century (see Berkhofer 1978). The idea that cultures progress along a linear path of development only came to be challenged during the second half of the twentieth century.

In what ways did medical researchers see what Native Americans' primitivism as causing high tuberculosis morbidity and mortality rates? I have developed three categories to aid the discussion. These are the impact of reservation life, social customs and life style, and psychology. I take up each of these facets of culture and how they were implicated in the tuberculosis problem in turn.

The dominant beliefs of researchers prior to nineteen-thirty, was that Native Americans had a biologically-based racial susceptibility to tuberculosis. Still, researchers who relied on biological models also relied upon notions of primitivism. In the early nineteen-thirties, when primitivism was used to explain the tuberculosis problem, researchers most often cited the changed economic conditions that resulted from the enclosure of Native Americans on reservations.
The changed economic structure, they argued, was responsible for poverty. Poverty was associated with the extremity of the tuberculosis problem. Native Americans were simultaneously viewed as victims of white encroachment and as responsible for their poverty due to their inability or unwillingness to adapt (Collins and Leslie 1926).

According to researchers' reports, the shift to reservation life resulted in changes in social structure. This included changes in diet, housing, clothing, and so forth. The evidence in the literature is that researchers considered the sanitation problem the most important. Some researchers attributed the sanitation problem directly to the shift from nomadic life to settled life on the reservation (Collins and Leslie 1926; Maher 1929). Ferguson (1928) observed that sanitation practices that were suitable for nomadic life were not suitable for settled life. Before enclosure on the reservations, when a camp became too dirty, a tribe could simply move on. Researchers reported that "there was a direct ratio between the extent of the disease and the degree to which living conditions ... approximated the more sanitary conditions of whites" (Collins and Leslie 1926, 647).

Throughout the nineteen-thirties, researchers continued to implicate the socioeconomic aspects of reservation life in the Native American tuberculosis problem. Poverty, inadequate housing, and poor sanitation were seen as important contributing factors, even by researchers who preferred biological theories of racial inferiority (Burns 1932; Ferguson 1933; Simes and Paynter 1934; Carswell
1938; Ross and Paine 1939). In the first half of the nineteen-thirties, researchers argued that white intervention was essential to change the living conditions on reservations. Left to their own devices, Native Americans would not improve their lot. "[U]ncontaminated by civilization ... [the Native American] was filthy in his [sic] personal habits ... [and was] unaccustomed to those comforts and conveniences demanded by most whites" (Gillick 1932, 208-209). Intervention was seen as having potential benefit, since Native Americans were capable of "uplift," provided the right approach was taken (Gillick 1932; Ferguson 1933). Later in the decade, researchers did not make recommendations for economic intervention. Instead, the state of reservation life was blamed on Native Americans' inability to adapt to it:

The Indian is still a wandering wigwam dweller at heart, and adapts himself [sic] poorly to living in houses ... [they] do not plan beyond immediate events, so, ... he [sic] is continually passing through alternate cycles of abundance and famine (Ross and Paine 1939, 183).

The poverty of reservation life was implicated in the Native American tuberculosis problem throughout the nineteen-thirties. However, the emphasis shifted from socioeconomic (poverty) to socio-cultural solutions. Early in the decade, researchers recommended white intervention primarily in economics and living conditions. Educational solutions were rarely recommended. Economic programs were recommended less and less often over the course of the nineteen-thirties. Late in the decade, those few programmatic recommendations that were made
consisted solely of education to assist Native Americans in learning how to live more like whites.

In addition to the problems that researchers identified as resulting from reservation life, they reported that lifestyles of Native Americans contributed to the spread of tuberculosis. Their lifestyles promoted "massive and continuous exposure to tuberculosis" (Burns 1932, 499). Researchers pointed to particular customs which they implicitly contrasted with the everyday life of whites.

First, the sociability of Native Americans was reported as contributing to the problem. Because of the "gregarious habits of the race" (Warner 1932) and because "the herd instinct is very strong" (Richards 1932, 495), exposure begins at a very young age and continues throughout life.

Sociability was part of a broader characteristic of Native American social customs. Everyday life was seen as more communal than that of whites. The patterns of interaction in homes and in other social relationships were thus implicated in the spread of tuberculosis. "[I]ndividualism is entirely lacking," hence sociability was an inherent feature of everyday life and indispensable to the community's morality (Gillick 1932, 210).

Further, they reported, extended families lived together in over-crowded, poorly ventilated dwellings (Richards 1932; Warner 1932; Carswell 1938; Ross and Paine 1939). This mode of living created an environment of "prevalent infection" which caused higher rates of tubercular infection than for whites living
in comparable socioeconomic conditions (Toone 1936, 191).

The cultural characteristics of Native Americans -- sociability and communality -- were seen as helping to spread the disease. Another characteristic prevented physicians from effecting treatment and prevention programs. Physicians attributed their lack of success in this arena to the Native Americans' psychological primitivism. Even Ferguson (1928), who believed that biology was more important in the tuberculosis problem, included the "mental side" of "conquest by whites" in his explanation (34-35). Researchers claimed that Native Americans' psychology made them reluctant to accept treatment and unlikely to try to better their living conditions. Evidence of this was offered by several researchers. Burns's argument that "[t]he Indian who has succeeded in making a social and industrial adjustment has been able to reduce his tuberculosis" is exemplary (1932, 504).

Psychological characterizations portrayed Native Americans as child-like, inflexible, prone to alcoholism, and of lesser intelligence than whites. Paternalism is apparent in these data. For example, Richards (1932) reported that individuals who test positive for tuberculosis consider themselves "lucky" because they "get . . . a trip to the city and a free meal" (493). Racially-framed, primitive psychology stood as an explanation for the social conditions and practices of Native Americans because of the evidence researchers saw when observing "mixed bloods." "Mixed bloods" were seen as having intelligence and lifestyles that
approximated whites (Warner 1932; Crouch 1932). Native Americans were also characterized as psychologically unable to adjust. Warner (1932) reported that they were "fatalist by nature, . . . [and made] little effort to adjust himself [sic]" (511). They were also plagued by the "sins of indolence . . . and an attitude of hopelessness" (Burns 1932, 403).

Over the course of the nineteen-thirties, psychological characterizations of Native Americans became increasingly elaborate. In the early part of the decade, they were simply called stubborn and inflexible. As contact with Native Americans was protracted over the course of the decade, they were characterized in more complex ways. For example:

We were particularly struck in our dealings with Indians by their paradoxical character, for as a rule conflicting attributes seemed to make up their personality more frequently than in white people. There is a native stubbornness and intolerance to interference that makes clinic work difficult but which may quite suddenly give way to an almost tribal migration of opinion in a favourable [sic] direction, prompted by a minor shift in tactics that catches the public fancy. This same dual personality reaction is believed to influence the Indian in all his relations and will help shape his course in the fight against tuberculosis. Though showing unbounded patience in the pursuit of his own activities of hunting and fishing, he is not liable to have the white man's patience in the long struggle against disease. Being blessed with natural indolence should make him an ideal cure-chaser if he [sic] were not such an easy prey to periods of undisciplined activity. An abundance of natural intelligence is often dissipated by lack of direction to thinking and a host of superstitions are still unbelievably common. (Ross and Paine 1939, 183)

Throughout the nineteen-thirties, primitivism remained a powerful conceptual resource to explain the Native American tuberculosis problem. In
1940, however, two rather different kinds of articles were published about the Native American tuberculosis problem. Unlike any report of its kind that preceded it, one offered no explanations for the extent of the problem. It was a simple report of case finding (Jones 1940). The other argued that "factors other than susceptibility peculiar to Indians must receive consideration" (Alley 1940, 44). Living conditions and economic conditions were, Alley argued, comparable to the slums in cities, "districts [that] are a breeding place for tuberculosis" (Alley 1940, 44). This comparison to a non-racially defined group, tenement dwellers, was also unprecedented in the literature.

**Conclusion**

In the early part of the twentieth century, two kinds of arguments were used to explain Native Americans' relatively higher rates of tuberculosis compared to both whites and African Americans. A pure biologically-based racial inferiority model was not the dominant one, but it did persist throughout the period, even as it declined in use. In this model, Native Americans were seen as a more susceptible race because of lack of exposure to the disease by previous generations. Researchers garnered evidence for biological susceptibility from family studies in which they traced the blood quantum of individuals. This method was developed by scientists working in the eugenics movement (Rafter 1988). Measuring blood quantum, researchers presented evidence that the infusion of "white blood" into
the population of Native Americans had a positive affect, and that those who were "mixed bloods" had a reduced rate of tuberculosis.

The second model was that of cultural primitivism. Although not completely distinct from biological explanations, cultural explanations provided a space in which researchers could argue for interventions on the part of whites. The tuberculosis problem could be solved, they argued, via the "uplift" of Native Americans.

In the first half of the nineteen-thirties, researchers were inclined to put forth ideas that were programmatic and aimed at improving the socioeconomic conditions on the reservation. Over the course of the nineteen-thirties, the arguments for the most important reason for the severe tuberculosis problem shifted from poverty to culture -- the sociability and psychology of Native Americans. As socio-cultural arguments became more prevalent, researchers offered socioeconomic programmatic recommendations less often. During the late nineteen-thirties, researchers were more inclined to report that primitive social customs and psychology were an impediment to white efforts to reduce the tuberculosis problem, but rarely offered suggestions about how to remove the impediment.

The shift from biological to social and finally cultural explanations for contagion and disease is not unique to Native Americans. I suggest three reasons for the shift in emphasis in the literature. First, the prominence of public health
approaches to disease was receding as medial approaches ascended in the United States (Teller 1988; Fee 1988; also see Gamble 1989). Next, as researchers' experience with Indian agencies and familiarity with U.S. policy toward Native Americans increased, researchers no doubt came to view of their sphere of influence as limited. If one's recommendations are not followed, one ceases to make them. Finally, there was an emergent culture of poverty argument in this literature in which social and economic solutions are eschewed in favor of the idea that "individuals have to be rehabilitated culturally before they can advance in society" (Wilson 1987, 13). Gamble's (1989) research about African Americans shows the same trend.

There are clear parallels between the Native American and the African American cases. For both, tuberculosis represented another instance of white superiority. Though of declining importance as the period progressed, biological theories of racial susceptibility "proved" that non-white races were biologically inferior. Environmental explanations supplanted the biological theory. But they saw the cause of higher morbidity and mortality rates among non-white races ultimately as the product of individuals' behaviors. Proposed educational programs were geared toward "uplift" of the individual, which they saw as a precursor to uplift for the race. The blame for the problem was squarely with the victim: Native Americans were maladapted to reservation life; African Americans were maladapted to freedom.
There are also four notable differences in the way concept of race was used as a resource and by whom it was used. First, the medical literature of the period portrayed Native Americans as primitive, while African Americans were portrayed as immoral and ignorant. Both of these portrayals were meant to demonstrate relative inferiority to whites, but these are clearly different lines of thinking.

Second, there was the gradation of race as constructed by researchers who studied and reported on blood quantum differences among Native Americans. In Gamble's (1989) study, we see no such theoretical constructions developed for explaining differential tuberculosis morbidity and mortality rates between groups of African Americans, even though such differences existed in that population.

Third, the clinical pathology and course of the disease was theorized differentially for whites, African Americans, and Native Americans. Native Americans and their tuberculosis were not as different from whites as were African Americans and their tuberculosis. While not a major theme in the data, there is evidence that researchers saw differences between races in pathology ("type of lesion" and "degree of generalization"), the relative prevalence of the types of tuberculosis (chronic and acute), and the affect of "immunizing first infection" in childhood (Long 1937).

Finally, unlike the Native American situation, African American

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Gamble did not address the literature that theorized differences between whites and African Americans in the clinical pathology of tuberculosis.
physicians, public health experts, and activists had access to the medical literature. They published and debated within the scientific community (Gamble 1989; Stepan and Gilman 1993). There is no evidence that there were Native American physicians or that members of their communities had comparable access. One proposed solution to the African American problem, increasing the number of African American physicians and health workers, was never offered as a solution to the Native American problem. Thus, African Americans, unlike Native Americans, were able to influence the debate about the tuberculosis problem and the programs that were implemented to remedy it.

Race and race difference were the primary resource that researchers used to explain the high rates of incidence and death from tuberculosis during the early part of the twentieth century. The concept of race was deployed such that race was simultaneously the framework for the exploration of the problem as well as the explanation for the problem. Regardless of whether a researcher relied upon biological, socioeconomic, or socio-cultural explanations, the theoretical lens of race difference virtually precluded the possibility that non-racial explanations would emerge.
As we saw in the previous chapter, between 1900 and 1940, race and race difference were the primary ways that researchers explained high incidence and death from tuberculosis among Native Americans. After 1940, there was a shift in the ways that the concept of race was used in the medical literature. This was accompanied by an overall change in the character of the medical literature about Native Americans' tuberculosis. In this chapter, I discuss both of these aspects of the post-1940 literature.

First, I take up the character of the body of work about Native Americans' tuberculosis. Over the course of the post-1940 period, the kind of reports that were published shifted from explaining the cause of the problem to descriptions of treatment methods, pathology, clinical studies, and the like. Substantive work aimed at establishing or defending causal models is virtually absent after 1940. I explore the nature of and reasons for this change in the medical literature in the first section.
Next, I look specifically at the concept of race. As I showed in the previous chapter, the predominant form of racial explanations shifted from biological to cultural models over the course of the early part of the twentieth century. I examine the demise of biological conceptions of racial susceptibility, which was complete by 1950.

In the third section, I examine the use of the concept of race in cultural explanations that were used in the literature. The notion of Native American primitivism is used as late as 1988. The way that this idea was used, however, changed over the course of the post-1940 period. There was a marked shift from the argument that Native Americans should change to an argument in the mid-nineteen-fifties that medical practitioners should accommodate, and then in the late nineteen-eighties, integrate traditional Native American beliefs in their treatment of patients. I examine the shift in the use of cultural explanations for the in the medical literature about Native Americans' tuberculosis by focusing on the strategies and tactics suggested and used to deal with cultural difference.

I conclude this chapter with a comparison between the pre- and post-1940 periods of how the concept of race was used in the literature about Native Americans' tuberculosis. I also examine the shift in the category, both in terms of how Native Americans were constructed as a racial category and as part of the system of classification of which that category was a part.
The Changing Character of the Medical Literature

In the post-1940 years, the emphasis in the literature shifted from explaining the cause of problem to describing it. This change is related to two developments. First, revelations about the actions of Nazis caused scientists in many fields to cease using biologically-based racial models (Provine 1973; Stepan 1982). Second, the emphasis in medicine changed from prevention to cure, fueled by success in treating many diseases, including tuberculosis, with anti-biotic drugs and by increasingly sophisticated diagnostic technology (Musto 1988; Quétel 1990). This change in the literature can be thought of as a change of emphasis from Native Americans to the disease itself, from reports about Native Americans to reports about tuberculosis. As in the earlier period, case finding and control program reports were prominent in the literature in the nineteen-forties and nineteen-fifties. New subject matter included the experimental results of BCG trials, pathology reports which detailed studies of the course, conditions, and processes of the disease, and accounting of the resources practitioners had available to them.\(^{24}\)

\(^{24}\)BCG is an abbreviation for bacillus Calmette-Guerin. BCG was a vaccination that was developed by the Pasteur Institute in Paris for tuberculosis prevention and that was used widely in countries other than the United States, where it was considered to be unproven (Ryan 1993). While not used among the general population in the U.S., the evidence in these data indicates that BCG was used extensively among Native Americans. Because its efficacy was considered to be unproven, there was a debate about its use with Native Americans in the literature.
From the beginning of the period until 1973, a substantial proportion of the published reports about Native Americans' tuberculosis included an accounting of practitioners' resources. They counted available beds, funded beds, needed beds, medical professionals and medical support staff, laboratory equipment, and more. The emphasis was on need. The Native American tuberculosis problem had declined only slightly compared with the earlier period, in part because of the scarcity of medical care during World War II when resources, including physicians, were diverted to the war effort. Physicians who worked with Native Americans after the war portrayed the persistence of the problem as the result of insufficient medical resources -- laboratory equipment, beds, and staff -- to treat all of the individuals who needed it.

The premise of resource accounting was that physicians could solve the problem using extant medical technology, provided that technology was supplied to them by the Indian Health Service.

Despite the fact that there is still more tuberculosis among the Indians than among the Caucasians [sic], the total number of the former (350,000) is so small, the fundamental methods of tuberculosis control are so well established, and the Indians respond to these methods so well that no

25 The reporting of resources began in the nineteen-thirties but was done by a small proportion of the researchers (Richards 1932; Carswell 1938; Rider 1938). Of the twenty-six articles published between 1941 and 1973 inclusive, ten (thirty-eight percent) contain an accounting of the resources possessed and/or required by practitioners working with Native Americans (Moore 1941; Townsend 1942; McGibony and Dahlstrom 1945; DeLien and Dahlstrom 1950, 1951; Foard 1952; Davis 1953; Salsbury 1953; Deuschle 1959; Mikkelsen et al. 1973).
excuse remains for allowing tuberculosis to continue to incapacitate and kill and perpetuate itself among Indians. (Meyers and Dustin 1947, 322)

There had been, researchers argued, ample studies that showed that control methods would work and that there was a clear need, but that researchers' recommendations were not followed by the Bureau of Indian Affairs (DeLien and Dahlstrom 1951, 530).

One rationale that was presented for increasing practitioners' available resources was elaborated in the logic of what Gamble (1989) called white self-interest. From the mid-nineteen-forties to the mid-nineteen-fifties, reports appeared that warned that the Native American tuberculosis problem was an "ethnic reservoir" of disease (McGibony and Dahlstrom 1945; Meyers and Dustin 1947; Reifel 1949; DeLien 1951; DeLien and Dahlstrom 1951; Salsbury 1953).26 Increasingly, Native Americans were coming into contact with whites, as a result of white settlement in remote areas in the midwest and west and of relocation programs which settled Native Americans in United States cities. This logic had been successfully used to rally white support for prevention and treatment

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26 Native American tuberculosis had been talked about as a threat to whites during the earlier period, as well (Burns 1932; Richards 1932; Ferguson 1933; Korns 1936; Carswell 1939). It is clear that one element of the use of this argument is related to establishing the research's merit for publication. Defining the problem in this way answers the question, 'why should whites care?' During the earlier period, only one report disputed the thesis that whites living near Native Americans were in danger of becoming infected, citing different morbidity rates for the two races in adjacent communities (Ross et al. 1939).
programs for African Americans from 1900 to 1940 (Gamble 1989). However, practitioners were unsuccessful in using this argument to garner additional resources for treating Native Americans, which is evidenced by the continuation of reports that counted the inadequate resources through 1973.

The failure of the argument citing white self-interest for improving facilities and increasing resources for practitioners working with Native Americans was likely due to the audience. As Gamble (1989) showed, African Americans, activists, and the physicians who treated them had access to foundations and other private sources for funding programs and facilities. The physicians working with Native Americans who made this argument had a rather difference audience, their employer, state or provincial and federal governments. In the United States, the "ethnic reservoir" logic abruptly ceased in the literature at the same time that the Public Health Service took over the health care delivery system for Native Americans from the Bureau of Indian Affairs in 1955.27

Another kind of research report appeared in the literature after 1940. Pathology reports focused on describing symptoms and treatment protocols. The appearance of this kind of very specialized report reflected the increasing

27The Public Health Service took over the health care delivery system for Native Americans on July 1, 1955 (U.S. Department of Health, Education, and Welfare, Public Health Service 1957, 2). This move was part of an overall effort to dismantle the Bureau of Indian Affairs and to sever the legal relationship between the U.S. government and Indian nations and abdicate obligations incurred by treaty (Drinnon 1987).
specialization of the medicine. These were devoid racial conceptions. Further, after 1973, characterizations of Native Americans in which racial attributes were used completely ceased to exist in the literature. The only apparent reason for the existence of a category for Native Americans in Index Medicus was that Native American individuals and population groups comprised the cases and subjects in the studies that were reported.

However, in case finding and control program progress reports, a staple in the literature in the nineteen-forties and nineteen-fifties, a concept of race was frequently deployed. The problematic nature of patient identification and treatment placed the researcher face to face with differences between themselves and Native Americans in conceptions of disease, its cause, and appropriate treatment. It was in these kinds of reports and in historical surveys of the tuberculosis problem that a theory of race -- whether biological or cultural -- was most likely to be used.

The Demise of Biological Theories of Susceptibility

The paucity of literature premised upon biologically-based racial susceptibility suggests that it was of small importance after 1940. I explore the

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One anomaly appears in these data. Beamish (1959) compared symptoms of renal tuberculosis in white and Native American patients. He found fewer symptoms reported by Native Americans and attributed this to "racial stoicism" (240-241).
theme here because of the importance it held in the earlier period and because of
the actors involved. Only two articles appear after 1940 that argue for the
biological theory. The first was authored by McGibony and Dahlstrom (1945).
Their argument was framed in biological theory and used blood quantum to
organize incidence information (see Chapter 3). While they acknowledged
environmental theories, they clearly favored the biological theory. Still, their
interpretation of differential incidence rates by race was not logically consistent.
They wrote that "resistance to the disease by Indians is less than that shown by
whites, but more than that possessed by the Negro race" (McGibony and
Dahlstrom 1945, 109). What was known about incidence and mortality during
that period could not have borne out this hierarchical thesis of resistance. Even
given the limits of comparing incidence and mortality rates that I noted in Chapter
1, the evidence of the period suggested that Native Americans suffered the highest
rates of any ethnic group. Thus, in McGibony and Dahlstrom's work, the evidence
was shaped to facilitate the use of a biologically-based theory of racial difference
and to support a hierarchical thesis of differential resistance and susceptibility for
racial groups that was prominent in the pre-1940 period.

29 A marginal anomaly appears in 1986, when Enarson and Grzybowski
wrote that the difference in incidence between Native Americans and the general
population may be due in part to socioeconomics, but the "herd immunity
hypothesis not ruled out" (1152). See the next section, The Changing Implications
of Primitivism, for more about Enarson and Grzybowski's (1986) work.
Ferguson, the Canadian physician who established and promoted the thesis of biologically-based racial susceptibility published again in 1949 (with Simes). The study examined the efficacy of BCG vaccination. It used experimental method and was longitudinal, extending over a fifteen year period. The theory of biologically-based racial susceptibility was a direct premise of the study, as it was in all of Ferguson's work. However, unlike his previous work, this report is barren of theoretical framing and elaboration of the biological theory. Only once did Ferguson and Simes refer to it when they argued that the advantage of Native Americans as the study group was that they were "a primitive, susceptible race" (Ferguson and Simes 1949, 6). The influential advocate of the theory of biologically-based racial difference accommodated the dominant perspective by refraining from polemic. This was a very different approach than he had taken during the earlier period. For example, in his 1933 article, Ferguson engaged in strident argument against non-biologically-based theories of racial difference in susceptibility and resistance (see Chapter 3). Ferguson's work influenced Native American tuberculosis studies through the nineteen-eighties. However, the authors that cited it ignored the biological component of his work.30

30Citation analysis revealed that Ferguson's 1955 book, *Studies in Tuberculosis*, was last cited in 1988. His 1949 article with Simes was last cited in 1982, and his 1928 article in 1961. While his work was not cited between 1941 and 1960 (except in Ferguson and Simes (1949)), where he cites his own 1928 work), from 1961 through 1990, seven of the twenty articles published (thirty-five percent) cite Ferguson.
The dominant perspective in the nineteen-forties was that environmental -- especially socioeconomic -- factors were of primary importance in explaining the high incidence and mortality from tuberculosis among Native Americans. At the same time, as we saw above, researchers believed that the problem was controllable via the application of medical technology. These data demonstrate that researchers believed that the biological processes were understood and that they were universal. Thus, biologically-based race difference was not an issue in the majority of these data after 1940.

The Changing Implications of Primitivism

While the demise of biologically-based theories of racial susceptibility was swift and early in the twentieth century, cultural theories of race difference persisted, although not without modification, through the nineteen-eighties. As I showed in Chapter 3, cultural evaluations of Native Americans by researchers relied upon ideas of primitivism that were linked to a linear, progressive model of social change to explain the severity of the tuberculosis problem. Further, during the pre-1940 period, the character of the idea of primitivism itself underwent change. Early in the period, cultural primitivism was linked closely to biology and to the collective life of Native Americans. By the late nineteen-thirties, however, primitivism was more often linked to what they saw as complex, individual psychology. Underlying the use primitivism as a descriptor of Native Americans
was a belief in the capacity for them to be "uplifted" to white ways of life.

Three distinct ideas, chronologically sequenced, constitute the idea of primitivism in the post-1940 period. First, there was a continuation of the idea of the psychologically primitive Native American, an idea with a close similarity to the culture of poverty thesis elaborated by sociologist Oscar Lewis in the nineteen-fifties (Wilson 1987). Next, in the late nineteen-forties the difference began to be framed in terms of conceptual frameworks linked to language. Finally, by 1960, explanatory and valuative descriptions of cultural difference ceased altogether in the literature.

Linked to these changes in the meaning of primitivism were the strategies that researchers proposed and tried to implement western medical solutions under the weight of the obstacle of cultural differences. Because these proposed and tried strategies reveal much about how physicians and practitioners viewed Native Americans, I use them to organize the discussion that follows.

As we saw in Chapter 3, in the late nineteen-thirties, when proposals for programs for made at all, they were for Native American uplift via education to deal with the problems practitioners faced. These proposals were rooted in seeing Native Americans as psychologically primitive. The logic and use the idea of psychological primitivism continued through the nineteen-forties. Psychological primitivism was used to explain problems in tuberculosis control and treatment programs in three (forty-three percent) of the seven articles published the years
between 1940 and 1947 (Moore 1941; McGibony and Dahlstrom 1945; Bush 1946). Educational programs, particularly those meant to induce Native Americans to use medical programs, were geared at individual, rather than social, change.

As early as 1947, Meyers and Dustin published an article in which a new explanation was offered. The conceptual framework of whites and Native Americans differed, they argued, because of language. Linking cultural difference to language and conceptual framework did not, however, immediately result in the proposal of new strategies and tactics. While Meyers and Dustin proposed that Native American health workers would help bridge the cultural gap between patient and physician, their strategy was not widely promoted in the literature. Native American education continued to be viewed as the solution to the problems of case-identification and treatment all through the late nineteen-forties and early nineteen-fifties (Reifel 1949; DeLien and Dahlstrom 1951; Davis 1953; Foard 1952).

Only in the late nineteen-fifties, was Meyers and Dustin's proposal taken up. In 1959 Deuschle wrote that Navajo medicine men conceded the "superiority of modern medicine in treating tuberculosis" (Deuschle 1959, 200). Further, he continued, traditional Navajo beliefs persisted among the majority and these beliefs were an obstacle to white physicians. It was, Deuschle wrote, "folly [to] spend . . . too much time on conceptual differences to the neglect of practical
measures" (Deuschle 1959, 201). Rather, he argued, program planners and physicians in the field should accommodate traditional beliefs in their approach to tuberculosis treatment and control. In addition, Deuschle argued that Native American "subprofessional health workers" should be employed to assist in bridging the cultural gap (Deuschle 1959, 206).

Deuschle was clearly advocating alliance building between white physicians and field practitioners with Native Americans. In addition to proposing accommodation to traditional beliefs and employment of Native Americans, he went on to report the success of his project with the Navajo which he credited to "continuous effort to keep tribal officials, local leaders, and the Project community fully informed about the nature, purpose, and progress of the medical program" (Deuschle 1959, 206).

Building alliances with tribal leaders was reported on again in 1973 about a project at Fort Apache (Mikkelson et al. 1973). This time, the alliance took a rather different turn. The tribal council authorized the use of coercion in the treatment protocol:

... all patients on the reservation with confirmed tuberculosis ... were placed on the supervised intermittent treatment program ... All patient visits and missed appointments were documented in the outpatient records. The primary responsibility for maintaining chemotherapy in this program was assumed by the pharmacist. If a patient missed a treatment, he was referred to the physician on his next kept appointment for discussion. If two successive visits were missed, the public health nurse was sent to find the patient. If this effort failed, a request was sent to the tribal court, and the patient was brought in by the police. The alternative to cooperation was
that the patient would be returned to the sanitorium. (Mikkelson et al. 1973, 571 emphasis in the original)

In this instance, alliance building resulted in tribal leaders sanctioning coercive measures for noncompliant tuberculosis patients.\(^{31}\)

Alliance building was not always viewed unproblematically in the literature. In Enarson and Grzybowski's (1986) report, they argued that the faster rate of decline of incidence for the Inuit compared with Native Americans in Canada "may have been" due to the Native Americans' involvement in decision-making about medical service delivery (1151-1152). Interestingly, the source of information about Native Americans' involvement was an earlier paper by Grzybowski's student, Jenkins (1977). In his study, Jenkins found that the Native Americans he surveyed desired "participation in on-reserve health education programs" (Jenkins 1977, 553). Jenkins also found, and promoted the idea of, increasing band council responsibility for the health care delivery system (Jenkins 1977, 553-554). Nowhere in these reports is there evidence that the wishes Jenkins reported (and apparently held) became the reality imputed by Enarson and Grzybowski.

\(^{31}\)Isoniazid, the drug for treating tuberculosis, was developed in the nineteen-forties and gradually, ambulatory or out-patient treatment replaced sanitarium treatment. Because the course of pharmaceutical treatment is quite lengthy, at least a month and sometimes more, ensuring that the entire course of therapy is completed by the patient is a challenge to physicians (Ryan 1993; Waksman 1966; see also Martin 1987 for further explanation of non-middle class patients' reluctance to follow physicians' instructions).
A rather different proposal was made by Rieder (1989). Here we see a complete shift in how meaning was attributed to cultural difference. Rieder proposed "... the integration of traditional medicine into treatment programs" (Rieder 1989, 656). In Rieder's point of view, the cultural understandings of patients could not be stripped from them in clinical settings. He argued that when working with Native Americans understanding cultural difference was essential for physicians. Cultural difference, he wrote, caused Native Americans to have different ideas from whites about the cause and treatment of disease. These ideas prevented Native Americans from seeking treatment and, when they did seek treatment, from following physicians' instructions. Thus, the responsibility for adaptation shifted from Native Americans to whites, from patient to physician.32

A clear change took place over the course of the twentieth century. In the first half of the century, the solution to Native Americans' health problems was seen to lie in their education and "uplift." Cultural difference was characterized as primitivism. The meaning of primitivism for physicians and practitioners struggling to treat them for tuberculosis was constructed in terms of psychology and personality traits.

32Rieder's assumption about the reasons for Native Americans' unwillingness to be treated by white physicians and the Indian Health Service may be naive. There is a history of abuse, most notably sterilization abuse (see Dillingham 1977a, 1977b, 1978; McDonald 1989; Shapiro 1985; Women of All Red Nations 1992).
After the U.S. Public Health Service supplanted the Bureau of Indian Affairs in administering the Indian Health Service in 1955, the tone and substance of the literature about tuberculosis changed. Primitivism changed to cultural difference, explained as being rooted in language difference between Native Americans and whites, and the concomitant difference in conceptual frameworks about disease and treatment. About a decade after this new idea of cultural difference was introduced into the discursive repertoire, new strategies for dealing with that difference emerged which relied upon alliance building. No longer were Native American cultures viewed as something to be changed. The alliance building strategy, however, did not necessarily mean that tactics would be benign, as evidenced by the use of coercion in the Fort Apache study (Mikkelson et al. 1973).

Finally, perhaps because of the multi-culturalism movement of the nineteen-eighties, a very different approach was taken in the late in that decade. In a one-hundred and eighty degree turn, the strategy then called for changing mainstream medical practice rather than changing or accommodating Native Americans, as had been promoted earlier.

**Conclusion**

The category "Indian" persisted in the medical literature throughout the twentieth century. Early in the century, the category is constructed with the linked
ideas of biologically-based racial difference and primitivism embedded in a linear model of social change (cultural evolution). Biological theories of race difference decline throughout the nineteen-thirties, and then vanish in the nineteen-forties. Supplanting biological theories were theories about cultural primitivism. Beginning in the late nineteen-fifties, the idea of cultural difference ceases to be (overtly) linked to primitivism. Concomitantly, over the course of the century, proposed strategies for obtaining patient compliance changed from the idea of racial uplift via education to accommodation of Native Americans by physicians and finally to the idea that physicians should actively seek to incorporate the cultures of the people they treat in their practice.

As this shift occurred over the course of the century, the intension of the category contracted. That is, over time there was less and less descriptive information about what constituted Native Americans. In these data, only once was the very idea of race problematized, and that in the context of accounting for Mexicans (Meyers and Dustin 1947). The concept of race was never abandoned. Even while "Indians" became less distinct in terms of racial descriptors, the extension of the category persisted and even expanded and was refined. In Index Medicus, the category "Indian" became the categories "Indian, North American," "Indian, Central American," and "Indian, South American." Further, the amount

33 See Chapter Two, "Methodology" for detailed information about these categories.
of medical literature produced about "Indians" has continued to increase over the course of the twentieth century. For example, in all categories for "Indians", in 1930 there were twenty-nine articles about Native Americans, in 1960, thirty-two articles, and in 1990, there were 138.

The substance of published research reports also changed over the course of the century. As we saw in Chapter 3, proposals for programs often included socioeconomic components, such as education, housing, and economic development. Only education continued to be proposed after nineteen-forty, and this ceased by the end of the nineteen-fifties. Accounting information about physicians medical resources began in the early nineteen-thirties, became a staple of the literature in the mid-nineteen-forties, and continued until the mid-nineteen-seventies. Practitioners believed that the Native American tuberculosis problem could be solved via medical technology, if only the resources were provided to them to do so. The decline of wide-ranging socioeconomic strategies and the

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Some of the growth in the amount of medical literature about Native Americans stems, no doubt, from overall growth in medical literature over the course of the twentieth century. For literature about Native Americans, there was a noticeable increase in the quantity of articles published in a given year after 1970. Between 1914 and 1990, inclusive, the mean number of articles published in a year is 25. In a bivariate regression analysis, taking the year of publication as the independent variable and the quantity of articles in all categories for Native Americans listed in the Index Medicus in each year as the dependent variable, sixty percent of the increase in the amount of medical literature can be explained by knowing year (r²=.6; mean substitution was used for missing years; see Chapter 2).
increase of strategies that emphasized medical technology was likely the result of physicians' perceptions of their sphere of influence. It is also the product of physicians' changing definition of Native Americans, who over the course of the century were transformed from a race that was biologically and culturally inferior to one that was biologically indistinct and culturally different.
CHAPTER 5
CONCLUSION

If we argue that abuses in medical science are the product of science itself and not of "immoral scientists" doing "bad science," then we need to understand how the practices that come to be defined as abuse are thinkable within the boundaries of medical discourse. That is, we need descriptive analysis of how groups are constructed as the objects of scientific study. In this study, I have examined one discursive resource that medical science uses to organize its knowledge, the concept of race.

Native Americans make credible claims that they are victims of scientific abuses. A contemporary claim is that children are being administered an experimental hepatitis-B vaccines without the consent of their parents (Women of All Red Nations 1992). In their assertion that this scientific practice is abuse, Native Americans contest scientific authority. And, to a certain extent that authority will only be challenged when its methods fail in some sense.

The goals of medical scientists in designing experimental methods that come to be defined as abuse are framed in terms of the problem that they seek to solve. Scientific method can require years of research, sometimes yielding little
result (as in the case of cancer, for example). For the scientist, even when an experiment fails it provides meaningful information by ruling out a possible solution. However, for the people who are the research subjects, when an experiment fails there is an entirely different meaning. The goal of individuals seeking medical treatment is to alleviate or eliminate a health problem. The "research subject" is not a meaningful abstraction for individuals and their families. The goals of individuals seeking treatment and of medical researchers seeking solutions to medical problems can be diametrically opposed.

Systems of classification such as race abstract and generalize human beings and render them as objects of research. This study provided descriptive information about how medical scientists used the concept of race to organize their research, experimental methods, and strategies for treating patients in their struggle to solve the Native American tuberculosis problem.

We have seen that within the system of classification of race, the categories for African Americans and for Native Americans were constructed differently, although with similar effect, in the early part of the century. And, we have seen that one category of race, Native Americans, was used throughout the twentieth century in different ways at different historical moments, changing relative to the problems that researchers were trying to solve.

What was the "racial" tuberculosis problem? The very definition of the problem has changed over the course of the century. Early in the century, it was
high morbidity and mortality rates compared with the white population among Native Americans and African Americans. Biological models posited that biological inferiority made these races prone to disease. Biological models waned in the nineteen-thirties and vanished completely from the discourse by the end of World War II, supplanted by environmental models that were more closely tied to the increasingly successful germ theory.

However, the new way of thinking about disease was not accompanied by a concomitant change in thinking about causation. If the races could not be blamed because of their biology, they could be blamed for their immorality (as was the case for African Americans) or their primitiveness (as was the case for Native Americans). The attributes the constituted races as unique (the intension of the categories) within the system of racial classification changed only moderately as environmental models of disease causation took hold: from inferior biology to inferior behavior.

In the period following World War II when Nazi atrocities had come to light, communities of scientists rejected biological models of racial inferiority. (It was at this point that the eugenics movement in the United States was completely defeated.) At the same time, there was an increased optimism about the potential of the medical community to effectively treat tuberculosis that resulted from success with new antibiotics. Physicians who worked with Native Americans believed that they could eliminate their tuberculosis, if only the needed resources
were supplied to them. Even with extensive documentation of the inadequacy of available resources, physicians felt that the resources they did bring to the communities they served were poorly used. In the late nineteen-forties, the tuberculosis problem became and remained through the nineteen-eighties the problem of getting individuals to into treatment and obtaining compliance with treatment protocols.

As researchers struggled with getting individuals to seek treatment and follow physicians instructions, their use of the concept of race changed. The idea I called primitivism, in which Native Americans were seen as having a lesser evolved culture than whites, gave way to the idea of cultural difference in the middle of the nineteen-fifties. Physicians now saw Native Americans as having different conceptual frameworks for understanding the world, rooted in language. This difference meant that physicians and their Native American patients had very different ideas about the causes of and appropriate treatment for disease. Native Americans had it wrong, of course, and physicians advocated education about "right thinking" about disease.

In the late nineteen-fifties, new strategies for getting individuals into treatment were advocated and implemented. These strategies involved alliance building with the communities physicians served. One approach recommended that physicians accommodate individuals' beliefs and that Native Americans be hired and trained as health care workers. The goal was to bridge the cultural gap.
Another approach to alliance building took a rather different turn, when the physicians at Fort Apache were able to use tribal council sanctions and enforced coercion to ensure that patients completed their treatment.

In the late nineteen-eighties, the problem continued to be getting people into treatment. But, a new strategy was proposed in which it was argued that physicians should integrate traditional Native American religious practices into treatment programs. With this strategy, physicians and health care professionals would bear the responsibility for bridging the cultural gap between themselves and Native Americans.

What the medical literature about Native Americans' tuberculosis suggests is that the very meaning of the racial category "Indian" was subject to substantial revision. The medical literature viewed retrospectively over the course of the twentieth century displays a trend in the declining usefulness of the concept of race. That is, over time we find that there were fewer descriptive and specific attributions (biological, psychological, or cultural) directly associated with Native Americans as a racial group.

The concept of race may have declined in its productive power to explain biological processes of disease, but it continued to serve some other use not evident in this study. At the same time that use of the concept of race was declining in explaining disease, the number of race categories for and the amount of medical literature about Native Americans increased in the medical index. This
is evidence that race as a system of classification continued to be important in the organization of medical knowledge. Further, the persistence of race categories in the medical literature raises a larger question which the literature examined in this study cannot answer. It is, why did (and do) race categories persist in organizing medical knowledge, as represented by the categories in *Index Medicus*, when they ceased to have descriptive, explanatory information in them? If knowledge about the human body is universal and cultures are different rather than inferior, what is to be gained by continuing to use race categories? A possible explanation is that Native Americans (and other ethnic groups) have distinctive health problems. For example, currently diabetes incidence rates are much higher among Native Americans and hypertension incidence rates are much higher among African Americans than in the general population (Harding 1993). Are there other correlates, such as poverty or education? Does ethnic or race categorization lead physicians to order diagnostic work differently? I cannot answer the question, "what is the reason for the persistence of race categories in organizing medical knowledge?" What I have shown is that race categories have persisted, even while there was substantial change in their meaning.

There are other questions that my research has raised. The medical literature was with issues for which questions could only be raised and not answered, in large part because of the limits of this study. I outline just a few of these questions next.
First, the idea of blood as a metaphor for genetics and its shifting meaning is rich with possibilities. For example, the idea of "admixture of white blood" effectively locates how many generations back the inter-marriage took place. That is, one-half white would most likely mean a parent was white; one-quarter would most likely mean a grandparent; and one-eighth, a great-grandparent. In what way was blood a metaphor for social relations? As we saw in Chapter 3, mixed bloods were seen to be more like whites culturally and socially, even while the primary way researchers framed the "blood" issue was biological. Was "admixture of white blood" a metaphor for the social distance of an individual from white culture?

Biological identification (as blood quantum) of Native Americans is another example of how the idea blood is implicated in social relations. To satisfy bureaucratic definitions of who counts as a Native American, the Bureau of Indian Affairs uses a minimum blood quantum requirement which defines who is entitled to rights and entitlements established by treaty. Today, Native Americans themselves use blood quantum to identify who is "really an Indian." They debate this issue in the Native American press. Blood quantum as it is currently used by Native Americans is a metaphor and a boundary mechanism for keeping what they call "wannabes" at bay. Native Americans see their cultures under assault, particularly from "new age" seekers of spiritual secrets.

Still another example of the fertile site for research that the blood metaphor
is lies in white liberalism of the late twentieth century. With the idea that we "all bleed red blood," blood is a "metaphor for . . . locat[ing] sameness in the body -- precisely the location of difference in genetic or biological theories of white superiority" (Frankenberg 1993, 144 emphasis in the original). Thinking for a moment about the idea of genealogy, I wonder how "blue bloods" would respond.

Yet another fertile site for research is the social construction and meaning of the reservation and of boarding schools. As Rayna Green observed,

The new mythology born on the remote reservations where Indian people were removed in the nineteenth century included women in the list of endangered but not tamed species living in those preserves. Memorialized on stamps and coins like those other threatened creatures, the buffalo, Native American men and women came to be the property (and the reservation the laboratory) of scholars who measured, tested, and speculated on them. (Green 1980, 249)

When I first read this passage, I imagined Green had generalized to come to this amazing conclusion. However, I found instances in the data in which the distance from particularity to generalization was short. For example,

The population of the Indian reservations offers a unique opportunity to study the effectiveness of control measures in tuberculosis. The morbidity and mortality rates from tuberculosis are high. Incomes are almost universally low in the areas studied, living conditions poor and homes crowded. These people are of relatively pure stock racially and may be observed over a long period of time with relative ease. (Aronson 1948, 97)

Aronson was reporting on BCG trials. His study was experimental, with control and test groups. In the test group, infants were vaccinated with BCG and both the control and test groups were "observed" for periods of up to eleven years
(depending upon the year of vaccination). Considering that BCG has never been widely accepted by the medical community in the United States as an effective measure to prevent tuberculosis, this example is a clear instance in which the researcher understands the reservation as a laboratory. Green's observation was not a metaphor.

Similarly, reporting on the results of the skin test for tuberculosis among Native American and white children public schools in Montana, Crouch wrote,

The first step in the survey of tuberculosis among school children was a skin test of each child for tuberculous infection. The test was given to all Indian children without asking for consent of the parents. With white children, consent of the parents had to be obtained. (Crouch 1932, 1911)

The reservation was a laboratory and Native Americans were subject to the authority of researchers' decisions and were denied any voice in those decisions until the late nineteen-fifties when researchers' authority this was attenuated by alliance building. Using the concept of race and facilitated by the social geography of the reservation, tuberculosis researchers designed studies that would without doubt today be called abusive.

The Indian boarding school is another controlled environment, and there is evidence in the literature that physicians conducted BCG trials and tested diagnostic strategies (that is, the skin test) on the students who attended them.35

35 The history of the Indian boarding school is, like the history of white-Native American relations, complex and of contested meaning and merits a study in its own right. In the Native American discourse, the boarding school has been
But there is further reason to believe that the isolation of children from their families presented a variety of issues and opportunities. One story from the data illustrates the kind of questions that emerge around the connection between medical practice and boarding schools:

This study is based on a group of 147 students at the Manitoba Industrial School for Indian children at Brandon. . . . They were all born on Indian reservations. This single fact places them all in a definite category, for it is known that, with insignificant exceptions, they all have been exposed to massive and widely open pulmonary tuberculosis. . . . [F]ew of the students return to their homes in the course of their school years, and if they do so it is for a short time in the summer when they are out-of-doors most of the time. . . . The school itself is an up-to-date institution . . . The work carried out is adapted to the needs of the students . . . [and] the routine is practically that of a preventorium [of disease] . . .

The children were examined according to the ordinary routine of a clinic. A satisfactory history was not obtainable in most cases, partly because of the natural taciturnity of the Indian and partly because most students were so young when they left home that they had forgotten their antecedents . . . (Montgomery 1933, 502 emphasis added)

The children were completely subordinated to the policies of the Bureau of Indian Affairs and its agents, the administrators of the boarding schools. In this study I looked at the kind of concept race was, to begin to get a sense of how it is in normal science that abuses are be thinkable. In another study, we might ask how it is that physicians and researchers came to understand the reservation and the boarding school as laboratories. How did that metaphor serve them as they sought (and is) portrayed as the means by which the federal government sought to strip Native Americans of their cultures.
to solve problems within those settings?

Finally, promising research site is the development of medical school curricula in which traditional Native American beliefs and healing rituals are included as part of physicians' training. Several aspects of this development would be worth of investigation, including how it emerged, how it is explained in and outside of the institution, and how it is translated into the vocabulary of medical discourse and practice.

Scientists are embedded in their broader culture, subject to changes in the concept of race in public and discourse.36 Still, scientific knowledge is cultural knowledge of a certain kind and we would not expect great divergences between them. Within the boundaries of what is normative in the scientific communities, the kind of knowledge that counts as science is constrained. The use of the concept of race in science cannot be reduced to broader cultural trends.

The use of knowledge about human biology, especially in the way that it is linked to social policy, has emerged as a pivotal issue in public and political discourse as the twentieth century draws to a close. It is therefore essential that we understand the ways that the biological and medical sciences define and use categories for human beings and the relationships between broad cultural trends and the scientific stance.

36 For an overview of the history of public discourse about race in the twentieth century in the United States, see Frankenberg (1993, 13-16).
APPENDIX A

DATA CODING CATEGORIES
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I. Background information
   A. Background of subjects: What Native group specifically is the article
dealing with? Where is it located geographically? What are the
characteristics of the group reported in this article (e.g., women,
children, adults, elderly, and so on)? Other?
   B. Background on researcher: Is this academic research, field research,
anthropological research, or something else? What is the
researcher's relationship to health care delivery system? What
institutional affiliation does the researcher have? Other?
   C. Background on research: What is the contribution to knowledge the
research intends to make? What is the method? Other?

II. Substantive information
   A. Public health issues: How is the problem defined? How is access to
health care defined/described? How is the quality of health care
defined/described? Is access to medical education for Indians an
issue? Is public health education an issue? How? Who is
responsible for solutions? Who is responsible for the problem?
Why should whites care? Why should the reader (i.e., other medical
professionals/researchers) of this article care?

B. Health status: Is the health status of Indians (relative to whites) discussed? How is it discussed?

C. Logic of causation: Is the cause of the "problem" defined/described in terms of:

- genetics or racial predisposition?
- environment?
- social pathology?
- lifestyle/morality/"ignorance"?
- socioeconomics?

In what way exactly does the researcher report this? What are the underlying assumptions?
APPENDIX B

CRITERIA FOR THE EXCLUSION OF AN ARTICLE FROM THE STUDY
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CRITERIA FOR THE EXCLUSION OF AN ARTICLE FROM THE STUDY

Articles in foreign languages were excluded due to lack of funding for and the ability to do the requisite translation. One foreign language (Spanish) article was not obtained because it was not owned in a library in the United States. In all, there were eight articles excluded on the basis of this criteria.

One article was mistitled and its subject was actually tuberculosis among Africans.

Two articles were duplicates. In one case, an article duplicated another, in an abbreviated version of the original. The words in it, though fewer, were identical to the words in the article it was extracted from. In the other case, the articles were fully identical, though published in two different journals.

Listing of Articles Excluded by Criteria

Foreign Language


Mistitled


Duplicates


¹This periodical was not owned by any library in the United States.
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Lynn M. Higgins was born in Milwaukee, Wisconsin on December 14, 1953 to Allen and Lucille (Siegfried) Higgins and was raised in the Chicago area. She is the oldest of five children. Ms. Higgins completed her high school education in three years at Sacred Heart of Mary High School in Rolling Meadows, Illinois from which she was graduated in 1970. She attended Rosary College in River Forest, Illinois, where she majored in sociology. She earned the degree of Bachelor of Arts in 1979. Ms. Higgins currently resides in Chicago, Illinois with her husband, Adam Seward.

After earning her B.A., Ms. Higgins established a career in data processing where she progressed from computer programmer to project manager. In 1989, she entered Loyola University Chicago's graduate program in the Department of Sociology and Anthropology. In 1993 and 1994, Ms. Higgins worked as a research analyst for the Illinois Criminal Justice Information Authority where her primary responsibility was field research on community policing in Chicago. Her research interests are the sociology of knowledge and science, race and ethnic relations, and feminist theory and research.
APPROVAL SHEET

The thesis submitted by Lynn M. Higgins has been read and approved by the following committee:

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The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree Master of Arts.

3/23/95.  
Date

Director's Signature