

TO KNOW THE BRETHREN: A BIOCULTURAL ANALYSIS OF THE W. MONTAGUE
COBB SKELETAL COLLECTION

by
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partial fulfillment of the requirements for the degree of Doctor of Philosophy in the
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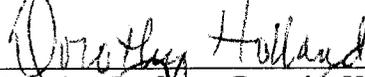
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ABSTRACT

Rachel Jeannine Watkins: To Know the Brethren: A Biocultural Analysis of the
W. Montague Cobb Skeletal Collection
(Under the direction of Carole L. Crumley)

This dissertation examines the health consequences of poverty among African Americans living in Washington, D.C. during the late 19th and early 20th century. A biocultural framework informed by political economy and ecological anthropology is used to understand cultural, environmental and biological interrelationships in their specific and broad contexts. Research focuses on the impact of poor relief policies, migration, racial discrimination and the Great Depression on the District's local environment and the health of its residents.

The W. Montague Cobb skeletal collection includes the remains of Black Washington, D.C. residents who lived in the city almshouse as well as individuals who lived in District neighborhoods. A sample of skeletons from each group is the focus of this analysis. Methodologies include a critical analysis of documentary social data, a survey of known causes of death and macroscopic observation of skeletal remains for lesions associated with unskilled labor. Two skeletal samples from the Robert J. Terry collection are used to compare data from the Cobb samples with African American remains of similar socioeconomic and temporal context.

This study reveals biological outcomes of African Americans' extremely limited access to public assistance, housing and labor in the District. Unlike previous studies of

institutionalized populations, the incidence of trauma and death from infectious disease was lower among almshouse residents than individuals living in the general population. Conditions in the almshouse did not facilitate 'healthier' residents than non-residents. Rather, these results indicate the gradient of poverty among African Americans represented in the Cobb collection. Individuals in the Terry sample presented moderate and severe marginal joint lipping at an earlier age, while cartilage loss in joints occurred earlier in the Cobb samples. Different expressions of activity stress and infectious disease within and between samples reflect the impact of local environments on human biology.

This analysis contributes to research on the biological consequences of poverty and African American biohistory. The biocultural framework used in this study includes a detailed social and historical contextualization of health and disease patterns. As a result, it is possible to identify how smaller units within communities are affected differently by local conditions.

My Great Grandmother, Ethel Labiche, nurtured my love of learning and exploration before any teacher. This work is dedicated to her. This dissertation is also dedicated to W. Montague Cobb, in honor of his bioanthropological research and vision, which has yet to be fully appreciated.

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TABLE OF CONTENTS

List of Tables	x
List of Figures	xiii
Chapter	
I. Introduction	1
1.1 Background on the Research Problem and Overview of Study	3
1.2 Brief Statement on Materials	5
1.3 Brief Statement on Methods	7
1.4 Understanding Poverty as an Historical and Environmental Process	9
1.4.1 Understanding Structures of Power	9
1.4.2 Understanding Relationships between Structures of Power and Human Biology	11
1.4.3 African American Biohistorical Studies: A Review	14
1.5 Conceptual Framework for the Study	23
II. Materials and Methods	30
2.1 Materials	30
2.2 Methods	32
2.2.1 Sample Selection	32
2.2.2 Establishing Environmental Context	35

2.2.3	Establishing Biological Context	38
2.2.4	Structure and Etiology	38
2.2.5	Joint Structure	39
2.2.6	Marginal Osteophytes	41
2.2.7	Porosity	42
2.2.8	Eburnation	44
2.2.9	Collecting Biological Data	45
III.	The Social Environmental Context of Poor African Americans in Washington, D.C. During the Late 19 th and Early 20 th Century	54
3.1	Black Migration to the District	57
3.1.1	Migration and Poor Relief	58
3.1.2	Poor Relief for Blacks in the District, 20 th Century	59
3.1.3	Social Networks and Resistance	63
3.1.4	The Case of Samuel Burgess	65
3.2	Housing and Residential Settlement	67
3.3	Labor and Health Care	73
3.3.1	Post-Civil War Employment Opportunities	73
3.3.2	Health and Health Care	77
3.4	Municipal Housing for Poor Blacks in Washington, D.C.	82
3.4.1	Poorhouses in Washington, D.C.	82
3.5	The Home for the Aged and Infirm	83
3.5.1	Discipline and Surveillance	84
3.5.2	Inmate Demographic Features	89

3.5.3 Living Conditions	92
3.5.4 Medical Care	96
IV. The Biological Consequences of Poverty in Late 19 th and Early 20 th Century Washington, D.C.	99
4.1 Hypothesis 1	101
4.2 DJD Patterns – Sample Variation	104
4.3 Hypothesis 2	105
4.4 Hypothesis 3	107
4.5 Hypothesis 4	113
4.6 Hypothesis 5	118
4.7 Hypothesis 6	119
4.8 Hypothesis 7	122
4.9 Hypothesis 8	125
V. Conclusion	132
VI. References	147

LIST OF TABLES

1. Descriptive statistics for the Cobb and Terry samples	31
2. Descriptive statistics for the Cobb and Terry subsamples	32
3. Persons and Families treated by the physicians to the poor, 1920-1941	77
4. Adult free patients admitted to hospitals sponsored by Board of Charities	78
5. Primary causes of death in the Cobb and Terry samples	99
6. Primary causes of death in the Cobb and Terry subsamples	99
7. Age-joint Correlations for the Cobb and Terry Samples	103
8. Paired samples t-tests by source (Cobb)	105
9. Paired samples t-tests by source (Terry)	106
10. Paired samples t-test by subsample (sample a)	106
11. Paired samples t-test by subsample (sample d)	106
12. Paired samples t-test by sex (Terry sample, males)	107
13. Paired samples t-test by age group (Cobb, age group 2)	107
14. Paired samples t-test by age group (Terry, age group 1)	108

15. Spearman's correlations for right and left sides of the body	108
16. Spearman's correlations for right and left sides of the body by sex	108
17. Independent samples t-test for gender and arthritis by source (Terry)	111
18. Independent samples t-tests for gender and arthritis by subsample (sample a)	111
19. Independent samples t-tests for gender and arthritis by subsample (sample c)	112
20. Independent samples t-tests for gender and arthritis by subsample (sample d)	112
21. Chi-square test for the relationship between gender and arthritis by source (left shoulder)	114
22. Chi-square test for the relationship between gender and arthritis by source (left elbow)	114
23. Chi-square test for the relationship between gender and arthritis by source (right elbow)	115
24. Chi-square test for the relationship between gender and arthritis by source (right knee)	115
25. Chi-square test for the relationship between gender and enthesopathy (left radial tuberosity)	116
26. Chi-square test for the relationship between arthritis and subchondral porosity (left thumb)	117
27. Chi-square test for the relationship between arthritis and subchondral porosity (right thumb)	117
28. Chi-square test for the relationship between arthritis and subchondral porosity (left shoulder)	118
29. Chi-square test for the relationship between arthritis and subchondral porosity (right shoulder)	118

30. Chi-square test for the relationship between arthritis and subchondral porosity (left elbow)	118
31. Chi-square test for the relationship between arthritis and subchondral porosity (right elbow)	118
32. Chi--square test for the relationship between arthritis and subchondral porosity (left hip)	118
33. Chi-square test for the relationship between arthritis and subchondral porosity (right hip)	119
34. Chi-square test for the relationship between arthritis and subchondral porosity (left knee)	119
35. Chi-square test for the relationship between arthritis and subchondral porosity (right knee)	119
36. Chi-square test for the relationship between arthritis and enthesopathy by source (left elbow and radial tuberosity)	120
37. Chi--square test for the relationship between arthritis and enthesopathy by source (right elbow and radial tuberosity)	120
38. Cases of eburnation in each joint by source	123
39. Cases of eburnation in each joint by age group	124

LIST OF FIGURES

1. Marginal osteophyte development on the acetabulum of a 61 year old male (Robert J. Terry collection)	42
2. Marginal osteophyte development on the first metacarpal-phalangeal joint area of a 69 year old male (W. Montague Cobb collection)	42
3. Subchondral surface porosity on the acetabulum (lunate surface) of a 47 year old male (Robert J. Terry collection)	42
4. Subchondral surface porosity on the glenoid fossa of a 29 year old female (Robert J. Terry collection)	43
5. Subchondral surface porosity and sclerosis of the femoral head of a 38 year old male (W. Montague Cobb collection)	43
6. Subchondral eburnation on the glenoid fossa of a 71 year old male (Robert J. Terry collection)	44
7. Subchondral eburnation and porosity on the corresponding humeral head (Robert J. Terry collection)	44
8. Subchondral eburnation with grooves marking the range of motion on the left lateral femoral condyle of a 71 year old male (Robert J. Terry collection)	44
9. Representative cases of none, slight, moderate and severe marginal lipping on the circumference of the radius (left to right, W. Montague Cobb collection)	47
10. Representative cases of none, slight, moderate and severe marginal lipping on the glenoid fossa (left to right, W. Montague Cobb Collection)	47

11. Representative cases of none, slight, moderate and severe marginal lipping on medial condyles of the tibiae (left to right, W. Montague Cobb Collection)	47
12. Representative cases of none, slight, moderate and severe marginal lipping on patellar surfaces of the femora (left to right, Robert J. Terry collection)	48
13. Subchondral surface porosity on less than 1/3 of the articular surface of the glenoid fossa (Robert J. Terry collection)	49
14. Subchondral surface porosity on more than 1/3 of the lateral surface of the patella (Robert J. Terry collection)	49
15. Subchondral surface porosity on over 1/2 of the acromio-clavicular surface (W. Montague Cobb collection)	49
16. Enthesophytes on the radial tuberosities of a 67 year old male (W. Montague Cobb collection)	50
17. Bilateral hypertrophy of the deltoid tuberosities belonging to a 57 year old female (W. Montague Cobb collection)	51
18. Enthesophyte on the ulnar tuberosity of a 79 year old male (W. Montague Cobb collection)	51
19. Washington, D.C. map showing location of residents living in the general population from the Cobb sample and Blue Plains	71
20. Home for the Aged and Infirm, front view (from District of Columbia Commissioners Report, 1906)	86
21. Home for the Aged and Infirm, first story plan (from District of Columbia Commissioners Report, 1906)	87
22. Home for the Aged and Infirm, second story plan (from District of Columbia Commissioners Report, 1906)	87

23. Healed fracture of the left radius and ulna of a 79 year old male (W. Montague Cobb collection)	129
24. Improperly set fracture of the left tibia and fibula with subsequent ankylosis from the remains of a 65 year old male (W. Montague Cobb collection)	129
25. Osteochondritis dessicans on the capitulum of a 72 year old male (W. Montague Cobb collection)	130
26. Osteochondritis dessicans on the medial femoral condyle of a 58 year old female (W. Montague Cobb collection)	130

Chapter I: Introduction

This dissertation examines the health consequences of poverty among African Americans living in Washington, D.C. during the late 19th and early 20th century. The W. Montague Cobb skeletal collection includes the remains of Black Washington, D.C. residents who lived in the city almshouse, as well as individuals who lived in District neighborhoods. A sample of skeletons from each group is the focus of this analysis. Health is examined in these historic African American skeletal samples as a product of social relations through which people gain access to resources. Therefore, differences in health and stress-related variables such as cause of death and the severity of osteoarthritis are explained on the basis of social context. To this end, a biocultural framework informed by political economy and ecological anthropology is used to understand cultural, environmental, and biological interrelationships in their specific and broad contexts. Research focuses on the impact of poor relief policies, migration, racial discrimination and the Great Depression on the District's local environment and the health of its residents.

A political economic approach to the study of health rejects the notion that social aspects of disease are reducible to risk factors. Rather, health and disease patterns are used as a lens through which to examine the effects of social, political and economic stratification on individuals within a population. Therefore, environments in which health conditions occur are not assumed to be a product of natural occurrences (Singer, 1992; Morgan, 1987).

Because of the integral relationship between human biology and human social experience (Ingold, 1990; Hvalkof and Escobar, 1998; Escobar, 1999), environments of social, political and economic inequality are worthy of study for their effects on quality of life and health. Therefore, environment is not defined in a way that artificially separates natural and social spheres in this study. Environment is defined as the physical surroundings, human activities, personal and cultural experiences in which individuals are embedded. This definition also reflects the understanding that environments influence and are influenced by interactions between these components (Thomas, 1998; Newson, 1998; Leatherman, 1998; Leatherman and Thomas, 2001).

Methodologies include a critical analysis of documentary social data and macroscopic analysis of skeletal lesions. The objective of this research is to profile the environment of social and political inequality in which individuals in these samples lived, as well as the health consequences of living in that environment. This study is significant because it is one of the first applications of a biocultural framework including a detailed social and historical contextualization of skeletal material to the study of African American biohistory.

In sum, the goal of this biocultural analysis is twofold. The first goal is to develop a local historical context using documentary data. This context helps to identify the conditions in which people lived and developed social reactions and biological responses to the stress of poverty. The second goal of this study is to identify health consequences of poverty evident in skeletal remains. Both data sources are used to determine the extent to which conditions of poverty specific to Washington, D.C. are reflected in the Cobb skeletal sample.

Background on the Research Problem and Overview of Study

Bioanthropological research focused on the ‘biology of poverty’ over the past 15 years is duly credited with helping to establish an understanding of social factors as ecological constraints, as well as recognizing the complexity of human biological responses to environmental stressors (Goodman et al., 1988). However, poverty was treated as an inevitable or ‘natural’ component of ecological systems, which often yielded studies relating proximate social indicators such as socioeconomic status and occupation to health and disease (Leatherman and Thomas, 2001). In recognizing the relationship between social context, history and human biology, recent biocultural studies of small-scale farming households in the Andes have focused more attention on social relations, and the local and external forces shaping local environments and social relations (Thomas et al., 1988; Leatherman, 1998). As a result, different responses to ecological constraints within and between these marginal populations missed in previous research were revealed. African American skeletal samples housed in U.S. museums and academic institutions are frequently used as source material for biocultural studies indicating generalized health and disease patterns among poor individuals (such as Rose, 1985; Angel, 1987; Rankin-Hill, 1997). However, researchers have yet to re-engage these collections for research in which local and external forces involved in producing conditions of poverty are explored. In response to this shortcoming, this study explores these relationships in African American skeletal samples.

Using the W. Montague Cobb skeletal collection, this study examines the relationship between the environment of social and political inequality in late 19th and early 20th century Washington, D.C. and observed responses to biological and cultural insult. This research is significant because it is during this period that social policy and medical science were first

applied to social problems in North America (Phillips, 2001a). Institutional responses based on prevailing interpretations of poverty, crime and disease transformed the urban social and physical environment with institutions to house and conceal the poor, as well as health and housing reform that contained poverty while maintaining the status quo (Finzch and Jutte, 1996; Katz, 1996). Migration, racial discrimination, social welfare policies and medical professionalization are some of the processes affecting the quality of life during this period. The Cobb collection provides a unique opportunity to examine the health consequences of poverty related to these processes because of the personal information included in morgue records. In addition to cause of death, records contain information on next of kin and residential address. Residential information indicates that some individuals in the collection died as residents of the local poorhouse (called the Home for the Aged and Infirm). As a long-term care institution, the home lodged the city's poorest residents lacking employment as well as those without the physical ability to work. As a result, this collection not only represents the poor in the District, but also reflects the range of poverty in the city. In examining the health consequences of poverty evident in this collection, it is also possible to examine differences in the experience of poor individuals who were institutionalized and those living in the general population. In contrast to previous studies on the biological consequences of long-term institutionalization (such as Phillips, 2001a, 2001b; Higgins, 2001a, 2001b, 2002), the results of this study indicate a lower prevalence of infectious disease and trauma among the almshouse residents. This finding suggests that the social context of the poorest African Americans living in the general population put them at a greater disadvantage than poorhouse residents. Records indicate that many of these individuals were unable to meet the stringent eligibility criteria for public assistance.

Therefore they were more than likely a segment of the population that ‘slipped through the cracks’ of a welfare system. Therefore, this study goes beyond analytical generalizations of the poor and conditions of poverty to identify the local historical and environmental context that influenced different responses to the stress of poverty among the poor living in the general population and those who were inmates of the almshouse. Archival sources are used to develop the historical and environmental context, which is used as an interpretive frame for the health and disease patterns observed in both segments of the population. This is important because local conditions can impact segments of what might appear to be a homogenous population differently (Leatherman, 1998, p. 265).

Brief Statement on Materials

William Montague Cobb established his skeletal collection at Howard University in 1932. In many ways, it is a product of the transformative climate in African American higher education and Physical anthropology at the time. Howard University installed its first African American president, Mordecai Wyatt Johnson, in 1927. One of the early initiatives his administration carried out was transforming the predominately White leadership of the Medical School. Cobb was one of five outstanding Black faculty members selected by Numa P.G. Adams, Dean of the Medical School for advance training to develop the Department of Anatomy. Adams contacted physical anthropologist T. Wingate Todd at Case Western University, who agreed to direct Cobb’s post-graduate studies. An intellectual progressive, Todd lent his anthropological studies to illustrate the fallacy of prevailing thinking on racial differences. His research was diametrically opposed to that of his contemporaries, which focused on showing the racial superiority of Whites on the basis of inherent differences in the

development of the Black and White brain and skeletal morphology. Moreover, Todd opposed the separation of Physical Anthropology from Anatomy proposed by his colleagues at the time. Cobb's training with Todd from 1929 to 1932 served as a catalyst for establishing the Laboratory of Anatomy and Physical Anthropology at Howard University. Cobb envisioned the laboratory as a vehicle for African American scholars to authoritatively participate in debates on racial biology and promote an integrative study of human anatomy, (Cobb, 1936; Rankin-Hill and Blakey, 1994). In response to the lack of 'Negro materials' in established human skeletal collections, Cobb made efforts to assemble a research sample of African American skeletons from cadavera used in anatomy classes beginning in 1932. Cadaver records included personal data, which Cobb deemed necessary for 'studying the remains of a human being' and determining how accurately mortality statistics reflected 'ecological phenomena' (Cobb, 1936; W. Montague Cobb papers, box 9, folder 17). Commensurate with population data on Blacks in the District during the 1800s and 1900s, documents indicate that many of the remains in the collection belong to late 19th to early 20th century African American migrants to Washington, D.C. To date, the W. Montague Cobb collection is the only human skeletal research collection housed at a historically Black college or university.

Verbally and in writing, Cobb often referred to African Americans as 'the brethren.' The title of this dissertation pays homage to this reference and his non-generalized approach to teaching and conducting research on human remains. Cobb's efforts to go beyond generalized understandings of human biology through the use of social data were certainly innovative for his time.

Brief Statement on Methods

As mentioned earlier, the present study focuses on two samples from the Cobb collection with residential settlement patterns reflecting two different conditions of poverty in late 19th and early 20th century Washington, D.C. The primary subsample is made up of African American residents of the City Almshouse, while the secondary sample is comprised of poor African Americans living in the general population. Residential addresses were obtained from morgue records and plotted on a map. The map was used to compare the residential settlement patterns of individuals in the sample to the broader settlement patterns for Blacks in the District.

Skeletal remains from each subsample are examined for patterns of arthritic change such as marginal osteophytes, subchondral porosity and subchondral eburnation that may reflect activity stress associated with unskilled labor. Debate persists among physical anthropologists about the etiology of osteoarthritis, how to determine whether or not observed patterns are caused by activity-related or systemic factors and how reliable marginal lipping, porosity and eburnation are as criteria for diagnosis (Ortner, 1981; Jurmain, 1990,1991; 1998). Nonetheless, osteoarthritis has continued to be an important element in skeletal studies for examining variations in biomechanical stress between populations, and over long periods of time (Bridges, 1992; Waldron, 1993; Harrington and Blakley, 1995; Larsen, 1997). Moreover, observations of the severity and patterns of osteoarthritis are included in studies of African American skeletal populations without exception (Rathbun, 1987; Mann and Krakker, 1989; Parrington et al., 1990; Rankin-hill, 1997; Harrington, 1998). Patterns and severity of osteoarthritis are used as an integral part of establishing the biological context of the Cobb collection for comparison with other existing populations.

Although this study works from the premise that conditions of poverty are not reproduced in the same manner across populations, comparing the prevalence and severity of osteoarthritis in different skeletal collections should help to identify generalized arthritic patterns associated with environments of inequality.

Two samples from the Robert Terry collection housed at the Smithsonian Institution are used for comparative analysis to this end. There are several reasons why the collection is appropriate for comparison. First, the collection is associated with the same time period and socioeconomic status as the Cobb collection. Second, the collection represents a different (Midwestern) region of the United States than the Cobb collection. In the absence of uniquely available information on address and social networks, the Terry collection can be used to test hypotheses regarding the influence of local historical context on health and disease patterns. Third, the Terry collection was used to examine patterns of osteoarthritis in a number of previous studies (including Jurmain, 1975, 1977, 1980, 1990, 1991). This research is useful in identifying generalized patterns of arthritic change in skeletal sample of poor African Americans.

A comparative analysis of known cause of death in the Cobb and Terry samples was also conducted to examine similarities between populations of similar socioeconomic and temporal context. These data were also compared to leading causes of death for the general Black Washington, D.C. population to indicate how representative the Cobb sample is of the general Black population.

Consonant with other recent biocultural approaches to the study of health and disease, I argue that differences in the conditions of poverty and health between the two Cobb samples are best explained as different responses to local historical and social conditions

(Smith and Thomas, 1998). To understand these differences in terms of local history, archival material is used to develop historical and environmental contexts based on interactions between local and external socioeconomic and political forces. Specifically, this study focuses on the impact of poor relief policies, migration, racial discrimination and the Great Depression on the District's physical and social environment during the late 19th and early 20th century. In a broader sense, the environmental context situates evidence of poor health in human remains as a representative lens into the lived experience of individuals in the Cobb collection, and the social relations in which they were embedded as residents of Washington, D.C. As a result, this study renders visible the complex social phenomena retained in the skeletal record while recognizing the materiality of the remains as vestiges of living bodies (Grosz, 1994). The following section provides an overview of the theoretical and conceptual bases for this study.

Understanding Poverty as an Environmental and Historical Process

Understanding Structures of Power

Social perceptions of poverty shaping the care and treatment of the poor are located at the nexus of ideologies emerging during the 19th century coincident with industrialization and urbanization. Urban growth resulting from the industrial development included an influx of poor migrants from rural areas and foreign immigrants. As these populations grew and increased their contact with middle and upper class domains, they were viewed as a 'threat to social order' rather than objects of pity and charity. The need for middle and upper class groups to erect boundaries against contamination led to discourse constructing the poor as deviants, followed by their discursive and spatial exclusion from visibility (Douglas, 1966;

Sibley, 1995). As science is inextricably linked to social process, pre-existing medical and scientific interpretations of human biological variation and disease were consistent with upper class discourse on deviance. This served as the basis for the authoritative presence of medical and public health professionals in addressing and interpreting problems of urban poverty. Specifically, the 'medicalization' of poverty played a key role in the development of poor relief policies and reform initiatives without confronting structures of poverty (Craddock, 2000). Foucault's analysis of how medical knowledge is applied to the discipline of everyday life is useful in understanding this process. This analysis is discussed in the following section.

An extensive body of social constructionist literature developed in critical reaction to modernist conceptions of the 'socially unconstrained body' (Wickham, 1986). Arguably, the early writings of Foucault on the body as a site and target of power served as the foundation for the post-marxist dimensions of this scholarship (Foucault, 1976, 1977, 1980). Foucault's illustrations of the inextricable link between the development of specific forms of power and the production of specific forms of knowledge ('saviors') leads to an understanding of medicine as a form of knowledge used to regulate behavior (Foucault, 1976, 1980). According to his analysis, bodies are socially constructed through discourses based on a 'medical gaze,' which observes, examines and compares individuals to an established norm (Foucault, 1976). Standards of normalcy based on the medical gaze often lend to the interpretation of that which is considered abnormal as pathological. This pathologization serves as the basis for justifying medical intrusion into everyday life. Therefore, medical encounters provide disciplinary guidelines for how patients should understand, regulate and experience their bodies (Turner, 1995; Fox, 1997).

The application of medical knowledge to the discipline of everyday life led to the emergence of institutions like almshouses and asylums (Foucault, 1976). Foucault asserts that these institutions became increasingly important as population pressures during the 19th century created a necessity for coordinating and integrating a larger number of people into the apparatus of production (Foucault, 1980). As ‘the population’ became an increasingly important object of surveillance, intervention, modification, new categories of deviancy arose from a more stringent comparison of individuals to established norms. These institutions helped to preserve the ever-threatened social order and provided deviants with an environment of normalcy in which to possibly be reformed, or at the least, controlled.

Foucault’s analysis of the body in relation to power and knowledge is useful for understanding the relationship between institutional residents and medical authorities, as well as the historical functions of medical institutions as sites of power (Lupton, 1996; Goodman and Leatherman, 1998). However, Foucault treats the body as a social product with no ontological fixity. As a result, his analysis is not widely employed by physical anthropologists researching interactions between individuals and structures of power in everyday life. That bodies are not recognized outside of discourses of power is not only at odds with the bioanthropological study of lived experience, but also understanding human agency within milieus of power (Lash, 1991; Haber, 1994).

Understanding Relationships between Structures of Power and Human Biology

The merging of ecological and bioanthropological perspectives has often served as the intellectual medium for investigating the relationship between socially influenced factors and human biological diversity. In the 1960s it facilitated a decade of bioanthropological research on

the systemic interaction of physical, cultural and biological environments as ‘milieus of human biology and behavior’ (Goodman and Leatherman, 1998, p. 9). Therefore, the concepts of evolution and adaptation were considered applicable to biological and cultural observations. Specific studies focused on finding genetic adaptations to specific environmental conditions, as well as relationships between phenotypic plasticity and more socially influenced factors (Livingstone, 1958; Thomas, Gage and Little, 1979; Baker, 1996). Other classic studies made connections to larger theoretical issues, situating bioanthropological research as a site of capitalist critique (such as Lee, 1968; Gross and Underwood, 1971). However, prevailing notions of evolution and adaptation as ‘purposeful and progressive’ and ecological systems as homeostatic and self-regulating left biological and ecological anthropology open to much critique during the late 1970s on the part of evolutionary biologists and cultural anthropologists (Lewontin, 1978; Orlove, 1980). Ecological research methodologies emerging from critiques included a focus on mechanisms of change and adaptive strategies rather than homeostasis. As a result, biological variation came to be discussed in terms of its relationship to intolerable stresses as well as adaptation to limitations (Goodman, 1994). An abundance of literature discussing small body size as an adaptation to limited food supply already exists and will not be discussed here in detail (see Seckler, 1980; Allen, 1984; Pelto and Pelto, 1989; Martorell, 1989). For the purposes of this study, however, it is important to note that this research is integral to exploding the notion of ‘no cost’ adaptation, and sharpened the focus of bioanthropologists on how social inequalities shape human biology (Goodman et al., 1988). Also, as in other anthropological subfields, Eric Wolfe’s *Europe and the People Without History* (1982) heavily influenced researchers’ consideration of the role that power and position played in human adaptation.

As a result, physical anthropologists continued to illustrate the connection between social phenomena and the biological record through biocultural frameworks with a political-economic focus. Beginning with the assumption that human biological and behavioral responses to environmental constraints can indicate disruptive events (stress) as well as adjustment (adaptation), frameworks consider the cultural and biological forces that influence biological well-being in a population. Often-ignored environmental constraints considered in the framework include sociopolitical processes that affect the daily life conditions of a population, such as persistent poverty (Goodman et al., 1988; Goodman and Leatherman, 1998). Therefore, this perspective assumes that social, political, and economic forces exist which affect biological well-being through differential access to control, production, and distribution of material resources, ideology, and power (Leatherman and Goodman, 1997). Indicators of stress are considered at individual and group levels. As a result, biocultural frameworks facilitate studies of localized populations rather than generalized collectives (Goodman et al., 1988). In addition, this research approach renders visible host resistant factors that are an important component of the dynamic between adaptation and stress (Angel et al., 1987; Kelly and Angel, 1987; Goodman et al., 1988; Rankin-Hill, 1997; Armelagos and Goodman, 1998; Thomas, 1998). In this regard, biocultural anthropologists often focus on the difficult to measure factor, *social support*, based on previous research indicating the positive effects of community support on an individual's biological well-being (Berkman and Syme, 1979; Dressler et al., 1986; Goodman, 1993). As mentioned at the beginning of this chapter, early political economic studies of human biology following this research trend focused on biological dysfunction in impoverished environments ('biology of poverty'). The 'naturalization' of social processes left studies with an inadequate analysis of the conditions under which poverty was produced and reproduced.

This shortcoming has resulted in a number of important research areas being overlooked in biohistorical studies of 19th and 20th century African Americans. Rankin-Hill notes that in particular, research on the living conditions, health status and lifestyles of non-slave African Americans relative to changing American social conditions is underdeveloped (1997, p. 9). Studies outlined in the following section illustrate how researchers used skeletal and documentary data to produce 'lifestyle' studies of enslaved and free African Americans, which focused on documenting health problems associated with slavery. In addition, osteological evidence is used to evaluate the accuracy of the historical record (Owsley, 1990; Larsen, 1997). Nonetheless, studies conducted by physical anthropologists are largely responsible for conceptual and methodological advances in African American biohistorical research. The following discussion illustrates both of these points.

African American Biohistorical Studies: A Review

A study of the Cedar Grove cemetery population (Rose et al., 1985) of southwest Arkansas combined evidence from the historical, archival and skeletal record to provide an image of the quality of life and health of individuals living during slavery, Reconstruction and Post-Reconstruction periods. Through osteological examination, Rose and researchers developed fertility, morbidity and mortality statistics, nutritional profiles and growth and stature estimations that answered important questions about the quality of life and health in this sample. Although limited skeletal evidence precluded conclusive results, research suggests that the diet of Blacks in southwest Arkansas was inadequate during the three time periods. The amount of physical labor required of Blacks was consistent throughout these time periods as well (see also Rose et al., 1987). It is important to note that these data were analyzed relative to existing historical research

on the composition and adequacy of African American diets during slavery, Reconstruction and post-Reconstruction (Stampp, 1956; Fogel and Engerman, 1974; Sutch, 1976; Kiple and King, 1981). However, documentary records on Cedar Grove were not used to provide context for osteological observations. Rather, documents were primarily used to provide historical background on the area and use of the cemetery.

Rathbun's study of a 19th century cemetery population in South Carolina also illustrates the integrative approach to biohistory used by physical anthropologists (1987). Like the Cedar Grove study, research findings verify the substandard quality of life and health of enslaved Africans and African Americans. Patterns of health and disease obtained from activity stress and skeletal trace element analysis are briefly discussed relative to known economic and social dynamics of slavery. However, economic and historical context are not used to develop an analysis of observed inter and intra-group differences in health status. Rathbun's emphasis on the consistency between documentary evidence, observed weaning patterns morbidity statistics illustrates the large-scale use of osteological data to evaluate documentary evidence.

Similarly, the skeletal remains of enslaved individuals from Maryland, Virginia, and the Carolinas representing 17th, 18th and 19th centuries are examined for stressors associated with slavery (Kelly and Angel, 1987). Although socially oriented sources of stress are mentioned, longevity is used as the primary measure of life stress. Osteological and documentary data are not combined to develop a profile of health and disease patterns. As a result, social context provided by historical evidence is viewed in a limited capacity. For instance, evidence of the preferential treatment of industrial male slaves uncovered in documentary data is only considered relative to how it is reflected in longevity and nutritional data from the skeletal record. Moreover, persistent economic and social dynamics are not considered in observations of similar amounts of lead

exposure between samples of different temporal context. Social and economic context is also disregarded when analyzing observed health differences between rural and urban samples, and samples from warmer and cooler climates. As a result, their analysis of the physiological stresses of slavery appears to be environmentally deterministic.

A study of the St. Peter St. Cemetery by Owsley and researchers (1987) also contributes to biocultural understandings of the biological consequences of urban life, especially as it relates to being enslaved. As the cemetery dates between 1720 and 1810, its existence as a historic period skeletal series is most significant. Like the previous studies mentioned, this research underscores the necessity for biohistorical studies with more interactive use of the historical and osteological record. In this case, the age bias of the skeletal sample prevents the common use of the skeletal record as an “objective check” for mortality trends noted in the historical record (Handler, 1986; Ritter, 1991; Larsen, 1997). That pathological changes indicate two different slave groups means that activity stress must be considered in the context of intra-group social stratification and coincident occupational differences before significant conclusions can be drawn about the population. Historical documents are essential to understanding the diversity of occupations open to those enslaved in urban environments, as well as social dynamics. Social, economic and political processes should also be considered in the analysis of activity stress differences between rural and urban samples, rather than focusing discussions on the relative difficulty of one aspect of slavery versus the other.

Mann and Krakker’s study of a small 19th century skeletal sample from the Mount Pleasant Plains cemetery in Washington, DC examines how representative the sample is of the general African American population living there at the time (1989). Although high rates of infectious disease, poor dental health and high rates of mortality were associated with the rapid

migration of Blacks to the District, the skeletal sample presents a low prevalence of these conditions compared to other Black cemetery collections. The authors suggest that this sample represents more affluent urban individuals or individuals living a more rural existence during the early industrial period. Nonetheless, historical accounts at their disposal are not used to obtain a more comprehensive picture of African American social and economic life to verify this conclusion. Documents are, however, used to provide background and context for the use of this cemetery and others in Washington, D.C. relative to urban development.

Studies of lead contact and poisoning in a skeletal sample of individuals enslaved on the Newton sugar plantation in Barbados better reflect the political economic orientation of recent biohistorical studies (Corruccini et al., 1985; Handler et al., 1986). Historical documents and writings by historians on life in 18th and 19th century Barbados provided essential information on slavery and sugar technology for rum production. Researchers relied upon these sources to develop a qualitative picture of lead contamination among the enslaved and Whites in Barbados, which forms the basis of their perspective on lead poisoning obtained through skeletal and chemical analysis.

Unlike many African American biohistorical studies conducted around the same time, researchers used the historical documents to consider the results of their skeletal and chemical analysis in the context of historic, cultural, environmental and economic processes. For instance, researchers discussed the higher degree of variation in lead exposure found among enslaved females in relationship to possible differences in environmental exposure to lead between domestics and fieldworkers (Handler et al., 1986, p. 403). Historical evidence also suggests that the use of lead equipment in rum production put Blacks and Whites of all socioeconomic levels at similar risk of lead exposure and poisoning. Besides the large-scale consumption of rum by

Whites and Blacks, both poor Whites and enslaved Blacks worked as rum distillers and sugar boilers. In sum, the inter and intra-group prevalence of lead exposure and poisoning revealed in the skeletal and documentary underscores the impact of political economic systems on health and disease.

As White skeletal remains were not available for study, the historical evidence served as an important source for understanding the prevalence of lead poisoning among Whites and Blacks. Therefore, documents were essential to understanding how lead levels in Newton plantation slaves reflected the health of slaves in Barbados as well as the health of the society as a whole. Although historical evidence served as such a valuable resource, they consider their research an objective method of checking historical sources (Handler et al., 1986, p. 401).

A skeletal sample from the First African Baptist Church [FABC] in Philadelphia, Pennsylvania has served as an important source of information on African American biohistory (Angel et al., 1987; Rankin-Hill, 1997). Representative of Philadelphia's nineteenth century free Black communities, the FABC population affords researchers an opportunity to explore a dimension of African American biohistory outside of the context of slavery. Angel and researchers used longevity, infant and child mortality rates and skeletal indicators of fertility, activity and nutritional stress, Angel and researchers developed a profile of the population's health and lifestyle. Although stature indicated adequate caloric intake among females during the antebellum period, researchers noted the more sensitive skeletal indicators of malnutrition that reveal lack of adequate nutrients during growth. Although skeletal evidence indicates less strenuous work in the FABC population than slave populations of the same time period, the archival record indicates that free and enslaved endured similarly difficult conditions during this time period. As in Kelley and Angel's study mentioned above, historical accounts are used to

identify the range of environmental stressors affecting the health of this sample. However, there is no consideration of the conditions producing these stressors, save the taken-for-granted assumptions about what a 'stormy time' the early and mid 19th century was for Philadelphia's free Blacks (Angel et al., 1987, p. 213). This has important implications for analyzing similarities in health status and disease prevalence that Kelley and Angel found between FABC and a slave sample dated 100 years earlier.

Rankin-Hill's later study of the FABC skeletal collection better reflects current methodological and conceptual advances in biohistorical research (1997). Her synthesis of the skeletal and documentary data provided a health assessment of the community profiling the material and social conditions affecting their biological well-being. Rankin-Hill's examination of archival data went beyond acquiring historical information to confirm the accepted notion that Blacks generally experienced a 'difficult time' in 18th and 19th century America. Rather, she used documents to render visible the specific material and social conditions in which the community lived, as well as the human agency with which the FABC congregation and community allies shaped the material and social landscape. Rankin-Hill illustrates at length how human agency in the form of membership in a beneficial society and external support from Quakers and abolitionist societies affected disease stress and environmental risk. Patterns of high infant and childhood mortality, prevalence of osteoarthritis and muscle hypertrophy, high prevalence of enamel defects and periodic malnutrition and infectious disease present in other free and enslaved skeletal populations of African descent are repeated in the FABC congregation. This indeed speaks to the general difficulty of Black life in the 18th and 19th centuries. Nonetheless, the FABC congregation appears to be healthier than skeletal samples of free and enslaved individuals of similar temporal context. For instance, the occurrence of enamel defects in FABC was similar to that found in a

skeletal sample from a Barbadian sugar plantation dated between 1660 and 1820 (Corruccini et al., 1985; Handler et al., 1986). However, enamel defect severity rates in FABC are low but high in the sugar plantation sample (Rankin-Hill, 1997, p. 173). In general, the low prevalence of nutritional defects, non-specific infections and severe enamel defects in FABC skeletal remains indicate episodic rather than prolonged periods of activity, environmental and nutritional stress. Rankin-Hill's comparative analysis and integration of the skeletal and documentary record underscores the importance of moving beyond simplified dichotomies constructed between rural and urban, slaved and enslaved samples in African American biohistorical research. The similarities and differences between FABC and other skeletal samples had much to do with the historical context of African Americans in Philadelphia, as well as the particular economic, cultural and environmental conditions in which they lived. Therefore, an analysis moving beyond simplified categories reveals the range of variation in the political economic conditions experienced by rural, urban, enslaved and free diasporic African communities as well as their responses to those conditions. Rankin-Hill's use of church and census records to render individual congregants visible greatly enhanced the profile of the FABC community in this regard. Records provided a glimpse into the lived experience of individuals in the community and are a source for developing the historical and environmental context of the community. This population was used as a comparative sample in a recent study by Rathbun and Steckel (2002) to illustrate the importance of considering historical and environmental context in explanations of health and disease patterns. The health of the FABC population was better than middle and upper class Whites living in a small town during the same period. Rather than assuming their results were caused by flawed methodology or represented an anomaly, they turned to recent historical studies of health and income (such as Preston and Haines, 1991; Davin, 1993). These studies indicate that

the positive correlation between health and income evident in contemporary populations did not exist during the 19th century. Therefore, the social support networks like those members of the First African Baptist Church belonged to, rather than socioeconomic status, were a better health indicator during this period. As for intra-group differences in health, Rathbun and Steckel noted that the remains from FABC used in the study came from burials dated before 1841. Assumptions about the difficult life of free Blacks in the 19th century are largely influenced by historical studies of the deteriorating social and economic conditions occurring after 1850. Examination of earlier and later period burials from the FABC cemetery indicate that individuals from the earlier period were relatively healthier than individuals from the later period (Crist et al., 1997). Davidson et al. (2002) also detail health differences within skeletal samples relative to the date of burial in a recent study of late 19th century African American skeletal remains from Arkansas and Texas.

Outside of the scope of African American biohistory, research on skeletal samples from New York county almshouses and asylums exemplifies an extended political economic approach to the study of human biology influenced by ecological concepts. For instance, Phillips' study of skeletal samples from New York county almshouses and asylums clearly illustrates the biological and social information retained in the skeletal record (Phillips, 2001a, 2001b). Like other recent biocultural studies of marginal groups, skeletons presented disease and trauma patterns indicating the disadvantage at which poor institutionalized individuals were relative to sociopolitical factors giving rise to these institutions. The presence of trauma related disfigurement Phillips observed in the asylum sample is not mentioned in the daily visitation records of the asylum physician. Rather than concluding that his skeletal data was a more reliable picture of the health of asylum inmates, Phillips suggests that the records further indicate how inmates developed into the stigmatized social definition of mental illness. Records indicating that the physician neither treated nor

mended traumas suggest that the social perception of mental illness resulted in limited medical care: “If misshapen long bones or other fractures helped to fit one into the social definition of mental illness, then it may have been easier to accept the inevitability of an incurable condition” (Phillips, 2001b, p. 45). Skeletons also revealed atypical mortuary treatment of individuals with advanced syphilis. Therefore, mortuary patterns and medical histories show that the social perception of a disease dictated how sufferers were treated. By revealing how complex social dynamics are embedded in the bioarchaeological record, Phillips illustrates how this skeletal sample is useful beyond what is revealed in disease patterns. This study supports other social science research on the failure of the almshouse system to protect inmates from the most severe consequences of poverty (such as Rothman, 1971; Katz, 1986).

As a result, research on skeletal samples from New York County almshouses most clearly reflects the current integration of political economic, ecological and bioanthropological concepts (Higgins, 2001a, 2001b, 2002). First, these studies have examined the health of inmates relative to sociopolitical factors gleaned from archival research. Rather than using skeletal data to evaluate the accuracy of the documentary record, the documentary record is used to understand the daily life conditions of poor New Yorkers living inside and outside of institutions. These documents are also used to understand how those conditions are related to the development of poor relief systems during the industrial revolution. Therefore, as with the study of Andean households, illness was treated as a product of social relations through which people access resources. In addition to reported sub par medical care, living and sanitary conditions, the failure to separate ill inmates from poor and unemployed inmates who were not ill put almshouse residents at a risk for infectious disease greater than that for poor individuals living outside of municipal housing. Illness from infectious disease was found to be both a reason and consequence of almshouse

admittance because of the wide variety of marginal groups served. This research illustrates that illness is not only a product of poverty, but also a mechanism through which poverty and persistent poor health is reproduced. Higgins states that this research underscores the work of economic historians indicating that the social policy giving rise to almshouses is rooted in a conflation of moral and health reform rather than improving the health and well being of the poor (also see Rothman, 1971; Katz, 1986, 1995).

It is important to note that within the scope of African American biohistory, Rankin-Hill's work certainly encompassed these principles in her analysis of the role human agency played in the variation between health and disease patterns between FABC and samples assumed to be similar in socioeconomic and temporal context. Moreover, the varied lives of individual congregants illuminated through her use of the archival record underscores the importance of assuming heterogeneity within samples (Rankin-Hill, 1997).

Conceptual Framework for the Study

As the previous discussion illustrates, only biocultural research conducted over the past decade considers the intersections of global systems and local history in the study of human biological adaptation and stress. As with earlier biocultural studies, ecological concepts appear to factor heavily into these recent methodological and conceptual advances. Specifically, current methodological and conceptual trends in Historical Ecology are reflected in recent discussions about expanding the biocultural synthesis. Nonetheless, dialogue between scholars in these research areas is in its beginning stages. As a result, biocultural studies of human biology have yet to be considered as part of Historical Ecology studies. However, the complementarity of these approaches in their examination of natural/physical and social processes lends to such recognition.

Like biocultural anthropologists, historical ecologists are trained in a variety of anthropological subdisciplines and hybrid fields (Crumley, 1987, 1994). The common self-identification of these researchers is rooted in their intellectual commitment to bridging natural and social scientific divides to examine the relationship between humans and the environment over time, as well as the changing human values, perceptions and awareness coincident with those changes (Crumley, 1998). Leatherman and Thomas' paper on constructions of environment in *Physical Anthropology*, contributed to Carole Crumley's latest volume of writings on *Historical Ecology* underscores the consistency of biocultural and historical ecological approaches (Leatherman and Thomas, 2001; Crumley, 2001). As these researchers were involved in developing these research areas, this intellectual partnership is all the more significant.

Three key features of the historical ecological orientation are reflected in Leatherman and Thomas' discussion of current research trends in biocultural studies. These concepts are essential to identifying and illustrating the relationship between human health, the disease experience and larger social systems in this study.

1. *Recognizing the inextricable link between natural and social worlds, historical ecologists have adopted an inclusive definition of environment that encourages exploration of physical, built and cognitive environments (Crumley, 2001).* This definition underscores the break away from environmental determinist and bifurcated examinations of natural and social processes in ecological and bioanthropological studies. As a result, ecosystems are recognized as both product and cause of human activity (Thomas, 1998; Newson, 1998; Leatherman, 1998; Leatherman and Thomas, 2001). This also means that human agency is considered an important factor in how humans interact with their environment. With these considerations in mind, Leatherman and Goodman state that scholars should recognize that the impact that social processes such as limited

political power and persistent poverty have on how humans interact with and function in their environment is similar to that caused by extreme altitude and temperature. This is because social relations through which people gain differential access to resources influence what people eat, their exposure to pathogens, and their ability to cope with everyday life and crises (Newson, 1992, 1998; Schmidt, 1994; Hassan, 1994). Therefore, physical and social environments should be recognized as integrated and equally legitimate areas of inquiry for human biology studies. In sum, a political economic study of human biology informed by ecological anthropology can enhance analysis of the social processes shaping human biology. This perspective serves as the basis for developing an environmental and historical context through which to interpret health consequences of poverty in this study.

2. *Borrowing from an Annaliste approach to delineating the temporal scales on which natural and social processes operate, historical ecologists analyze human-environment relationships in their immediate and far-ranging contexts (Crumley, 1998).* Using Annaliste terminology, Leatherman and Goodman suggest that the social relations impacting human biology should be considered in their immediate (evenement), political and historical (conjuncture) and far ranging (longue durée) contexts. Therefore, the scope of environmental and historical contexts need to be expanded in biocultural studies to better illustrate the role of extra-local, regional and global processes in shaping local environments and social relations. The intersection of these contextual scales must be examined to understand the direction of social, political and economic transformations that impact human biology. Moreover, this examination has important implications for interpreting similarities and differences in health and disease patterns in comparative studies. As stated, recent studies of biological and cultural adaptation in small-scale

Andean farming communities have called into question the generality of discussions about adaptation in marginal populations (Thomas, 1988; Leatherman, 1998). This research showed that differences in patterns of illness and coping responses between households in three nearby districts were primarily shaped by differences in social relations. Moreover, the broad adaptive patterns researchers expected to observe in comparisons with Himalayan and Ethiopian communities situated in similar physical environments were not present (Leatherman, 1998). Again, differences in local history were found to be a key factor in household adaptive strategies and coping. In sum, differences were best explained by using a research method that assessed local conditions as a product of interaction with larger historical and environmental forces as opposed to the ecological conditions. Following this logic, health was treated as a product of social relations through which people gain access to resources. Recognizing that humans are embedded in complex webs of social relations was key to understanding the variation observed within and between communities. Therefore, Leatherman and Goodman suggest that considering environmental conditions on these different temporal scales helps to move biocultural research away from a population-level analysis that artificially homogenizes groups masking the unique features of their ecological and cultural settings (Larsen and Ruff, 1991; Rathbun and Scurry, 1991).

This research method has yet to be applied to African American biohistorical studies. In this dissertation, these temporal contexts are used to illustrate how local conditions of poverty in Washington, D.C. are related to factors affecting economic and social relations on a national level. This is important because examining relationships between local and external forces shaping conditions of poverty in Washington, D.C. is critical to understanding the different responses to poverty observed in the skeletal and noted in the documentary record. For instance, poverty

among Blacks in the District is situated within the broader context of Black rural-to-urban migration in the south and east during and after the Civil War. This is because poor relief programs for Blacks were largely developed by the Freedmen's Bureau to assist refugees and freedmen during this time. The amount and distribution of relief was in part shaped by changing attitudes about charity to the poor resulting from their increased presence in cities. The unparalleled influx of Blacks into the District had specific implications for how adequately relief could be distributed, as well as how Blacks were stigmatized and treated as the largest segment of the poor. As many of the work relief programs run by the Freedmen's bureau were farm-based, the lack of farmland surrounding the District limited the number of work relief assignments available. Black migrants in general lacked work skills appropriate for earning a living in an urban area. This coupled with racial discrimination set the tone for their confinement to low-paying, unskilled labor into the 20th century. In addition, there were specific local consequences caused by the District's reliance on federal government expansion rather than industry for economic development.

Leatherman and Thomas also point out that examining conditions of poverty within different temporal contexts lends to identifying connections between social relations observed in past and present populations from the same locale. As Goodman and researchers note: 'The causes of poverty in the contemporary world are usually the end result of sociopolitical and economic processes whose origins might be displaced in time and space' (Goodman et al., 1988, p. 193). Therefore, consideration of different temporal contexts in human biological research can help a researcher locate processes of inequality as well as understand their relationship to observed biological conditions (such as Martin, 1998; Crooks, 1998). Identifying veiled structures of

inequality and their biological consequences is one of the ways that biocultural research can assist in addressing contemporary social problems.

3. *Researchers also adopted the Annaliste concept of landscape, defined as the material and spatial evidence of human action modifying the environment as well as past environmental events in shaping human action. Historical ecologists have expanded the concept, considering it the material manifestation of relationships between humans and their environment (Marquardt and Crumley, 1987). As social processes influence human biology, it follows that the skeletal record is not only an important record of the lived experience of individual human beings, but also the social relations within which individuals were embedded. Therefore, as a material manifestation of the relationship between humans and their physical and social environment, the human skeleton should also be considered a unit of the landscape upon which social relations can be interpreted. As researchers in Historical Ecology and Biocultural Anthropology both seek to develop research frameworks within which the relationship between cultural and biophysical processes can be illuminated, landscape can serve as a useful all encompassing term for all material records of lived experience in their immediate and broader contexts. In this project, the concept of landscape is a contextual frame that I use to interpret skeletal remains as a record of individual lived experience in their immediate context as well as an historical text on which to read past social relations in a broader context. I also use the concept of landscape to analytically situate the historical documentary and skeletal record in positions of equal privilege. Analytically situating the skeletal record as a dimension of landscape on which to read social relations is important for deconstructing the use of the skeletal record as an 'objective check' for the documentary record (Corruccini et al., 1985; Owsley, 1990; Larsen, 1997).*

In sum, the above concepts help to establish an integrative framework that extends political economic studies of human biology. First, these concepts establish grounds for recognizing the equal legitimacy of both natural and social landscapes for examining human-environment relationships. In turn, it becomes clear that skeletal material is not only useful for understanding biological processes associated with social relations, but is also a resource for identifying social relations in which people were embedded. This point is made in a number of recent 'biology of poverty studies' (such as Harrington and Blakely, 1995; Phillips, 2001a, 2001b). However, this research framework has yet to be applied in biohistorical studies of 19th and 20th century African American skeletal samples. As a result, this study constitutes an important contribution to research on the health consequences of poverty, as well as African American biohistory.

Chapter II: Materials and Methods

Materials

The W. Montague Cobb skeletal collection is a sample of the eastern urban United States that provides biological information on the development and pathology of the poorest Washingtonians from the years of the Great Depression until 1969 (Blakey, 1988; Rankin-Hill and Blakey, 1994). This sample dates between the late 19th and mid 20th century, which makes it extremely important to the study of African American biohistory. The Cobb Collection extends the anthropological gaze into the health and life-ways of African Americans more than 30 years past the time periods represented in other collections (Angel et al., 1987; Martin et al., 1987; Rankin-Hill, 1997).

Although morgue records are present for 987 individuals, only 634 of the associated skeletons are available for research. The collection primarily consists of African Americans who were employed as day laborers and domestics in the Washington, DC area. Individuals died at Gallinger (presently D.C. General) or Freedmen's (presently Howard University) hospitals. Unclaimed by relatives for burial, remains were donated to the Laboratory of Anatomy and Physical Anthropology of the Howard University Medical School between 1932 and 1969 (Blakey, 1988). Under the guidance of W. Montague Cobb, medical students documented and dissected cadavers. Curation efforts initiated by Michael Blakey in 1988 were completed in 1995, making the collection available for research after a long period of under-utilization.

The combination of cultural and biomedical information present with this sample is rarely available with skeletal collections. Occupation is documented for 95 of the 634 individuals in the collection: 48 males were laborers, 20 females were domestics, and 27 more individuals had other occupations listed (such as chauffeur, busboy, and housewife). Cause of death is listed for 790 individuals and 27 contain clinical medical histories.

The duration of time individuals resided in Washington, DC ranged from 3 days to 75 years. That only 10 individuals in the entire collection were listed as lifetime residents indicates the significance of migration as a large-scale force in shaping the local history of the poorest people in the District. Although birthplace is listed for 103 individuals, over 700 records provide local addresses. Addresses indicate that most individuals resided in the northwest quadrant of the District. However, 104 African American individuals in the collection resided at the Washington, DC Almshouse located in the southeast quadrant.

It is important to note that the collection is almost undoubtedly a biased sample of the African American community in Washington, DC. For example, females and young adults are underrepresented; only 287 of the individuals in the collection are female and only 13 are 25 years of age or younger. Therefore, biological data only provide information on a portion of the Black Washington, D.C. population. As a goal of this research is to understand the local conditions of poverty, using these data to extrapolate health standards of Blacks throughout the District is not an objective. I argue that the selectivity of the sample indicates who the environment of inequality during the time period represented in the collection disproportionately affected. For instance, biases in the sample suggest gender differences in familial or social networks individuals belonged to that did not have means for burying their deceased. This distribution thus lends insight into the cultural and economic context. As

such, it is an important example of how social phenomena are retained in the skeletal record.

Skeletal samples from the Robert J. Terry Skeletal Collection housed at the National Museum of Natural History, Smithsonian Institution, are used to compare arthritis patterns and cause of death between two populations of similar socioeconomic and temporal context. The Terry Collection is comprised of skeletons from cadavers used in Washington University Medical School's Anatomy classes (1927-1967). Most individuals were obtained from St. Louis hospital and institutional morgues (Hunt, 1999). Although the collection includes the remains of individuals who willed their bodies to scientific research, remains in the sample used for this study were unclaimed for burial before being turned over to the medical school for teaching and research. Although morgue records do not provide information on residence, occupation and duration of residence like those from the Cobb Collection, cause of death and pathological conditions, ethnic identity and institutions at which they died are included. Of the 1728 specimens in the Terry collection, 938 are African American.

Methods

Sample Selection

The following tables provide sample size, sex and age distributions for skeletons used in this study.

Table 1. Descriptive statistics for the Cobb and Terry samples: Age

Source	N	Minimum	Maximum	Mean	Std. Deviation
Cobb	145	25	90	56.01	17.89
Female	56	25	90	55.79	19.22
Male	89	25	87	56.16	17.11
Terry	207	25	85	44.10	16.89
Female	110	25	85	48.05	18.33
Male	97	25	77	39.63	13.89

Table 2. Descriptive statistics for the Cobb and Terry Samples: Age and sample size

Source	Series	N (%)	Minimum	Maximum	Mean	Std. Deviation
Cobb	Primary	74	45	90	70.23	11.25
	Female	29 (39.2)	50	90	71.24	10.86
	Male	45 (60.8)	45	87	69.58	11.57
	Secondary	71	25	61	41.20	9.48
	Female	27 (38)	25	55	39.19	10.08
	Male	44 (62)	25	61	42.43	8.98
Terry	Primary	86	36	85	60.58	12.91
	Female	53 (61.6)	36	85	63.38	13.20
	Male	33 (38.4)	36	77	56.09	11.21
	Secondary	121	25	54	32.39	6.23
	Female	57 (47.1)	25	54	33.79	7.93
	Male	64 (52.9)	25	40	31.14	3.85

As most individuals in the Cobb collection were not lifetime residents of the District, it is not appropriate to assume that all health and disease patterns are a result of their lives in Washington, DC. Therefore, it is important to establish the environmental and historical context of individuals in the collection. This context is necessary for identifying the factors involved in producing conditions of poverty in Washington, D.C. It is also necessary for understanding how to situate migrants in relation to the city. As a substantial number of individuals in the collection died as residents of the City Almshouse, individuals from this subgroup were selected for the primary sample. Existing literature in economic history and physical anthropology indicate that the establishment of local almshouses was part of the national poor relief movement during the rise of the industrial era (Katz, 1996; Higgins, 2001a). Therefore, this sample represents an articulation of national forces and local history as well as the conditions of poverty in Washington, DC between the late 19th and early 20th century. The neighborhoods in which people living in the general population settled should also lend insight into the impact of external forces on local history. Specifically, settlement patterns should indicate District neighborhoods associated with the migration of poor Blacks to the area. All records of African American residents aged 25 and older were used for the

primary sample (n=74). Age and death dates were used to calculate the year of birth in the sample, which ranged from 1850 to 1901. Continuing the use of residence to situate individuals in the Cobb Collection within the local history of the District, I chose a secondary sample of individuals with residences listed other than the almshouse. Since I found the records for almshouse individuals in the first 700 records, non-residents were selected from this same set of records (n=71). Because of the small number of non-almshouse residents born within the same time period as the almshouse residents, records for African American individuals age 25 or older born after 1900 were selected for this second sample. Calculation of year of birth indicated that individuals were born between 1900 and 1927. Individuals in both samples died between 1930 and 1960.

In addition to addresses, individual records from both samples had to list a cause of death. Records lacking this information were excluded from the study.

I examined skeletal material associated with each morgue record for inclusion in the skeletal component of the study. If skeletons lacked elements for examining a minimum of two appendicular joints, I excluded them from the skeletal study. Only the associated morgue record was used to collect demographic data, residence and cause of death. Because age and sex were already provided in the autopsy records, no further determination was made. Skeletons of questionable age and sex (noted on morgue records), non-matching elements, and elements with serious post-mortem degradation were excluded from the sample.

Two African American skeletal samples from the Terry collection were selected for the comparative study. The primary sample (n=86) and secondary sample (n=121) were

selected based on having the same years of birth and death as individuals in the primary and secondary samples from the Cobb collection.

Although both samples from the Cobb Collection reflect the African American poor living in Washington, DC during the late 19th and early 20th century, I argue in this study that the almshouse sample represents individuals who experienced extreme poverty. Not only is this evident in the residential difference between the two samples, but also different frequencies of infectious and non-infectious disease. I delineate the methods used to establish biological and historical contexts to support my argument in the following sections.

Establishing Environmental Context

The methodology for this study is structured with the understanding that the social context of individuals used in this study must be known to properly interpret biological data. This is because as stated, environments of social and political inequality have as much of an impact on human biology as physical environmental conditions. Identifying the environment of structural inequality involves identifying: a) the local conditions of poverty in late 19th and early 20th century Washington, D.C.; and, b) examining how local conditions of poverty were influenced by external forces. In turn, understanding the relationship between local and external forces lends to understanding how specific conditions of poverty were produced in a specific locale.

Documents describing the daily life of poor Blacks in the District as well as reports and histories are useful in identifying local and external forces, as well as how those external forces were internalized and helped to shape the conditions of poverty. Knowing these conditions also helps to identify individual responses to inequality noted in documents.

Establishing environmental context is thus an important part of rendering visible the life circumstances of this marginalized group (Ascher, 1974; Harrington, 1998).

I rely upon archival material to develop the historical and environmental contexts of poor Blacks residing in the almshouse and those living in the general population. Because individuals in the sample first arrived in the District between 1893 and 1909, I reviewed records from the late 1800s through 1960 (latest date of death). To identify potential bias in documentary data, a range of documents were reviewed including municipal reports, newspaper articles, special studies and statistical reports. Many of these documents are housed in the Washingtoniana Room, Martin Luther King Washington, D.C. Public Library. Primary documents included Bureau of Public Welfare annual reports, City Commissioners reports, aid association reports, institutional regulations and select studies. Secondary sources included newspaper articles, histories of Washington, DC and local charitable institutions. In addition to indicating differences in access to resources between almshouse residents and non-residents, documents also illustrate differences between institutional and non-institutional environments.

The W. Montague Cobb Papers, Moorland-Spingarn Research Center, Howard University were sought for information on the demographic characteristics of cadavera Howard University Medical School acquired from the Anatomical Board between the 1930s and 1960s. As Cobb was the secretary of the DC Anatomical Board from 1942 until the mid 60s, his papers included correspondence and documents on laws regarding the acquisition of indigent remains, as well as the distribution of those remains to medical schools in the DC area. Cobb's inter and intra-university correspondences also include information about

remains used for the research collection. These materials are also used to determine how representative this sample is of the general Black DC population.

Individual morgue records were reviewed for information regarding social networks and residence. The records of 25 people (12 women and 13 men) noted whether or not family or friends were contacted upon an individual's death. Residential patterns were examined to determine whether or not individuals in the sample settled in areas known to have a high Black concentration. This information also lends to understanding how representative the sample is of the general Black D.C. populations in light of demographic biases.

Using a variety of sources allows me to minimize biases associated with relying upon one type of documentary source. Critical analysis was used to evaluate and examine documentary data in 3 particular ways (such as Grob, 1994). First, analysis entailed using the documents to develop a thorough understanding of the period in which documents were created to identify necessary information. Comprehension of the period also allowed me to identify biases in the texts while remaining cognizant of presentist conceptions in my analysis. Second, sources were reviewed again to identify local conditions of inequality and the external processes bearing upon the local environment. Therefore, documents were examined with an eye towards historical contingency as well as the involvement of extra-local processes (Roseberry, 1998; Kunitz, 1994). This approach is rooted in an historical understanding that articulation of the same forces in different locales could lead to different outcomes (Cole and Wolf, 1974; Wolf, 1982).

Finally, residential addresses from autopsy records were entered into a database and plotted on a map of Washington, D.C. using MapInfo software v. 4.12. The map was used to

compare the residential settlement patterns of individuals in the sample to the broader settlement patterns for Blacks in the District. Similarities serve as an indication of the extent to which the Cobb samples are or are not representative of the larger Black population in the District.

Establishing Biological Context

Physical anthropologists commonly examine skeletal responses to biomechanical stress to understand interactions between culture and biology in a sample. As the oldest and most observable condition of this kind, osteoarthritis is readily used as an indicator.

Researchers generally accept that it is not possible to make reliable conclusions about specific activities that caused degenerative lesions, or how they affected mobility (Merbs, 1983, 1989; Waldron, 1993; Jurmain and Kilgore, 1995). However, controlling for age and other systemic factors in the analysis of observations, osteoarthritis patterns are considered documents of the cumulative effects of strain (Wells, 1964, p. 60; Harrington, 1998).

Although common, osteoarthritis is not an inevitable condition. It is for this reason that varying osteoarthritic patterns are attributed cultural significance regarding the general burdens of labor and activity in a population.

Structure and Etiology

As stated, osteoarthritis is recognized as one of the most commonplace diseases affecting humans in the past and present (Ortner, 1968, 2003; Jurmain, 1977; Waldron, 1992, 1993). The degenerative process is influenced by a number of factors, including age (expressed through subsequent hormonal changes), load stress (which may be sex-specific),

metabolic disorders (e.g., thyroidal dysfunction), obesity and pre-existing or congenital joint related disorders (Radin, 1972; Jurmain, 1980). Nonetheless, many studies confirm that biomechanical stress is a primary contributor to the disease (Radin, 1972, 1982; Jurmain, 1977, 1980, 1991; Hough and Sokoloff, 1989; Larsen, 1997). Biomechanical stress is defined as functional demand placed on the skeleton by habitual activity (often related to work), which expresses itself as change in the shape, size, or surface of joint. Mechanical stress is also referred to as load stress, functional stress or physical demand, and will be referred to by these various descriptors throughout the dissertation.

Joint Structure

Articular joints are encapsulated by two protective structures: 1) A fibrous, protective sheath of a thick ligamentous structure; and, 2) a synovial membrane covered by the sheath, which secretes synovial fluid and directly encloses the joint. The synovial fluid lubricates and nourishes the highly avascular cartilage covering the articular ends of bones comprising a joint. This cartilage is responsible for: a) spreading loads applied to a joint to decrease the load per unit area; and, b) providing a surface of minimum friction for joint articulation and movement (Woods, 1986; Jurmain, 1999). Generally, these functions are achieved with hardly any friction in the capsule by the ‘washing and flow-through’ of water hydrating the cartilage and synovial fluid surrounding the joint under stress conditions (Sokoloff, 1969; Radin, 1975; Woods, 1986). More specifically, under extreme loading, pressure on cartilage causes fluid to exude out of gaps between surfaces causing a fluid film to separate articular surfaces (Sokoloff, 1969; Mankin and Radin, 1985). Joints primarily depend on the adhering film of lubricant on opposing surfaces (products of synovial fluid movement) to withstand

lower loads. Close-fitting joint congruity (such as in the ankle), ligaments, muscles and menisci (in the knee) further enhance joint integrity.

Earlier research on osteoarthritis attributed cartilage breakdown to aging. However, more recent studies show that joint integrity can and does remain normal into old age (Solomon, 2001; Bullough, 1998). These studies also suggest that some types of load stress (such as impact stress) may be more influential in the development of osteoarthritis than other forms (such as friction wear). Research also indicates a possible genetic influence in the occurrence of arthritic change, expressed through metabolic or endocrine factors. Therefore, an understanding of the complex interactions between anatomy, physiology, biochemistry and the biomechanics of a joint are integral to a better understanding of the pathogenesis of osteoarthritis (Ortner, 2003). Nonetheless, activity stress is generally recognized as an important factor.

Articular cartilage and subchondral bone are most centrally involved in arthritic change. Exposure to repetitive loading can compromise the structure of cartilage fibers, which affects water retention and release under loads (Mankin et al., 1986; Hammerman, 1989). Fibrillation of the cartilage surface is an accepted result of cartilage losing its ability to respond to mechanical demand, and is recognized as a primary lesion of osteoarthritis (Woods, 1986). Many researchers also assume that increased pressure on and exposure of adjacent and subchondral bone is associated with cartilage degeneration (Hamerman, 1989). Moreover, the relationship between pain an individual experiences as a result of osteoarthritis and osteoarthritic changes observed in the skeleton are not well correlated (Jurmain and Kilgore, 1995; Jurmain, 1999; Ortner, 2003). As a result, the sequence of effects in

osteoarthritis is not thought of as a simple, uniform process (Radin, 1982; Dieppe, 1987, 1990).

Articular cartilage, bone and synovium do not act independently of each other and should not be viewed as isolated structures. By necessity, however, osteologists focus on arthritic changes in bone adjacent to articular cartilage. Skeletal lesions associated with osteoarthritis include extensive changes to subchondral bone. This is because a greater proliferation of subchondral bone is stimulated after cartilage integrity is compromised (Dieppe, 1987; Hough, 1993). Three changes to bone associated with osteoarthritis are marginal osteophytes, subchondral porosity and subchondral eburnation. Each condition is briefly described below.

Marginal Osteophytes

Osteophytes may develop around margins of joints in severe cases. Brown and Wiess (1988) attribute stimulation of osteophyte development to a breach in the normal vascular barrier of articular cartilage. These lesions represent the body's attempts to "expand the bony framework" to more equally distribute load on the joint, lowering the force per unit area (see Radin, 1972, 1982; Merbs, 1983; Kennedy, 1989). In most cases, marginal osteophytes present as a relatively smooth extension of the joint surface (Ortner, 2003a). Examples of this condition on the acetabulum and first metacarpal are presented in figures 1 and 2 below.

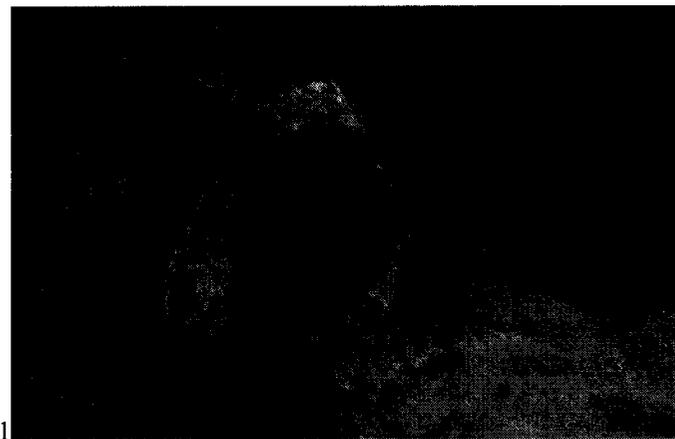


Figure 1. Marginal osteophyte development on the acetabulum of a 61 year old male (Robert J. Terry collection).

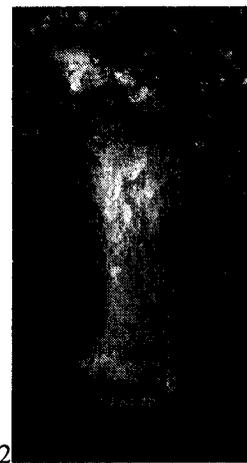


Figure 2. Marginal osteophyte development on the first metacarpal-phalangeal joint area of a 69 year old male (W. Montague Cobb collection).

Porosity

Osteolytic activity (see figures. 3 and 4) observed on subchondral surfaces, also known as porosity, is considered a result of vascular invasion of calcified cartilage from the subchondral bone (Hamerman, 1989).



Figure 3. Subchondral surface porosity on the acetabulum (lunate surface) of a 47 year old male (Robert J. Terry collection).

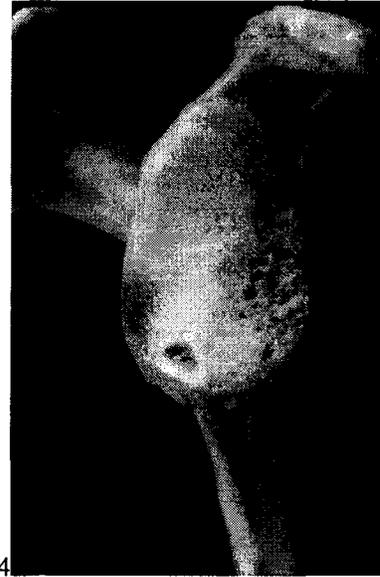


Figure 4. Subchondral surface porosity on the glenoid fossa of a 29 year old female (Robert J. Terry collection).

Porosity may also represent the body's attempt to create pathways for fat to lubricate joints in the absence of articular cartilage (Ragsdale et al., 1981). With further load stress in the absence of articular cartilage, bone becomes porous and underlying trabecular bone thickens creating the sclerosis associated with osteoarthritis (figure 5).

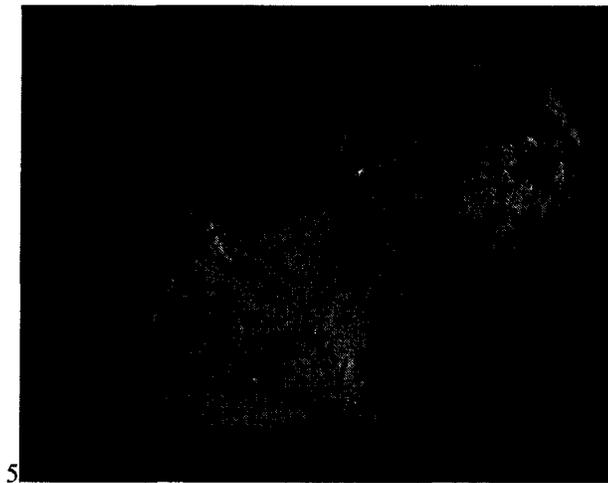


Figure 5. Subchondral surface porosity and sclerosis of the femoral head of a 38 year old male (W. Montague Cobb collection).

Eburnation

With persistent loading and degeneration of cartilage, surfaces can become polished due to direct bone-on-bone contact called eburnation (Merbs, 1983; Hough and Sokoloff, 1989; see figures 6 and 7).



Figure 6. Subchondral eburnation on the glenoid fossa of a 71 year old male (Robert J. Terry collection).

Figure 7. Subchondral eburnation and porosity on the corresponding humeral head (Robert J. Terry collection).

These figures also show that porosity may occur due to the perforation of the articular plate in association with eburnation (Jurmain, 1999). Continuous movement of eburnated surfaces may result in grooves appearing that mark the range of motion (figure 8).

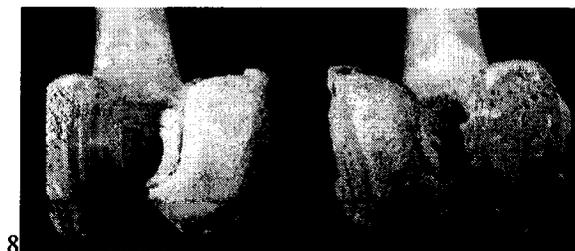


Figure 8. Subchondral eburnation with grooves marking the range of motion on the left lateral femoral condyle of a 71 year old male (Robert J. Terry collection).

The association of marginal osteophytes and porosity with osteoarthritis has been debated based upon contrasting results from radiological, anthropological and clinical studies (Rogers et al., 1990; Moskowitz, 1993). As it is not possible to distinguish between porosity caused by non-osteoarthritis-related factors, some researchers no longer consider porosity a reliable indicator of osteoarthritis (Jurmain, 1999; Rothschild, 1997). As a result, Jurmain and others have proposed only using eburnation to identify the presence of osteoarthritis (Waldron, 1992; Jurmain, 1999). However, porosity and marginal osteophytes are still generally recognized as components of arthritic change.

Collecting Biological Data

Primary causes of death in the Cobb subsamples are obtained from morgue records. Leading causes of death for each subsample are noted to determine differences and similarities between almshouse and non-almshouse groups. Health Officer records from District Commissioner's reports are examined to determine the extent to which mortality in the Cobb sample reflects that of African Americans in Washington, DC as a whole. I obtained data from health officer records dated between 1930 and 1960 for temporal consistency with data gathered from morgue records. Because of differences in available data from year to year, data from health officer records was collected in 5-year increments. Causes of death in the Terry sample are recorded for comparison with the Cobb sample and other population samples of poor individuals.

Five diarthroidial joint areas (first metacarpal-phalangeal, shoulder, elbow, hip and knee) were examined macroscopically in the Cobb collection. The diarthroidial joints are considered to be the "mobilizers" of the body, in that they function in the extension, flexion,

and rotation of joints for walking, grasping, and other associated movement. Diarthroidial joints are gliding joints associated with the movement of one surface on another component of the joint. Examples include rotational ball and socket joints (shoulder, hip), joints with only flexion and extension capabilities (interphalangeal areas of the fingers and toes, wrist, knee, ankle), and those with rotation, flexion and extension capabilities (elbow). Bones comprising each joint were observed macroscopically, using 2 1/2 power binocular magnifier when necessary. The loci on each bone comprising a joint area was scored individually and recorded for right and left sides of the body. Using an ordinal scoring method based on that developed by Jurmain (1975, 1977) and consultation with Steven Churchill (1997), marginal lipping was noted as follows:

0 – no marginal lipping observed.

1 – slight marginal lipping: a sharp-edged area is present on at least a fraction of marginal surface.

2 – moderate lipping: a portion or whole of the margin is extended.

3 – severe lipping: buildup with ‘trough’ between surface and lip (after Pierce, 1987, p. 274).

Eburnation was given a separate score of 4. Figures 9 through 12 provide representative examples of assigned scores.

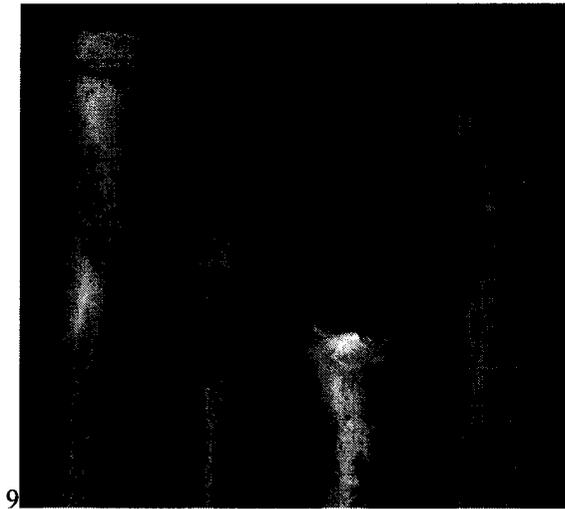


Figure 9. Representative cases of none, slight, moderate and severe marginal lippering on the circumference of the radius (left to right, W. Montague Cobb collection).

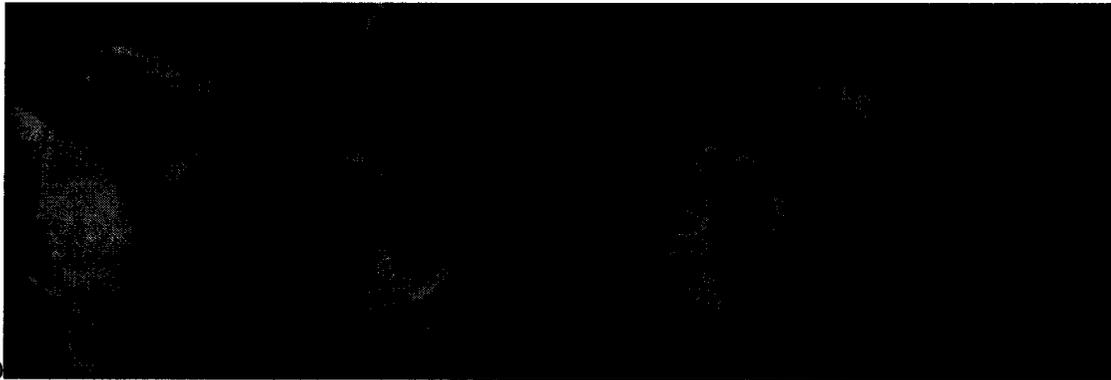


Figure 10. Representative cases of none, slight, moderate and severe marginal lippering on the glenoid fossa (left to right, W. Montague Cobb Collection).

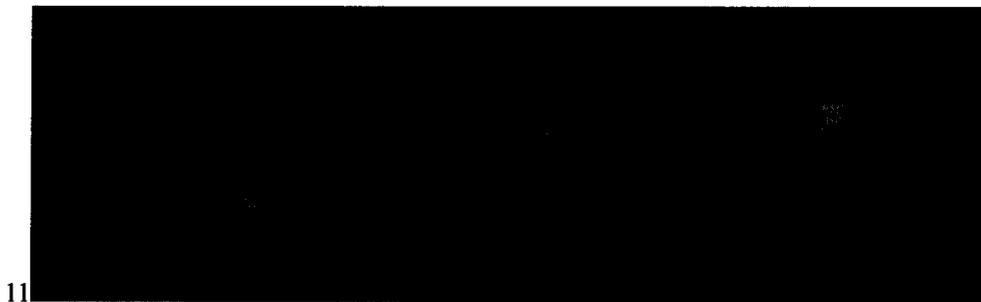


Figure 11. Representative cases of none, slight, moderate and severe marginal lippering on medial condyles of the tibiae (left to right, W. Montague Cobb Collection).



Figure 12. Representative cases of none, slight, moderate and severe marginal lippling on patellar surfaces of the femora (left to right, Robert J. Terry collection).

After separate loci are scored, a total bone score is computed by adding scores for loci on each bone. Then, total joint scores are computed by adding bone totals for each joint (Jurmain, 1975, 1980). Individual scores best present subtle arthritis patterning that composite scores can obscure. However, I also use composite scores for data comparison with other studies, as results presented are commonly the product of such scores (Waldron and Rogers, 1991; Bridges, 1993).

The amount of an articular surface affected by eburnation or porosity was scored separately (Bridges, 1993; Ubelaker and Buikstra, 1994; Ortner, 2001). The following scores were assigned:

A – less than 1/3 of the surface

B – more than 1/3 of the surface

C – over 1/2 of the surface

Figures 13 through 15 provide examples of assigned scores.

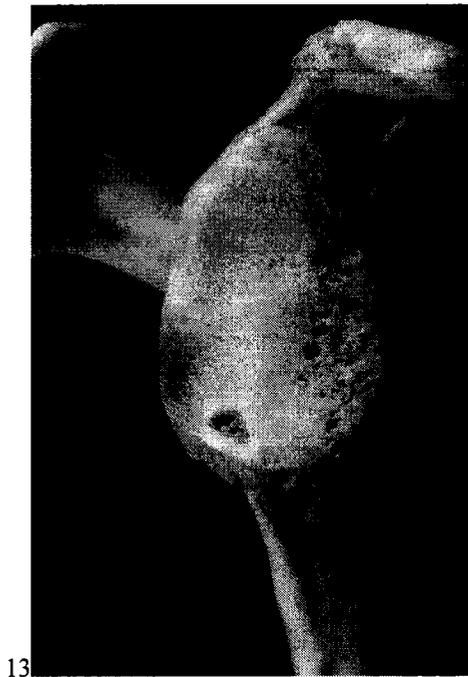


Figure 13. Subchondral surface porosity on less than 1/3 of the articular surface of the glenoid fossa (Robert J. Terry collection).

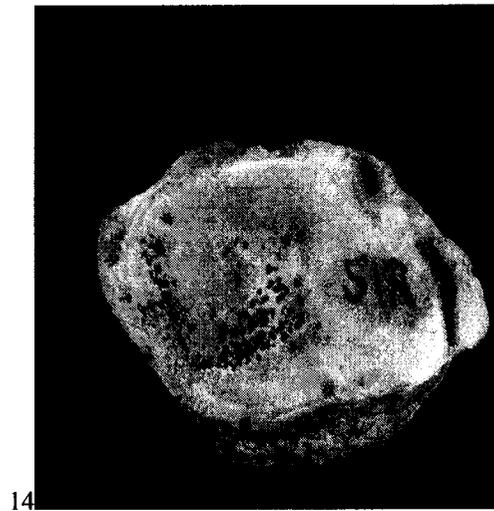


Figure 14. Subchondral surface porosity on more than 1/3 of the lateral surface of the patella (Robert J. Terry collection).

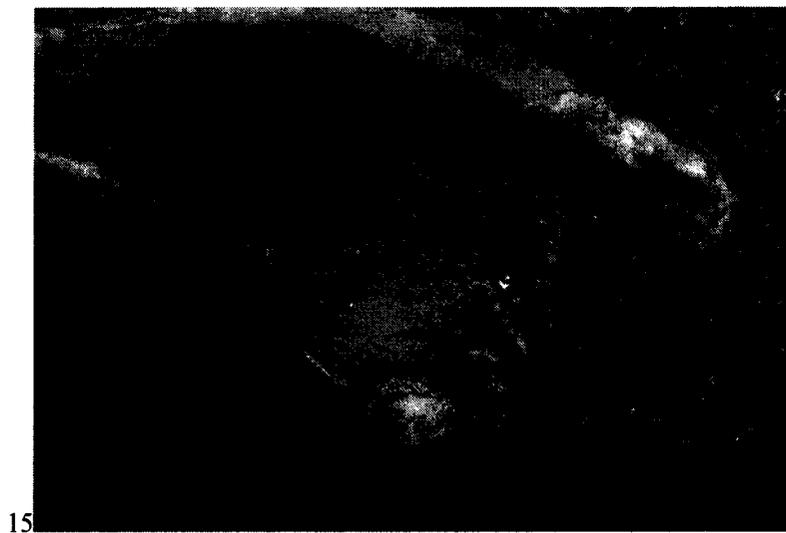


Figure 15. Subchondral surface porosity on over 1/2 of the acromio-clavicular surface (W. Montague Cobb collection).

To check for intra-observer error, I scored and re-scored 30 skeletons from each collection. Both sets of scores indicated that less than 3 percent of scores were different, most of which were between absent and slight categories.

The ever-present uncertainty about the etiology of degenerative disease often leads researchers to include the presence of enthesopathies (also called enthesophytes) in their studies of functional stress (Lai and Lovell, 1992; Rogers et al., 1997; Resnick and Niwayama, 1995). These lesions generally present as rough patches or bony projections at the site of muscle insertions and attachments as a result of prolonged, excessive muscular activity (Larsen, 1997). With this in mind, I also noted the presence of hypertrophy in the ulnar, radial and deltoid tuberosities. These sites were chosen because they are insertion sites for muscles involved in flexion, abduction, rotation and extension of the arm. Therefore, enthesopathies at these sites are suggestive of load stress from engaging in ranges of motion associated with heavy lifting (figures 16 through 18).

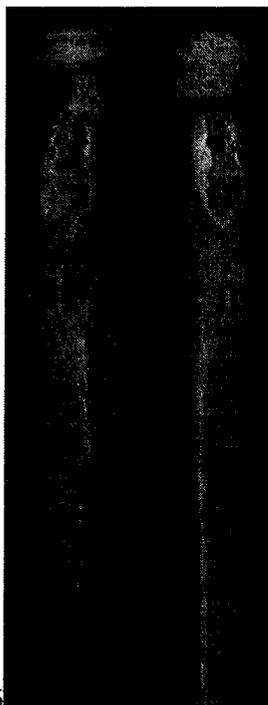


Figure 16. Enthesophytes on the radial tuberosities of a 67 year old male (W. Montague Cobb collection).



17

Figure 17. bilateral hypertrophy of the deltoid tuberosities belonging to a 57 year old female (W. Montague Cobb collection).



18

Figure 18. Enthesophyte on the ulnar tuberosity of a 79 year old male (W. Montague Cobb collection).

Like osteoarthritis, enthesopathies are caused by multiple and complex interactions. Rather than these lesions being the sole product of depositional bone response, early research suggests a displacement of bone from the endosteal area to the attachment surface:

“The notion that the pull of a muscle functions simply to stimulate localized subperiosteal osteogenesis, with the resulting formation of an elevated tuberosity, cannot in itself account for the overall shaping of a bone. The observations that 1) muscles are often attached to resorptive surfaces, and that 2) tuberosities and other bony elevations may have partial or total outer resorptive surface that is actually resorptive in nature, are in direct contradiction to the generally adopted concept that muscle pull itself brings about direct bone deposition” (Hoyte and Enlow, 1966, p. 211).

Moreover, the same systemic factors thought to influence osteoarthritic change are thought to affect enthesophyte formation. For instance, recent studies show that men form hypertrophic bone more commonly than women (Solomon, 2001). Studies showing a positive association between enthesophytes and osteophytes also suggest that there are systemic factors involved in reactive bone formation (Rogers et al., 1997; Rogers and Waldron, 1995, Ortner, 2003b). As a result, Jurmain considers evidence predictably linking enthesopathies with activity stress inadequate (Jurmain, 1999). However, a number of published studies support the association of enthesophytes with activity stress (Ortner, 1968, 1970; Merbs, 1983; Dutour, 1986; Kennedy, 1989). This study does not argue that enthesopathies are a manifestation of osteoarthritis. Rather, the purpose of including enthesopathies in this study is to obtain a more comprehensive profile of activity stress in the sample.

Finally, I noted observations of other indicators of trauma such as osteochondritis desiccans separately based on studies supporting their diagnostic relevance to activity stress (such as Roberts and Hughes, 1950; Smith, 1960; Ortner, 1968, 1981, 2003a; Loveland et al., 1984; Waldron, 1993).

All data was entered into the Microsoft Access 2001 database. For purposes of efficiency, a code name was assigned to each joint locus. For instance, knee joint loci are

referred to as 'kn1'-'kn7' in the table, followed by an 'l' or 'r' to designate left and right side. Each locus has 4 coded categories associated with it for marginal lipping scores, the amount of porosity covering an articular surface, the presence or absence of surface osteophytes and the amount of an articular surface that is eburnated. Returning again to the 'kn' loci, the four categories for the first knee joint locus on the recording form are: 'kn1' (marginal lipping score), 'Pkn1' (surface porosity score), 'Okn1' (presence/absence of surface osteophytes), 'Ekn1' (amount of surface eburnated). Codes were also designated for muscle insertion sites observed for the presence or absence of hypertrophy.

This database was then downloaded into the SPSS data editor to conduct statistical tests. Statistical tests were conducted on data from the Cobb and Terry skeletal series to determine whether or not patterns of arthritis were reflective of habitual or repetitive activity. Because of ongoing debates regarding whether or not slight marginal lipping is an indicator of osteoarthritis, the decision was made to focus statistical tests on the presence of moderate and severe marginal lipping. Hypothesis testing was also influenced by persistent debates regarding the relationship between surface porosity and marginal osteophytes in osteoarthritic change. Therefore, a number of statistical tests were conducted to examine the association between these lesions in the Cobb and Terry samples.

Details regarding test methods and manipulation of data are discussed in the following chapters.

Chapter III: The Social Environmental Context of Poor African Americans in Washington, D.C. During the Late 19th and Early 20th Century

This chapter presents internal and external social and economic pressures affecting the daily lives of poor African Americans living in District neighborhoods and the Home for the Aged and Infirm. These pressures are identified through examining the motivations and the structure of poor relief for Blacks in Washington, D.C. begun during the Civil War. The results of this research indicate that poor Blacks in the District continuously faced social and economic hardships whether or not they sought shelter in municipal housing. Inadequate medical staff and substandard living conditions in the city almshouse posed a considerable health risk to residents. Minimal relief allotments and stringent eligibility criteria for public assistance left young and old poor living outside of municipal housing without adequate means. Information about social networks from morgue records lends insight into the social and economic context of individuals that led to their persistent poverty. The discussion about the differential access poor Blacks living in Washington, D.C. had to relief, housing and labor resources serves as the basis for hypotheses developed to characterize the relationship between persistent poverty, cause of death and patterns of activity stress for individuals whose remains are a part of the Cobb sample. Results indicated that skeletal data reflected the patterns of poverty revealed in the documentary record. As opposed to indicating the relative health of different samples (Rankin-Hill, 1997), results of statistical tests and surveys illustrated the health consequences of being poor in the early and mid 20th century District of Columbia as a young, middle-aged and older adult.

One of the keys to understanding how conditions of poverty persisted among Blacks in the District into the 20th century is to consider extra-local forces involved in the prevalence of poverty in the U.S. as a whole. Namely, rural-to-urban migration and the Great Depression were among the forces that shaped Black occupational and economic conditions and social relations that fall into this category. As a result, these events are the focus of the following sections.

Biological and cultural data indicate that this sample represents poor people who did not have access to social networks like those identified in the First African Baptist Church study. Nonetheless, contact information on morgue records does suggest that individuals were a part of social or family networks. That individuals in the collection were unclaimed for burial indicates that these networks did not provide a buffer for conditions of poverty. However, documents from the Cobb collection do provide an example of an individual from this group asserting agency to counter restrictive criteria of the public relief system. The details of this case are discussed in a later section.

As stated, population increases in urban areas during the post war and industrial areas included an influx of poor Black migrants from the south and poor immigrants (Craddock, 2000). The resulting tenements and shanties that became part of the city landscapes brought new meanings of poverty and poor neighborhoods at the turn of the century. Discourses concerned with a 'crisis of order' in the American City are considered a direct result of this aspect of urban expansion (Boyer, 1978; Ward, 1989; Wilson, 1991; Katz, 1986). As these poor neighborhoods became less distinct from middle and upper class neighborhoods and the awareness of infectious disease among the poor increased, the fear that poor people would contaminate middle and upper class social groups spread. This logic continued to be

followed after environmental and sanitary factors were given consideration in disease prevention initiatives. As a result, discourse making poverty, slums, disease and deviant behavior analogous concepts/terms prevailed among privileged classes, medical authorities and social thinkers into the 20th century (Ward, 1989; Craddock, 2000).

This basis for this fear was the widespread acceptance of biological predisposition as an infectious disease etiology, which placed the cause of disease on the individual (Torchia, 1977; Galishoff, 1985; Hunter, 1997; Craddock, 2000). Structural problems associated with the growth of poor neighborhoods became more evident as cities expanded in general. As a result, discussions about disease were linked to poor areas of the city and the behavior of poor individuals. This in turn justified the inclusion of behavior reform in public health initiatives that led to the establishment of almshouses (often outside the core of the city) to isolate the poor. Outside the context of municipal housing, this discourse facilitated the neglect of the poorest neighborhoods to the end of housing reform focused on working and middle class neighborhoods. Therefore, the placement and treatment of the poor in the city involved an urban spatiality that veiled the consequences of uneven capitalist development and exploitation through isolating the poor (Soja, 1989, p. 23). Therefore, the conflation of agendas to contain infectious disease and maintain social order led to a system of poor relief that privileged the status quo over concern for the well being of the poor. As a result, relief failed to improve the lives of the poor.

Discourse regarding the crisis of order in cities was based on both class and ethnicity, locating urban problems with poor people who were mostly foreign immigrants and Black migrants from rural areas. Washington, D.C. did not receive the same influx of foreign immigrants as other cities like New York, Baltimore and San Francisco at the turn of the

century and afterward. Between 1850 and 1910, foreign immigrants represented less than 10% of the White population in the District (Collins, 1997). Therefore, discourse about poverty and disease was highly racialized, focusing on an influx of Blacks that was unparalleled in other cities during the same period.

Black Migration to the District

African Americans made up a substantial portion of the District's migrant population throughout the late 19th century and into the 20th century. The historical record documents the unique role Washington, DC played in the early rural-urban migration of Blacks in the United States. Former slaves arriving in the District during and after the Civil War represent some of the first African Americans to migrate from rural areas in the South – some 50 years before the northward Great Migration more extensively documented in the historical record (Byrand, 1999). Between 1860 and 1880, Washington, DC maintained a higher Black population in overall numbers and proportion than other eastern cities to which Blacks migrated such as Baltimore and New Orleans. Less than half of Black DC residents were born in the city, which is a trend that is maintained throughout the remainder of the century (Ward, 1971; Johnston, 1993; Christian, 1995). The characteristics of the Black community of Washington, D.C. formed during this critical period of migration remained similar through the early 20th century. In particular, residential and employment patterns that began to emerge at the end of the 19th century were fully evident in housing and employment data from the 1930s. These trends and their particular relevance to individuals from the Cobb collection are discussed in the following sections. Trends regarding poor relief, settlement and employment for Blacks are closely tied to how the city chose to accommodate the influx of Blacks seeking refuge in the District during and after the Civil War.

Therefore, relief efforts for housing and health care established during and after the Civil War shaped the structure of poor relief for Blacks in the city through the 20th century. As a result, historical context of these patterns will begin with this period.

Migration and Poor Relief

“There are at this time 40,000 Negroes in the District, a majority of whom flocked to the seat of government just after the war, expecting to gain an easy livelihood and find perpetual employment at the hands of those who gave them freedom; but the reaction come (sic), and with it hard times, and these people found that freedom had its trials and tribulations as well as joys and pleasures. Once imbued with the customs of city life, they were loath to return to the farm and field, and they have remained in the shanties and huts which fill the alleys and back streets of Washington and Georgetown. Poorly clad, ill fed, and surrounded with filth and squalor, they fall an easy prey to disease and are a constant care to the health authorities” (Townsend quoted in Joint Select Committee Report, 1878).

Black migrants were also blamed for the long period of non-local governance before 1871 as well as much of the loss of territorial government in 1874 (a condition that remained until 1975). Whites and elite Blacks felt that direct federal control was better than giving Whites and Blacks local suffrage because of the burden new arrivals (mostly Black migrants) upon the city (Greene, 1963; Collins, 1997). The federal government’s disenfranchisement of all District residents paralleled the rise of Jim Crow laws to further discriminate against Blacks in Washington, D.C. Therefore it serves as an early example of the disproportionate limitations placed on Blacks’ access to resources.

Relief policies established to deal with the influx of Blacks into Washington, D.C. emphasized a concern for social order. District officials thought that the large congressional appropriations for poor relief in the District were responsible for the steady influx of paupers and freedmen (Commissioners of the District of Columbia, 1874). The dependency that social reformers thought slavery engendered influenced the popular notion that Blacks had a ‘natural tendency to seek shelter and protection at the seat of government’ (Commissioners of the District

of Columbia, 1874; Joint Select Committee, 1878). Since spending these funds ‘too lavishly’ was thought to encourage pauperism, providing aid to the ‘deserving poor’ was a pressing concern for municipal authorities. As a result, the bureau assigned visiting agents to investigate cases and make recommendations for aid (Greene, 1963; Horton, 1977). In spite of overwhelming need, small numbers of people were provided relief during the mid and late 1800s (Swain, 1868; Greene, 1963; Horton, 1977). After the D.C. Freedmen’s Bureau closed in August of 1868, municipal efforts toward poor relief continued through local and federal government appropriations and private charities. In January of 1869, \$33,000 of local and federal aid was provided for the relief of the poor. When the funds were distributed in 1870, so as not to ‘encourage pauperism,’ less than half of the 102,781 people declared destitute and in need of relief were granted aid. Eighty-four percent of those destitute persons were Black. (41st Congress, 1871). As Blacks represented the majority of individuals in need, they were disproportionately affected by the limited distribution of funds.

As with the District’s role in Black settlement to urban areas, that the District economy was primarily based on expansion of the federal government also made it unique to other cities in the U.S. (Collins, 1997; Greene, 1963). Coupled with the fact that Blacks migrating to the District lacked work skills appropriate for making a living in a city exacerbated their hardship during economic downturns during the 19th century as well as the Great Depression.

Poor Relief for Blacks in the District, 20th Century

Although consistent information on the distribution of poor relief to Blacks in the District is not available, public welfare records from the time period relevant to the Cobb collection indicate that trends of inadequate relief and difficulty gaining employment evident during the 19th

century continued through the mid 20th century. Because information about the distribution of relief to Blacks during the Depression is the most detailed, it will be the focus of this discussion.

First, it is important to note that relief was only available to District residents. Individuals had to have continuous residence in the District for 12 months to be considered a resident (Hudnut, 1930). Therefore, newcomers had limited access to relief and support in the form of temporary housing and assistance in finding employment. In fact, relief efforts for non-residents focused on temporary lodging with limited meals and returning individuals to the areas from which they came. Obviously, this caused economic hardship for individuals who were already poor. Although these limitations affected all poor migrants to the District, Blacks were at a particular disadvantage due to racial discrimination. A 1930 study of transient services in the District provides extensive information on housing and resources available to Blacks in Washington, D.C. Only one-sixth of municipal and private lodging houses for men would accept Blacks (Hudnut, 1930). Therefore, 116 Black men can be accommodated per night in facilities as opposed to 608 White men. Also, many of these homes allowed only several nights lodging before being forced to leave. Lodging without limitation of residence often required residents to pay a nominal fee after a certain length of time, which many could not afford. Free meals were seldom offered, which put the health of individuals at a greater risk. A smaller number of lodging houses existed for women, and those accepting Blacks were even fewer. Only 6 transient Black women could be accommodated for free per night in the District as opposed to 20 White women. No information of lodging houses charging a fee could be obtained. The transient reports also indicated that a very limited number of employment agencies provided help to transient Blacks. Only 6 of the 20 agencies mentioned assisted Blacks with finding a job. Three of those strictly

provided domestic referrals, which was primarily a woman's occupation (Hudnut, 1930; Clarke-Lewis, 1994).

That Blacks were disproportionately affected by the Depression is reflected in their representing the majority of individuals and families in need. Although Blacks represented 27.1% of the District population in the 1930 census, they constituted 58% of the unemployed. Almost 50% of men and over 50% of unemployed women were under the age of 30. The mean age of the partially unemployed and was between 30 and 34 years of age. In 1937, the overall unemployment rate for the District was 9.9%. According to data organized by racial group, the unemployment rate for Whites was 5.4% and 22.5% for Blacks. That same year, older Blacks represented only 16% of the aged population in the District but made up 56% of old age assistance grant recipients (Public Assistance Division, 1937). Although a more systematic program of relief came about after an act of Congress expanded relief beyond an emergency basis in February of 1935, agencies were continually plagued with insufficient funds for providing relief to all applicants in need (Public Assistance Division, 1934, 1935). In 1940, the unemployment rate for Blacks remained 2.4 times that of Whites and made up 59.2% of the emergency work relief rolls.

With the initiation of the Federal Works Progress Administration [WPA] program in August of 1935, employable families and individuals receiving aid through the Public Assistance Division were transferred to WPA. Because federally funded job assignments would reduce the number of people needing relief, the Board projected a reduced caseload (Public assistance Division, 1935). However, jobs were not available for all employable individuals and families. Because congressional appropriations for public assistance were not sufficient to care for unemployable cases and individuals who did not receive WPA assignments, the Public Assistance Division only cared for unemployable cases. By April of 1936 relief was entirely cut for families

with an employable person whether or not that person could secure employment. Thus began the policy by which poor employable people often slipped through the cracks of public assistance and into a cycle of poverty (Public Assistance Division, 1936). Individuals receiving assistance were often subject to grant cuts because of the municipal adjustment to providing relief without federal emergency funds. In November of 1935, relief was stopped for all families for reinvestigation and only families that reapplied at PAD offices were reaccepted. This was surely a difficult task for some families, as the number of offices was cut in half (from 8 to 4) and staff cut from 740 to 286 after WPA was established (Public Assistance Division, 1935-1936, 1936). Reaccepted families had to live on a grant cut by 25% for the Month of December (Public Assistance Division, 1935-1936). After public assistance in the District was distributed according to the statutes of the Social Security Act in January of 1936, 2/3 of funds came from the local government. This policy made it necessary to have grant limits for general assistance, old age assistance, aid to the needy blind and aid to dependent children that were insufficient to cover the cost of living. The Board suggested a 50-50 match of federal and local funds for aid so that the amount of grants could be better suited to individual expenses (Public Assistance Division, 1936-1937, 1937). Even when grant caps were removed in 1943, appropriations remained inadequate. As a result, in 1945 grants were reduced by 10% to ensure 'equitable distribution' of funds between January and June (Public Assistance Division, 1945). In addition to inadequate appropriations, the steady increase in the number of cases prevented bringing grants in line with the cost of living. In 1949, grants were based on 1946 prices. Nonetheless, the board was forced to reduce aid by 12%. Since rent prices are fixed, cuts translated into less money for food and utilities (Public Assistance Division, 1949). Grants were 22% below living costs through the mid 1950s (Public Assistance Division, 1953). It

is also important to note that inadequate staff continued to have a negative impact on the distribution of funds, which combined with inadequate grants, caused hardship:

“The staff, limited by congressional appropriation, has not been sufficient in number to make prompt and thoroughly efficient investigations or for rehabilitation services necessary to make families self-supporting and to prevent permanent breakdowns” (Public Assistance Division, 1938, p. 187).

Reports noted that it took an average of 6 months to investigate old age assistance cases (Public Assistance Division, 1937-1938). Although elderly persons were not investigated on the basis of employability, existent sources of support, age and length of residence in the District has to be verified. To receive old age assistance, individuals have to be 65 years of age or older, with residence in the District 5 out of 9 years preceding application. One year of residence had to immediately precede application (Public Assistance Division, 1936, 1937). Verification of age was often difficult since some states did not require registration of births, especially among African Americans (Condran, 1980; Franklin and Moss, 1994). Moreover, migrants arriving in the city often had no means of proving when they first arrived without a permanent address or record of their arrival with an agency that provides temporary assistance to newcomers. Next to insufficient justification of need, available reports indicate that insufficient evidence of eligibility was the second most popular reason for denial of aid (Public Assistance Division, 1936, 1937, 1938, 1939, 1940, 1941). Therefore, the elderly poor that received grants were engaged in a cycle of poverty maintained by inadequate aid and others fell through the cracks of the system if unable to prove eligibility.

Social Networks and Resistance

As stated, the circumstances under which individuals came to be a part of the Cobb collection indicates that these individuals did not have access to social networks that buffered

conditions of poverty. Contact information from the morgue records of 30 individuals (13 women and 17 men) confirms this indication. Although these data do not provide conclusive evidence, they do lend insight into the type of social networks to which people in the sample belonged. 25 of these records listed next of kin or friends (12 women and 13 men). In 13 cases, relatives were listed as contacts for the deceased. Parents and siblings were listed most often (4 cases each), followed by husbands and children (2 cases each) and an aunt. In all but 2 cases, authorities were able to locate or contact relatives. The remaining individuals had friends listed. In all but two cases, records indicated that friends had been located or contacted. In only 2 instances (1 relative, 1 friend) contacts stated that they wanted nothing to do with handling the affairs of the deceased. That remains ended up a part of a research collection of unclaimed individuals suggests that these people belonged to families or friendship networks of people who were equally destitute and without means of support.

Additional notes on records indicate that 3 individuals in the collection were homicide victims. In one case, a sister requested that the body be 'disposed of by the homicide squad.' Two other records indicated that individuals died at the casualty hospital.

Therefore, Black migrants to the District arrived poor and were at risk for remaining in a state of poverty as a part of larger family and friendship systems made up of poor individuals. Although information on the violent death cases in the collection is not conclusive, the presence of violence and trauma in the lives of these individuals cannot be ignored.

Based on the characteristics of social networks, it seems that the most destitute individuals were hardly poised to effectively counter the restrictive criteria used to evaluate applicants for public assistance. Nonetheless, correspondence from the Cobb papers provides evidence of one such case.

The Case of Samuel Burgess

Samuel Burgess applied for Old Age Assistance in September of 1951, and was denied on the grounds that he lacked adequate proof of his age. Burgess obtained Cobb's assistance with verifying his age for an appeal to the Board of Public Welfare in 1953. Information on Burgess' duration of residence in the District, occupational status socioeconomic status and physical condition indicates that like individuals in the Cobb skeletal sample, he represents the destitute poor in the District. Therefore, this case is important because it shows an individual representative of the most destitute poor addressing the relief system's failure to provide assistance rather than passively accepting Board policy. Samuel Burgess was born in Fauquier County, Virginia. He could neither read nor write and has no knowledge of when he was born. His mother died and he subsequently left his town at an early age. As a result, Burgess has no contact with or knowledge of remaining family. As an adult, Burgess worked 'various jobs' in Virginia and then came to the District before the end of World War I (W. Montague Cobb papers, box 47). Correspondence indicated that he worked as a handyman. At the time of his appeal, his address was listed as 6 New York Avenue, NW.

After Burgess was denied public assistance, he requested a hearing with the Board referee, which was granted on March 12, 1953. By this time Burgess was physically unable to work regularly and 'only earned enough to pay for meals' (W. Montague Cobb papers, Box 47). Describing Burgess' appearance in his written report, the referee stated that Burgess 'had the appearance of a man in his sixties and of being in failing health' (W. Montague Cobb papers, box 47). Based on documents listing different years of birth Burgess claimed throughout the years, the referee determined that Burgess was born in 1890. Therefore, he declared that Burgess was not 65 years old when he applied for Old Age Assistance and upheld the original decision of the Board.

A week later, Burgess requested that the Social Security Administration Appeals Council review the referee's decision. His request was granted 10 days later on March 30, 1953). Correspondence then indicates that Burgess continued the process with the assistance of attorney John Sprigs, Jr., who communicated with the Bureaus of Retirement Claims and Vital Statistics on his behalf regarding census records that could possibly be used as proof of age (W. Montague Cobb papers, box 47). Cobb was contacted to provide an estimate of Burgess' age based on skeletal x-rays roughly 1 week later. Cobb used an age assessment method developed by Todd and based on his own research on skeletal age changes (W. Montague Cobb papers, box 38, folder 5). Cobb had x-rays of Burgess taken on April 8, 1953, on which he observed skeletal changes that led him to estimate that Burgess was between 65 and 70 years old. Cobb submitted a written report to the Appeals Council on April 24, 1953. The Appeals Council then submitted Cobb's work to Smithsonian physical anthropologist T. Dale Stewart and University of Pennsylvania physical anthropologist Wilton Krogman for review in June (W. Montague Cobb papers, box 38, folder 5). Stewart questioned Cobb's objectivity on the grounds that he did not provide an accurate range of possible error for his assessment (10 years rather than 5). Nonetheless, he agreed with Cobb's assessment based on skeletal changes shown on x-rays. Krogman did not review the x-rays, but read Cobb's written report and stated his confidence in Cobb's conclusion based on their common training in age assessment methods.

The Appeals Council rendered a decision on July 15, 1953. The council was reluctant to accept skeletal assessment of age as a generally reliable method for cases like Burgess'. However, based on Cobb's report and 'the complete absence of other reliable evidence,' the council determined that Burgess was born in 1888. Although this finding made Burgess ineligible for

public assistance when he first applied in September of 1951, he would be eligible upon filing a new application (W. Montague Cobb papers, box 38, folder 5).

As stated, this case is an important example of the agency of a destitute individual living in Washington, D.C. during the time period relevant to this study. This case is also important because understanding how individuals shaped their experiences within milieus of power is integral to developing an accurate social context for this sample (Meskell, 1998). Samuel Burgess is an individual located in a ‘specifically existing moment’ whose case shows how the structure of a nationally established relief system affected the conditions of poverty in Washington, D.C. for the most destitute elderly individuals (Johnson, 1989). Moreover, his case provides an example of a possible response to these conditions. Rather than privileging the individual as a unit of analysis, this case shows how constituting factors like age, class and ethnicity do not have to be prioritized in opposition to the individual. An understanding of individuals as a site of interface between biological and social domains is central to understanding human biological and social experience from a political economic perspective. Therefore, individual cases like Burgess’ can be used to enhance our understanding of how local and extra-local processes articulate to influence conditions of poverty in a specific area.

Housing and Residential Settlement

After a Freedmen’s Bureau office opened in Washington, D.C. in July of 1865, shanties were erected in alleys from scavenged materials to address the refugee housing problem (Horton, 1977). Scholars have written extensively on African American ‘alley life’ in the District (Greene, 1967; Borchert, 1980; Johnston, 1993; Byrand, 1999). However, it was not the predominant housing for migrant Blacks (Collins, 1997). Lodging for Blacks in ‘contraband’ camps, army

barracks and local farms has not been researched to the same extent, although they were an initial point on a continuum of municipal residence for the poorest Blacks in the city. Initially considered temporary housing for refugees, the housing shortage led to building additional structures on campsites throughout the city for longer-term residence. Freedmen's Village in Arlington, VA was the largest and longest running contraband camp in the area. Located on property seized from General Robert E. Lee during the Civil War, the camp opened in December of 1863. The camp included 100 small two-family homes, shops, a day and evening school, a church and home for the aged and infirm (Fry, 1954). Freedmen performed farm labor, work in the shops or work for the army. If laborers were not paid wages, they received food rations (Horton, 1977). Villages were largely supported by rent, profit from farm produce and income taxes from the highest paid laborers. The Freedmen's Bureau also converted army barracks to tenements for 350 families in the District. Food and fuel were issued to needy residents and employment provided for a few. Residents were required to pay rent or work on the grounds in exchange for lodging.

After all contraband camp and army barracks were sold trustees of the Refugees and Freedmen's Fund bought lots in the city and built tenements for more permanent housing. The largest of these plots was 375 acre Barry Farm in southeast D.C. Nonetheless, housing remained limited and conditions were substandard. Between 1874 and 1877 the Board of Health condemned a substantial proportion of these dwellings (Kober, 1907).

In settling at the city's west and east edges and central alleyways throughout the late 1880s and 1900s, Washington's poorest Blacks followed the trend established by free Blacks before the Civil War (Groves and Muller, 1975; Johnston, 1975, 1993; Borchert, 1980). These areas were not only peripheral in terms of location, but also in their lack of inclusion in city sewerage and

paving scheme as well as access to public transportation. These areas were often swampy and disease ridden. During the 1880s, central city space was at a premium for residential and commercial use, as Washington's public transportation initiatives did not keep up with population growth. The lack of heavy industry in the core of the city also made it attractive to wealthy Whites and well-established Blacks who could afford it (Johnston, 1993; Byrand, 1999). Therefore, newcomers and people without economic resources were at a disadvantage in the competitive housing market. As stated, the Black population of Washington, D.C. during this time was largely made up of latecomers to the city. Newcomers were only outnumbered by individuals less than 15 years old and 90% of individuals 50 years of age or older were born outside of the District (Johnston, 1993). Moreover, the lack of job skills applicable to an urban area among migrants forced them to accept lower income occupations, which made it impossible for them to economically compete for ideal areas. The neighborhoods and dwellings in which many poor Blacks lived lacked plumbing, were poorly ventilated and crowded. As a result, the likelihood of illness from respiratory problems and infectious diseases like tuberculosis was extremely high.

District of Columbia commissioners recognized that better living conditions for the poor would help lower crime and disease. Nonetheless, efforts to create cleaner and safer housing for the poor were undermined by emerging social attitudes geared towards maintaining the status quo. The Washington Sanitary Improvement Company was formed in 1897 under the direction of businessmen and physicians, including the District's first director of the Board of Health (Kober, 1907). The company's initial goal of building improved housing for the poor in alleys was abandoned to ensure profits for investors. As stated, the company was 'a business corporation with the objective of offering to capital [investors] what directors believe to be a safe 5%

investment and at the same time supply wage earners improved, wholesome houses at reasonable rents' (Kober, 1907, p. 27). In addition to shifting the focus of their energies from the poor to wage earners, dwellings were only built on established streets and avenues. Kober explained the rationale for this shift in the following quote:

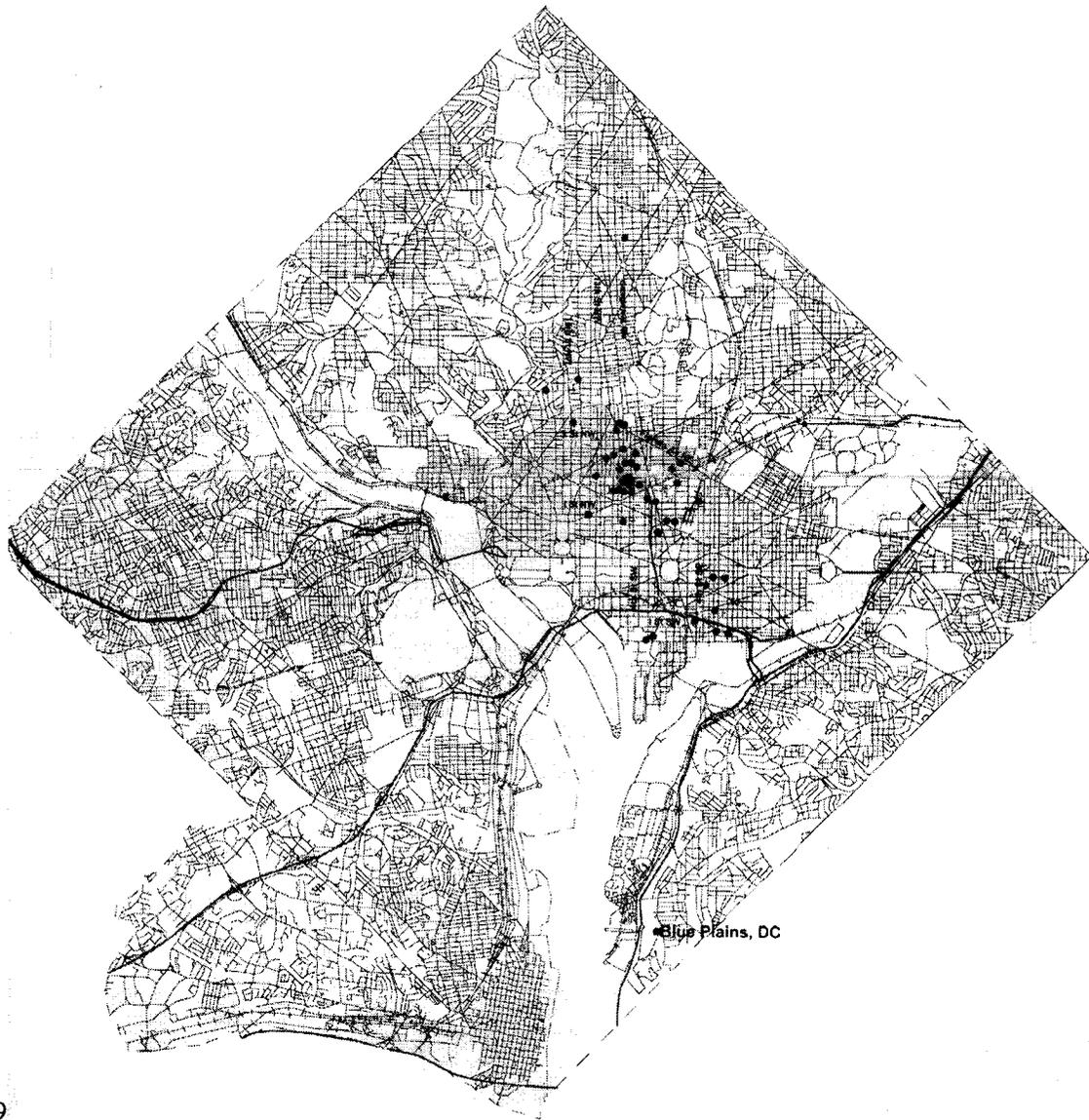
“...while the original intention was to provide homes for the alley residents and thereby remove the slums, it was considered best to begin this movement by providing improved dwellings for the better class of wage earners, in the belief that houses vacated by them would be rented by the next grade, and so on until the bottom of the ladder was reached. It is confidently believed that in work of this character it is always best to begin at the top” (Kober, 1907, p. 31).

Kober's involvement with the Washington Sanitary Improvement Company exemplifies the role of health professionals in operationalizing prevailing social agendas of the time. This 'trickle down' approach to housing reform underscores the careful neglect of the poor and inattention to problems of poverty inherent in the District's approach to housing reform.

Although there was a Black residential presence in most parts of the city, certain areas did have a higher concentration of Blacks than others. By the early 1900s, some of the most prominent Black neighborhoods were LeDroit Park and Shaw in northwest Washington and Barry Farm in the southeast quadrant (which began as a settlement area for Black purchased by the Freedmen's Fund in the 19th century mentioned in the previous section). Restrictive covenants for White-owned housing coincident with an increase in the White population also fostered expansion of Black residential areas outside the city's core to more unsettled parts of the District. The supreme court upheld these covenants in 1926.

Seventy addresses of non-almshouse residents of the District were listed in morgue records. The majority of residences seemed to cluster in areas cited in studies of Black communities in the District in the late 19th and early 20th centuries as having high African American concentration (Ginsburg, 1938; Groves and Muller, 1975; Johnston, 1993; Byrand, 1999). The following map (figure 19) indicates that the majority of addresses were concentrated

in the Northwest quadrant north of I street, bordered by 13th street to the west, 5th street to the east and south of Florida avenue.



19

Figure 19. Washington, D.C. map showing location of residents living in the general population from the Cobb sample and Blue Plains.

Another small cluster of residences was found in the northwest quadrant north of Florida Avenue up Georgia Avenue in the Brightwood Park neighborhood (bordered by Ingraham street to the north). South of the capitol, a small cluster of addresses between 4th streets southeast and southwest was found. None of these addresses were located further south than M street. The

location of most addresses north of I street NW is consistent with existing data on residential concentrations of Blacks in the District in the late 19th and early 20th century. However, Johnson's study of Blacks in the District during the 1880s cites northern and western peripheries of the city as the most heavily concentrated with Blacks. Byrand's study of residential and occupational patterns in the Shaw neighborhood in northwest Washington between 1880 and 1920 cites the area as an important one for Black settlement in the District, as well as business development. Shaw is loosely defined as an area of northwest D.C. bounded by Georgia avenue to the east, 14th street to the west, Florida avenue to the north and L street to the South (Byrand, 1999, p. 23). Therefore, many of the addresses in the largest cluster area on the map fall in the Shaw neighborhood.

The 1938 investigation of relief to Blacks mentioned earlier notes a high concentration of Blacks in northwest Washington between 16th street and Georgia Avenue, bordered by Florida Avenue to the north and S street to the south (Ginsburg, 1938, p. 67). The author of the study also notes a high Black concentration along the borders of the Potomac and Anacostia rivers. The addresses of individuals in the Cobb collection south of the capitol do indeed fall in this area. The addresses of people in the Cobb collection indicate a consistent presence of Blacks in the Shaw neighborhood and bordering areas for nearly 100 years. This also means that the conditions of poverty associated with individuals in the Cobb collection can be reliably analyzed within the context of internal and external economic and political forces affecting the Black Washington community noted in aforementioned studies and reports.

Labor and Health Care

Post- Civil War Employment Opportunities

As stated, most Black migrants to the city arrived from rural areas in nearby southern states. As a result, most individuals had labor skills inappropriate for earning a living in a city. Rather than providing a means for financial independence, jobs were mainly provided in exchange for material (housing, food, and clothing) relief. Therefore, employment opportunities served to keep Black refugees dependent on an inadequate relief system reluctant to provide help on a large scale. Many grants required labor in exchange for rations. Freedmen's officials noted that many Blacks without a form declaring them destitute and needing to work in exchange for items received could not get work (Swain, 1868). Government appropriations were only adequate for temporary unemployment of a limited number of refugees (Fry, 1954). Unlike the rural south, Washington, D.C. was not surrounded by enough farms to accommodate freedmen for labor contracts with former slave owners. The Freedmen's Bureau's attempt to relocate unemployed refugees to areas with more job opportunities was unsuccessful (Dyson, 1941; Fry, 1954). Many were reluctant to participate in the relocation program for fear of permanent separation from their families, or virtual re-enslavement on plantations. Many accepted jobs in spite of these fears due to threats to deny future aid to able-bodied freedmen refusing assignments. Therefore, job opportunities provided by the Freedmen's Bureau focused on relocation, although the effort was largely unsuccessful. For those remaining in the District in need of the paltry work and material aid provided, the work structure did little to provide job training that would better prepare them for life in an area without extensive industry. This limited future employment of Blacks to unskilled labor, which paid the least. As a result, individuals remained in a cycle of poverty reflected in their housing conditions, which had a negative impact on their health.

Johnston's sample study of 1372 Black households and 5730 individuals drawn from 1880 census enumerators sheets, 86% of Blacks were engaged in unskilled, low-paying jobs (Johnston, 1993). In fact, Washington lacked the skilled artisan class evident among Blacks settled in northern cities and New Orleans during the same time (Johnston, 1993; Hershberg et al., 1974; Blassingame, 1973). These occupational patterns are verified in the studies of Black communities in Washington, D.C. during this time period cited above. Nonetheless, Black skilled artisans were not guaranteed better employment due to competition from White tradesmen and the seasonal nature of work. The majority of individuals (69.3%) worked as laborers, servants, washerwomen or housekeepers. That Blacks were relatively confined to these types of jobs is evident in the mere 3% of individuals holding low white-collar jobs or above.

The occupational status of Blacks in the District changed little at the turn of the century and beyond. For instance, a study of occupation and residence in the Shaw neighborhood, an area known to have a high Black concentration, showed that the majority of household heads were employed as laborers between 1880 and 1920 (Byrand, 1999). Again, it was seen as the result of racial prejudice and the limited work skills migrants possessed applicable to an urban environment. That Washington's economic base was not derived from industry was also a factor.

The period between 1910 and the 1920s reflects the continuing trend of Blacks remaining on the bottom of the occupational structure. Ninety per cent of employed African American males worked as day laborers, janitors and servants, and 70% of all positions as waiters, laborers in public service and helpers in building and hand trades. Similarly, Black women made up close to 80% of all people working in domestic service and nearly 70% of all people working in the unskilled labor sector. The single largest factor in the primary confinement of Blacks to menial jobs was systematic racism. During and through the decade following World War I, the Wilson

administration circumvented civil service commission regulations to keep Blacks from obtaining government positions. Requiring pictures with applications as well as allowing military officials to hire the top few applicants were some of the more frequently used tactics (Hayes, 1941; Collins, 1997). In addition, the city's police department and street and railway companies refused to hire Blacks. Government agencies that did hire Blacks included the Post Office, Department of the Treasury and the Navy. However, employees were confined to separate work facilities based on ordinances established by the Wilson administration.

A 1938 investigation of relief for Blacks in the District indicates the persistence of these patterns. Citing information from the 1930 census, 60% of Black men in manufacturing, mechanical and transportation industries were laborers (Ginsburg, 1938). Moreover, 40% of Black men in trade and 80% of those in public service were laborers. Eighty-five per cent of working Black women were employed in domestic service. Blacks made up 63.9% of the workforce in dyeing, laundry and cleaning businesses, and women made up 52.4% of this group.

A 1930 study on Black employment patterns cited in the investigation indicates that as was the case 50 years prior, Blacks were largely confined to this type of labor (Greene and Callis, 1930). Researchers interviewed 330 employers at industrial and business establishments to find out how many employed Blacks. Of the 259 that employed Blacks, only 71 offered jobs with advancement opportunities and 24 provided opportunities to perform higher-paying skilled labor. In spite of the actual economic conditions, the hope of finding work in the Nation's Capital led to a continued influx of Blacks to the District. Between 1930 and 1940, the Black population in the city grew 41.9% (Collins, 1997).

New Deal policies before 1935 hardly impacted the economic condition of Blacks across the country. Work relief programs under the Hoover and Roosevelt administrations often

excluded Blacks from their rolls. Only after the Roosevelt administration made a concerted effort to include Blacks in New Deal programs after 1935 was it credited with having a positive influence on the everyday lives of Blacks (Collins, 1997). In fact, the WPA became a source of Black income rivaling agriculture and domestic service (Sitkoff, 1978). In many cities, the percentage of Blacks in the WPA ran 3 to 5 times higher than their percentage of the population. Nonetheless, the WPA provided few job opportunities for Blacks in the District. Other than sewing and household aid projects, the WPA offered little training in Washington (Ginsburg, 1938). Although Black women were trained in these projects, employment opportunities were limited. Not only did the District lack a large garment industry, but most department stores and dress shops only hired White women. According to Health Department reports, public health nurses requested household aids for work in homes where a woman who recently gave birth (Board of Public Welfare, 1940). However, they were only needed on a temporary basis. Although WPA trained household aids were in demand by local housewives, employment references were often required. This put women who were long out of work at a disadvantage for job opportunities. Moreover, these women were seldom paid more than non-WPA trained housekeepers. Therefore, the WPA offered little additional opportunity for employment to Black women or Blacks in general. It is also important to note that due to an increase in case load, in 1941 the WPA raised its standards of physical ability for unskilled labor; people able to perform 'light work only' were laid off. As noted in the previous section, Blacks were at a greater risk of illness, and it was likely that they made up a majority of individuals limited to performing light tasks. This is yet another way that the underemployment of Blacks was amplified to exacerbate the conditions of poverty in the District.

Persistent unemployment further caused economic hardship among people already paid the lowest wages. Seventy-nine per cent of unemployed Blacks in 1880 were jobless for more than 3 months and over half were out of work for 6 months or more of the year (Johnston, 1993). Therefore the occupational status of Blacks, characterized by racial discrimination, unskilled labor and low wages helped to maintain conditions of poverty reflected in their residence characteristics and patterns.

Health and Health Care

Beginning in 1880, \$13,000-\$15,000 was included in the federal budget for poor relief in the District, most of which went to health care (Horton, 1977). Prevailing social and biological models amplified the link between infectious diseases, slums and the poor rather than economic, occupational or environmental causes (Barnes, 1995; Craddock, 2000). Like other areas of poor relief and social reform, medical discourse suggested that controlling the spread of infectious disease involved controlling the individual carrier and his or her environment (Dubos and Dubos, 1952; Caldwell, 1988; Rogers, 1992; Rothman, 1994). Initially, health care for freedmen in the District under the Bureau and later the Board of Health was described as far-reaching and adequate in spite of limited accommodations. Congressional appropriations were used to reserve beds at local paying hospitals for Blacks and the poor (Board of Charities, 1910; Capper, 1927; Fairman, 1971). Physicians treating the poor after Freedmen's Bureau activities were terminated in 1872 were generally progressive in their approach to treating and preventing disease. In addition to caring for the sick, physicians spoke to societal conditions like substandard housing that, in their opinion, contributed to illness and mortality in the city (District of Columbia Commissioners, 1906, Public Assistance Division, 1936, 1937; Krieger, 1993). In spite of this

progressive orientation, societal concerns about the ‘contamination’ of privileged classes by the poor, and doctors’ inclination towards treating mostly middle and upperclass patients influenced treatment protocols:

“No physician who desires to secure private practice would undertake to treat any large number of poor patients at his office, as their presence would keep a more desirable class away, chiefly by reason of the filthy condition of many such poor patients and partly through fear on the part of the better class of being mistaken for paupers, and in view of the small compensation received by the physicians to the poor they cannot afford to maintain separate offices for their official work... In order to diminish the work of the physicians and to lessen the liability of it interfering with their opportunities for securing private practice, it has been the policy of this department to diminish as much work as far as possible by instructing them to treat officially as office patients only such cases as are unable to visit dispensaries for treatment (Woodward, 1897).

Moreover, in spite of the discrepancies in other areas of poor relief for residents and non-residents, little difference was made between medical care for transients and indigent residents (Hudnut, 1930). Although the small number of doctors and funding limited the number of people the physicians to the poor treated, most of these individuals were Black. The following table indicates the number of individuals treated by the physicians to the poor between 1920 and 1941 in 5-year increments.

Table 3. Persons and Families treated by the physicians to the poor, 1920-1941

Year		Number of persons treated	Number of families represented
1920	Black	778	670
	White	337	269
1925	Black	554	268
	White	319	508
1930	Black	854	702
	White	550	381
1935	Black	4736	3069
	White	2636	1570
1941*	Black	5299	N/A
	White	3338	N/A

*No racial breakdown of statistics available for 1940

Blacks represented less than one third of the overall population for all years listed in the above table. Therefore, these numbers underscore the fact that Blacks represented the majority of individuals who were poor and in need of aid in the District. Specifically, this table indicates that

poor Blacks were more ill than poor whites. Hospital admissions recorded in Public Assistance Division reports shed further light on the health of poor Blacks in the District.

Table 4. Adult free patients admitted to hospitals sponsored by Board of Charities/Board of Public Welfare (after 1926).

		1920	1925	1930	1935	1940
Black	Female	3487	4118	4913	8827	10,365
	Male	2713	3377	3905	6595	7512
White	Female	1132	1162	1780	3999	3779
	Male	1890	2043	2928	5189	5029

This table also indicates that poor Blacks suffered from poor health such that they had twice the number of hospital admissions for most years. Moreover, more Black women were hospitalized than Black men. What is most telling is the difference in admissions between Black and White women. Black women had at least twice the number of admission of White women for all years. This suggests a disproportionate amount of illness among Black women requiring hospitalization. As the main reason for requesting relief in the 19th and 20th centuries was illness, this is an important part of understanding the conditions of poverty under which Blacks in Washington, D.C. lived. Blacks who were moderately or severely ill were reliant upon public assistance to maintain food and shelter, which as noted in the previous section was inadequate. Grants were not sufficient to acquire adequate nutrition, which could exacerbate illness. That there were fewer individuals making up Black families than White means that Blacks were more vulnerable to financial breakdown if the employable member or members of a family got sick.. Moreover, more jobs were generally available for women as domestic servants and laundresses than for men. The fact that so many women were hospitalized indicates that the person with the greatest potential for earning a steady income in a family was not often well enough to secure work.

Medical and economic historians suggest that in addition to treatment protocols, prevailing explanation for the cause and spread of infectious disease also indicated that health professionals

sought to treat illness without changing the existing social order. A conference on the ‘Social and Physical Condition of Negroes in Cities’ sponsored by Atlanta University exemplifies this point. Conference participants and data surveyors divorced Black mortality from poverty (Horton, 1977). Conditions from which Blacks suffered disproportionately like infant mortality, consumption and pneumonia were thought to be hereditary. Participants concluded that high Black mortality was caused by ignorance and Blacks’ ‘disregard for the laws of health and morality’ (Hershaw, 1896). The conference determined that economic equality would not solve the health problems of urban Blacks. Rather, more visiting agents were needed to help reform individual and family behaviors.

This approach to improving the health of urban Blacks reflects a time dominated by social Darwinism, scientific racism and economic depression. The economic depressions of 1873 and 1893 in the district coincided with social reformers searching for reasons why their efforts to improve the lives of freedmen were unsuccessful. As economic conditions made it impossible to maintain relief efforts, a social philosophy explaining poverty as a natural part of societal order provided an explanation and a rationale for curtailing relief programs. This perspective was bolstered by the work of physical anthropologists describing Blacks as ‘children in knowledge and animals in instincts and habits’ (Gould, 1996). The enslavement of Blacks, justified by their inferiority, placed them in a system that engendered dependency and moral deficiency through forced rather than self-directed labor. The continuing poverty of freedmen was blamed on the immorality of the former slave (Horton, 1977, p. 230). Immorality and dependency were thus salient characteristics of the Black poor. This criminalization and racialization of poverty and disease led to an emphasis on promoting moral development among the poor (Horton, 1977; Craddock, 2000).

The medicalization of 'the poor lifestyle' shifted the rhetoric of fear and blame to a medically legitimated rationale for surveillance, control and exclusion (Douglas, 1966; Craddock, 2000). That the poor were viewed as 'pathological' rather than merely 'different' justified medical intrusion into their daily lives. Therefore, medicine played an important role in defining the poor and constructing institutional mechanisms for their control (Foucault, 1976, 1977). Poor people were marked as a deviant group upon which medical discourse was imposed for normalization, which involved containment in asylums and poorhouses (Turner, 1996). Municipal housing for the poor would assist authorities in monitoring the daily lives of the poor rather than improving the housing conditions in poor neighborhoods. As casual laborers, poor individuals worked intermittently. Because this made it difficult to pay rent consistently, individuals moved around frequently. Whether or not living conditions were improved, this made it difficult to monitor indigents for tracking the incidence and spread of disease. Poorhouses provided much needed food and shelter for the destitute. Following the logic of medical and social Progressives, these institutions served to instill middle class values in residents through the control of their physical environment and behavior. Such an environment would "raise the discipline of the underclass to middle class standards and entice them to live as cultivated, socially responsible citizens" (Boyer, 1978, p. 190). However, the living conditions in these institutions as well as the variety of people housed in the institution also suggests that their operation was more fueled by maintaining the status quo and protecting privileged classes from the poor (Sibley, 1995). The origins and characteristics of these institutions are discussed below.

Municipal Housing for Poor Blacks in Washington, D.C.

Poorhouses in Washington, D.C.

As stated, municipal housing for poor Blacks in the District began with space reserved at contraband camps and army barracks for people unable to pay rent. The largest and longest running camp was Freedmen's Village in Arlington, Virginia. In 1867, the District Superintendent ordered people living with dependent families sharing provisions, people able to support themselves living with dependent relatives, and people who can find their own support out of the village (Howard, 1867). The order proved relatively ineffective and by the time the village was closed in 1868, 155 dependents were living there (Superintendent of Freedmen's Village, 1868). The local asylum for the dependent poor was then consolidated with Freedmen's hospital and dependents were moved to the Washington Asylum (Fry, 1954; Horton, 1977).

The Washington Asylum, established in 1846, was the District's first effort at care for the poor and infirm on a large scale. Living conditions were substandard for a number of reasons. In addition to combining poor, infirm and criminals under one roof, inadequate lighting and accessible escape routes for the elderly and frail put inmates at risk. The superintendent's report for the same year indicates extreme overcrowding and fire hazard because of oil lamp lighting (gas was not installed in the building). The elderly were confined to the top story of a building, which prevented extremely frail individuals from getting out of doors and prevented escape in the event of fire (Capper, 1927). Moreover, the smallpox hospital was located only 250 ft from the asylum. Although charity and corrections board reports suggest officials wanted the poor and infirm housed in separate quarters from criminals, a separate section for criminals was not provided until 1888. The poor and infirm continued to be housed together. Although the conflation of poverty, disease and crime is not explicitly articulated in medical reports and articles,

the spatial organization of medical facilities and municipal lodging for the poor and penal institutions implies the ideological link between the poor, criminals and the physically and mentally ill.

It was not until 1901 that organization of the asylum endured large-scale critique about housing criminals and the poor and infirm under one roof. As a result, the Board of Charities recommended that the almshouse be separated from the workhouse. Indigents were moved to a 60 acre Blue Plains site because “those who are simply poor and unfortunate should not be sent to the same institution as criminals” (Department of Charities, 1900, p.7). Commensurate with this break, the Board suggested changing the name of the institution to the Home for the Aged and Infirm:

“The word almshouse’ carries with it a certain unpleasant signification which in some measure is associated with the time when persons were committed to the almshouse by magistrates and such institutions harbored many vagrant and criminal classes” (Board of Charities in Capper, 1927).

The Home for the Aged and Infirm

The Home for the Aged and Infirm was established by the Board of Charities in 1906, and was opened in 1907 (Architects and Builders Journal, 1903; District of Columbia Village, 1956). After city commissioners disbanded the Board of Charities in 1926, the Board of Public Welfare managed all municipal aid and care facilities. This institution was located in an area of the District called Blue Plains, which is located at the southernmost tip of the District on the bank of the Potomac River near the MD border. The home was located on a site including the Industrial School for Colored Boys and School for the Feebleminded. As a number of newspaper articles indicate, the institution was for individuals not able to care for themselves “...because of age or infirmity,” and “...having no one to take on themselves the burden of their support” (Washington Post, June 25, 1922). The Home for the Aged and Infirm was planned as a long-term care

institution. This is reflected in a report noting that inmates stayed at the home an average of 15 years (Public Assistance Division, 1945).

The conflicting aims of the almshouse to protect privileged classes from disease and poverty along with caring for the poor and infirm are constantly present in descriptions of the home in reports and newspaper articles. For instance, a Public Assistance Division report states that the home was “intended to be to the fullest extent possible a pleasant and cheerful refuge to those who must accept the facilities it has to offer” (Public Assistance Division, 1948, p. 232). At the same time, the home also served as a shelter “so that the self-respecting poor become reconciled to being provided for here rather than being a greater burden to society by their oftentimes ineffectual efforts to eke out an existence in some irregular way” (Home For The Aged And Infirm, 1914, p. 16). Most importantly, these conflicting aims are evident in the make up of the inmate population, as well as the living conditions and medical care in the home throughout its existence. Daily life and operation of the home is detailed in the following sections. Information about the home and its residents in reports varies from year to year. However, when viewed together, these documents indicate consistent patterns in the quality of life and care in the home.

The ideological link between criminals, the poor and the mentally and chronically ill is also evident in the spatial and demographic organization of the Home for the Aged and Infirm. These characteristics are discussed in the following sections.

Discipline and Surveillance

As stated, the analogous interpretation of poverty, race, crime and disease translated into exclusionary tactics, punitive intrusions on everyday life and neglect of basic welfare. The social need to erect boundaries against defilement in part leads to the spatial as well as discursive

exclusion of deviant people from visibility (Douglas, 1966; Sibley, 1995;). As spatial isolation is one of many mechanisms used to exclude, oppress and normalize deviant individuals (Epstein, 1995; Urla and Terry, 1995; Philo, 2000, 2001), this section illustrates how this was carried out at the Home for the Aged and Infirm.

In terms of topography, studies of 19th and 20th century American sanatoriums, poorhouses and asylums indicate that their location outside of city limits was integral to the supervision and control exerted by medical authorities on inhabitants. Isolation of the institution reflects the Foucauldian notion of a ‘space closed in upon itself or disciplinary monotony’ (Foucault, 1976, p. 141). Its distance from the core of the city assured inmates’ isolation from society, and society from the inmates. Therefore disciplinary monotony came from the institution being the only social and experiential context of inmates (Craddock, 2000, p. 17).

Located at the southernmost point of the district on the banks of the Potomac River, the site for the Home for the Aged and Infirm was purposefully placed outside of the city’s limits. As one article notes, the Almshouse was established for the city’s indigent so that they could “live in a community of their own, raise their own vegetables, make their own bread and live out their lives undisturbed by the proximity of a great city” (Washington Post, November 1936). The language used to refer to the residents of the Almshouse implies a displacement of their “city resident” status in D.C. In all articles reviewed, residents of the District who became *residents* of the almshouse were thereafter referred to as *inmates*. As this term implies, these individuals had limited freedom to travel to areas outside of the Village. It was documented that some inmates of the institution had not left the premises for nearly a decade before the institution received its own transportation. The village did not

receive its own transportation until over twenty years after its opening, although it was located two miles beyond the nearest car line (Washington Star, 17 January 1932).

Similarities between the spatial and architectural organization of medical and municipal lodging institutions for the poor also underscore the medicalization of poverty on the part of privileged classes and medical authorities. The open aired, panoptic architectural style of the Home for the Aged and Infirm represents foucauldian concepts of discipline and control through the organization of space (Foucault, 1976, 1977). In fact, figures 20 through 22 below show that the architectural style of the home replicates one of two architectural styles used for most tuberculosis sanatoriums in the United States during the late 19th and early 20th centuries (Craddock, 2000).

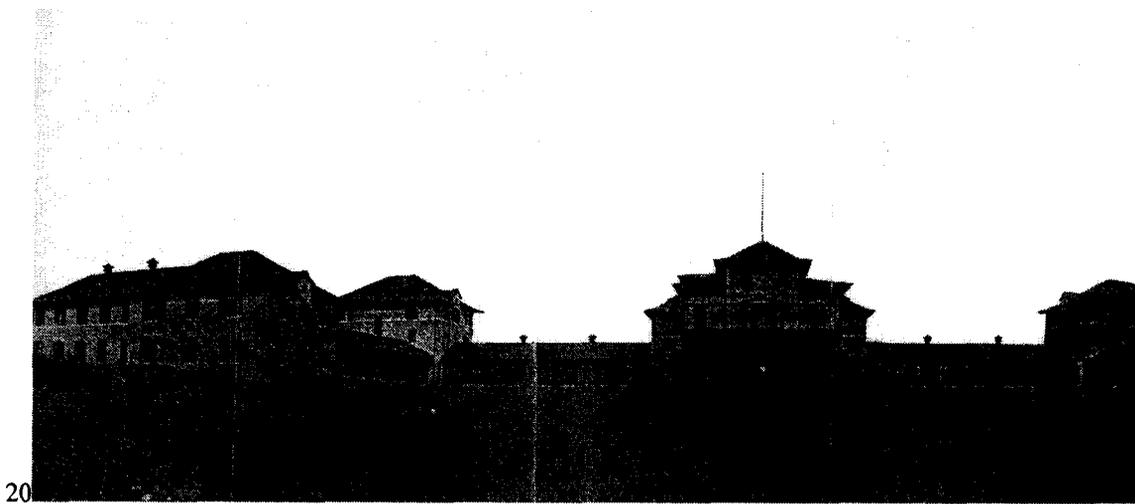
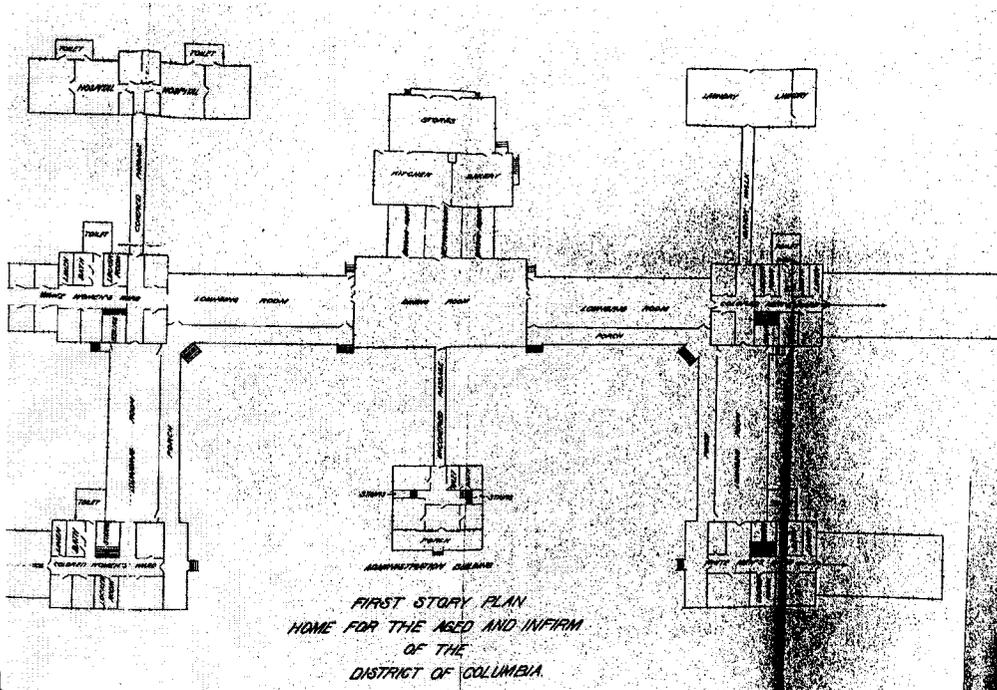
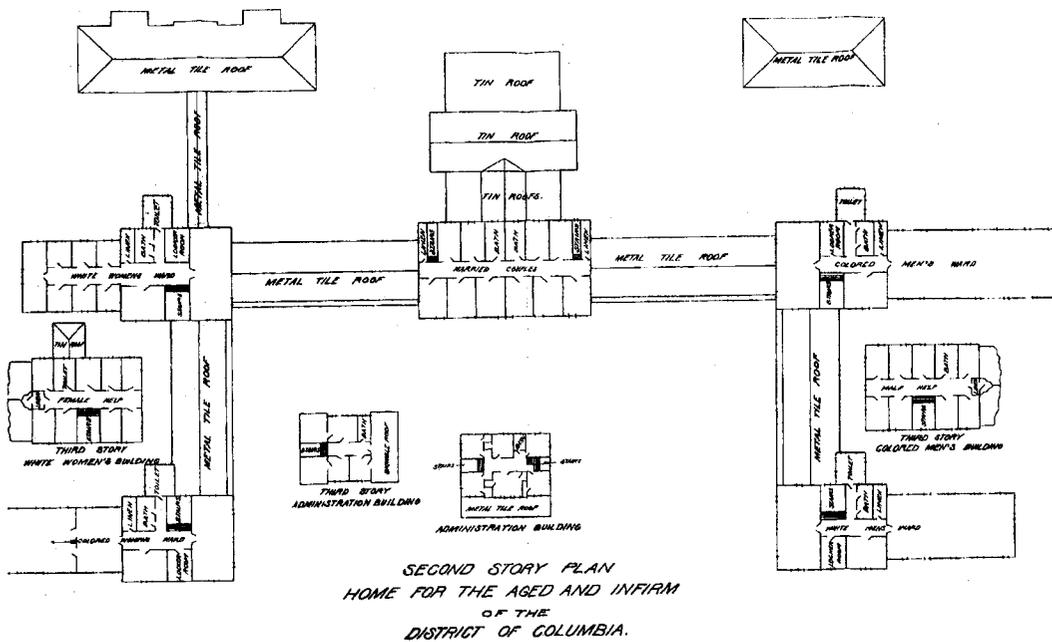


Figure 20. Home for the Aged and Infirm, front view (from 1906 District of Columbia Commissioners Report).



21

Figure 21. Home for the Aged and Infirm, first story plan (from 1906 District of Columbia Commissioners Report).



22

Figure 22. Home for the Aged and Infirm, second story plan (from 1906 District of Columbia Commissioners Report).

Institutions were primarily designed one of two ways: 1) dormitory cottages closely surrounding an administrative building that housed dining and medical facilities; or, 2) one-story dormitory wings attached to a side of the main building with porches lining each wing (Craddock, 2000). The proximity of dwelling space to the central building afforded residents easy access to service areas and an increased capacity for supervision by authorities. Strategically placed benches and walkways completed a well-regulated landscape for imposing discipline and compliance upon residents central to combating disease, poverty and the social disorder from which they are formed (Foucault, 1977; Caldwell, 1988; Rothman, 1994).

Therefore, the home was isolated and the layout mirrored that illustrated by Foucault for optimum surveillance:

“The plan adopted in its construction is the pavilion system similar to that used in hospitals. The administration building, for ease of supervision, is the center of the group. The dining rooms, kitchens and dependencies are also in the central axis for general convenience. The buildings on the side of the axis are for men, on the other for women...separate pavilions are provided for white and colored people” (Architects and Builders Journal, 1903).

The foucauldian notion of ordering every detail of individual and collective lives is also reflected in the daily regime at the home:

“The daily life of an inmate is mapped out for him to a certain extent. He rises at 6:30 and breakfast at 7. After breakfast he helps clear up, and from then on until 2 o'clock in the afternoon, with the exception of the dinner hour, 11:45 to 12:15, he does work suited to his ability. In the Summer some of the more hearty old men are able to cut the grass and keep the grounds in order. Others sweep and scrub the floors and do other light chores... From 2 o'clock on until quarter of 5, the supper hour, and from then on until 8 o'clock bedtime, they are also at leisure” (Washington Post, November, 1936).

As indicated in this quote, work therapy, endorsed since the 19th century, was included in the home's daily regime since its opening. Labor therapy implemented in these institutions often centered around farmland commonly established on these sites. In addition to providing

residents with the experience of participating in a labor force, the work helped to supplement food supplies (Foucault, 1977; Bates, 1992). At the home for the aged and Infirm, tasks included grounds keeping and sweeping for men, and meal preparation for women (Washington Star, 1936; Washington Post, August 30, 1958).

Inmate Demographic Features

The variety of residents at the home also reflects criteria for admission being based on factors other than age of infirmity. Inmate ages ranged from 29 to 97 during the 1940s and 1950s (Public Assistance Division, 1945). The conflicting aims of the almshouse and the conflation of poverty, illness and crime were also reflected in the highly diverse constituencies served throughout the home's existence. This conflation is underscored in the wording of annual reports stating that the aim of the Board to create a "home, rather than a hospital, a reformatory, or a penal institution" was considered an ideal, as "it is not always easy to distinguish the sick, defective, or the criminal from those who are merely incapable" (Home for the Aged and Infirm, 1914, p. 13). As a result, the home was used to accommodate individuals belonging to marginal groups for which facilities did not exist. As dates on reports and articles cited indicate the home for the Aged and Infirm served a diverse constituency throughout its existence.

Convalescent indigents that municipal hospitals could no longer care for were among the groups of individuals sent to the home (Public Assistance Division, 1936, 1937, 1948). The superintendent and medical officer of the home have no power to refuse cases referred by District hospitals (Washington Star, March 6, 1940). In fact, a group of young people sent to Blue Plains

by hospitals was discovered after being forgotten one to four years after admittance (Washington Star, March 6, 1940). Patients in need of hospital care were also among the inmate population:

“Imbicides and the Incompetent: Charlie is deaf, dumb and blind, and so paralyzed as to be helpless. He must be fed, bathed, and cared for like a helpless babe; and yet he weighs over 200 pounds and is 36 years old. He is not aged and he needs a hospital rather than a home. Another in the same ward is 21 and has some use of his crippled right hand, and some degree of intelligence... These are representatives of classes for which the home cannot render suitable service... To look after all these things is one attendant” (Home For The Aged And Infirm, 1914, p. 13).

Prisoners released from jail were also admitted to the home (Washington Daily News, March 6, 1940). One individual representing this group was convicted of killing an inmate of the home:

“A Criminal: One man shot and killed an inmate of this home. For this he served a term in the penitentiary. After that he was returned to the home. He remained until he died, although he repeatedly threatened the lives of other inmates and was a constant terror to those who were compelled to associate with him. A half dozen of his class separated weeded out from the home would make it a more comfortable, more useful, and a safer place than it can otherwise be” (Home For The Aged And Infirm, 1914, p. 13).

Many young and middle-aged men considered ‘poor but employable’ were assigned to the home as an ‘emergency measure.’ Because their status rendered them ineligible for any other form of relief:

“...the city is confronted with the problem of ether caring for them...or of turning them back in their indigence upon the community. They are considered to be ‘borderline’ cases, last resort of these individuals who have been overlooked by the community...have been sent there for humane reasons and not because they required such care (Washington Star, March 8, 1940).

In addition, alcoholics were ‘tolerated’ in the institution, although they totally destroyed “the real atmosphere of home life for residents no less than once a week” (Public Assistance Division, 1948, p. 233). The home also admitted patients from St. Elizabeth’s Mental Hospital to relieve overcrowding there. Again, these were patients that physicians contended no longer needed psychiatric care but were unable to live independently (Department of Public Welfare, 1960; Washington Post, October 30, 1960). Patients with active TB, drug addiction or psychosis continued to be eligible for admission until 1956 (Department of

Public Welfare, 1956a). The home also maintained a substantial non-aged population. In spite of attempting to change the living conditions and image of poor houses, the lag in executing the Board of Charities plan to have separate institutions for different poor constituencies left the home with a similar inmate population to that of the Washington Asylum:

“The main persons for whom provision is made in our institution are those who are deficient, either mentally, morally, or physically. They are not to any considerable extent normal persons who are likely to be employed and self-sustaining during good times and become depended in times of depression and unemployment” (Board Of Charities, 1917, p. 400).

The comparatively slight changes in population during World War I, the Great Depression and World War II indicate that individuals in municipal housing suffer persistent poverty. The increase in inmates between the time the home opened and 1920 – 83 people -- did not indicate a significant increase during or immediately after World War I (Board Of Charities, 1917, 1920). The operation of Old Age Assistance beginning in 1935 affected the inmate population through the 1950s (Washington Daily News, January 28, 1935). A decrease in the inmate population of the home was expected after the program started because the bill did not specify a standard sum for recipients. Inmates assumed that this meant that their pensions would be set according to their needs. As expected, there was a decrease in the daily average population the following year. There was also an increase in the number of ‘extremely helpless cases’ admitted (Public Assistance Division, 1936). In 1937, the Social Security Administration set the pension at \$30 per month. The inadequacy of these funds is reflected in an increase in resident population in 1938 (Washington Post, September 9, 1938; Public Assistance Division, 1938). Only 3% of applicants who received aid and were able to live independently came from people living in institutions like the Home for the Aged and Infirm (Public Assistance Division, 1936, 1937). Moreover, admittance of

older and infirm residents continued at a steady pace while aid was distributed. Therefore Old Age assistance did not lead to a drastic change in inmate population (Washington Post, March 16, 1939; Public Assistance Division, 1949, 1951, 1952).

Although a racial breakdown of the inmate population was not available for all years, reports indicate Black men were the majority, followed by Black women. Documents indicate that limited aid resources for Blacks due to segregation are responsible for this trend. A 1927 charities committee report indicated that out of 1000 beds in privately owned nursing homes, less than 6% are available to 'elderly colored people' (Washington Tribune, November 16, 1946). Other information on the limited employment and lodging resources available to Blacks mentioned in previous sections suggests why the Black male population of the Home for the Aged and Infirm was the first to reach capacity in 1908 (Board of Charities, 1908). Support organizations for Black women in the District have been in place since 1869 (Smith-Wilson, 1930). This leads to the assumption that women admitted to the Home for the Aged and Infirm are extremely destitute cases without access to resources specific to their needs.

Living Conditions

Compared to the Washington Asylum, the Home for the Aged and Infirm was a marked improvement in the care of the poor. Provisions were made for exposure to fresh air and farmland around the institution provided vegetables unable to be purchased with the home's limited appropriations. Unlike previous 'almshouse era' policies, inmates were allowed one day per month to leave the home and visitors were admitted every afternoon (Home for the Aged and Infirm, 1907). However, the structure of the buildings reflected a focus on institutional care for able-bodied indigents more than specialized care for the aged and infirm. In a building with no

elevators, half of the living quarters were on the second floor with steep flights of stairs leading to them. This space remained available but unusable because it was inaccessible to the home's many incapacitated patients (Public Assistance Division, 1949, 1951). Equally ironic was the lack of provisions for common meeting rooms, hobby rooms, libraries or a chapel in a dwelling that was supposed to mirror the 'normal' outside world. The absence of amenities in 19th and 20th century institutions was considered especially complementary to poor individuals, who were unaccustomed to lavish or comfortable surroundings (Craddock, 2000). Another thirty years would pass before many of these features, considered 'basic to present day concepts,' were provided at the home (Department of Public Welfare, 1956a, p.3).

From its beginning, the home had to function without adequate appropriations from Congress. Funding was consistently \$40-\$70,000 under superintendent's estimates and the home was run at a per capita cost less than half of similar institutions (Kober, 1907; Washington Post, January 31, 1940; Washington Post, January 27, 1940; Washington Daily News, January 27, 1940a; Washington Daily News, January 27, 1940b; Washington Star, January 28, 1940).

Congress provided extremely limited appropriations for constructing the home. As a result, materials used compromised the structural integrity of the building. For instance, the home was built with a tin roof instead of a slate or tile one (Kober, 1907). Moreover, the home was built with wooden fire escapes and was without fire retardant partitions until 1949 (Washington Times-Herald, September 18, 1941; Public Assistance Division, 1949). Condemned materials from District buildings were used to erect new buildings on the site and repair existing ones because appropriations for repairs and improvements were also inadequate. The home also had to rely upon day laborers for construction because

appropriations were never on par with bids submitted by construction companies (Kober, 1907). Because of limited funds, second-hand materials were used to furnish and supply the home. The home functioned with a second-hand boiler plant as well as second-hand chairs and beds (Washington Star, August 22, 1939; Washington Post, January 31, 1940). This set the tone for substandard conditions the home was known for during most of its existence.

A lack of adequate staff was also a result of appropriation limits. During the 1940s, there were only 58 employees to tend to the needs of the home's 700 inmates (Washington Post, February 3, 1940). With such a limited number of orderlies, it was difficult to perform regular exterminations, and keep dorm floors and patients clean (Public Assistance Division, 1927, p. 87; Public Assistance Division, 1938, 1939).

Limited appropriations also put inmate nutrition at risk (Washington Post, January 31, 1940). The farm run by the home was considered essential because it provided fruits and vegetables for inmates that "could not have been purchased from the available appropriation" (Kober, 1907, p. 268). Appropriations requests for essential repairs were often denied, which had a direct impact on inmate nutrition. District Commissioners were slow to honor requests for replacing heating systems and electric generators (Kober, 1907). Several articles reviewed noted that food at the home was 'fly specked' and rotting because of constant refrigerator breakdowns (Washington Times Herald, September 18, 1941). Food storage and preparation facilities were consistently characterized as inadequate for preparing food for such a large number of inmates. In addition, the appliances for food storage and preparation were in constant need of repair by the 1930s (Washington Daily News, January 27, 1940a; Washington Daily News, January 27, 1940b). The substance of meals was also affected by poor funding. Newspaper articles from the 1940s indicate that inmates were served thin

soups and 'one egg every 7th meal' (Washington Star, February 25, 1940). Typical daily meals for inmates were as follows: Typical breakfast: whole orange, oatmeal, bread and coffee; dinner: veal stew, bread pudding, bread and coffee; supper: vegetable soup, bread, tea and an apple (Washington Post, January 31, 1940). Throughout the decades, the food intake of inmates was described as inadequate (Washington Daily News, February 15, 1940; Washington Post, April 6, 1948). For inmates confined to the infirmary, no funds or proper facilities existed to obtain special diets.

All inmates were at risk of infectious disease because the home lacked adequate infirmary space until the mid 1950s (Washington Post, February 25, 1954). Again, inadequate appropriations are responsible. Because the home was built without adequate storage space, from the time the home opened until 1908, space designated for a small hospital was used for storage and a carpenter shop (Department of Public Welfare, 1956a).

"Consequently, while potatoes took the place of the sick in the hospital, the sick had to be crowded into the wards with the well" (Home for the Aged and Infirm, 1908, p. 70). Therefore, no attempt was made to segregate various groups requiring medical treatment: "Differences between patients in the infirmary and those still in the dormitories are of 'degree rather than kind..." (Public Assistance Division, 1928, p. 104).

Living conditions in the home were also affected by overcrowding. When the home opened in 1907, the inmate population was 208. The population in the Home increased by 10% each year, peaking at 880 residents in 1936 (Washington Post, 31 January, 1940). By 1938 all wards were filled to capacity except the White women's' ward. Eligibility requirements for income assistance established during the Depression had much to do with the Home's population increase during the 1930s and 1940s. Many elderly who qualified declined assistance to reside at the Home because funds were inadequate for basic living expenses (Washington Star, 3 March, 1940). Newspaper articles and reports indicate that this trend continued throughout the history of the institution.

As a result of this overcrowding, already limited common areas were converted into dormitory space for men (Washington Star, January 28, 1940). Also, bathroom facilities were only sufficient enough to afford inmates 1 bath per week and there was an average of one toilet per 100 inmates (Washington Post, December 4, 1940; Washington Post, February 3, 1940; Washington, Post, January 31, 1940). Because of excessive use and inadequate staff, it is not surprising that these facilities were described as filthy in reports and articles spanning decades.

The home was also overcrowded because inmates were seldom transferred to other municipal care facilities. Although many individuals from other institutions were admitted to the home, few inmates fit the service profiles of other institutions. For instance, when Glen Dale Tuberculosis sanatorium began admitting non-TB chronically ill patients, only a small number of individuals from the Home for the Aged and Infirm met their criteria of being chronically ill and responding well to rehabilitative treatment (Washington Post, October, 30, 1960). Therefore, the non-specific criteria for admission helped the daily average of the home steadily increase through 1950. Although these conditions were covered extensively in the press, living conditions are discussed in a positive light in Board reports.

Medical Care

Limited infirmary space and the inadequate number of physicians, nurses and attendants affected health care provided by the home. Again, the lack of appropriations was the cause (Public Assistance Division, 1939, 1946; Board of Charities, 1924; Washington Post, September 20, 1941). Like other almshouse units, the infirmary was supplied with second-hand items. Hospital equipment came from discarded Army medical supplies (Washington Daily News,

February 15, 1940). Until 1941, the home only had one part-time physician, 3 nurses, and 11 orderlies caring for all bedridden and sick residents (Public Assistance Division, 1938, 1939; Washington Post, January 31, 1940). Combined with the limited infirmary space, medical care for all infirm patients at one time was not possible:

“When we have a very sick patient in the wards we are obliged to go to the hospital, size them all up, and remove the one less sick than the others that we may use his bed” (Public Assistance Division, 1928, p. 104).

As a result, the almshouse physician could only treat acute medical cases. Inmates suffering from chronic illnesses had to go without special medical care (Washington Post, April 8, 1948). Only after a surprise visit from Eleanor Roosevelt in 1941 was a full-scale examination of inmates conducted to determine physical conditions. As a result, many inmates were moved to more appropriate facilities for care (Public Assistance Division, 1940, 1941). In particular, elderly patients suffering from communicable diseases were moved to Gallinger hospital. However, it was reported that all removed inmates were ‘quietly restored’ soon after (Washington Tribune, July 27, 1940). It is important to note that news of Mrs. Roosevelt’s visit, covered extensively in the press, is not mentioned in any Board reports.

When congress did authorize \$1,500,000 for construction of a new infirmary in 1948, it was shelved because of a continuing wartime presidential directive banning construction where ‘suitable facilities already existed’ (Washington Post, April 6, 1948). The infirmary was not built until 1954.

In spite of the substandard living conditions in the almshouse, the environmental context of poor Blacks in the District indicates that they were at a particular disadvantage regarding access to decent housing, jobs or material assistance. Therefore, it is likely that there were negative biological consequences associated with belonging to either group. The health risks posed by the conditions of the almshouse are rather self-explanatory. However, the particular disadvantage at

which the most destitute lived in the general population deserves to be restated. As migrants, this sample had disproportionately limited access to decent housing and labor. Documents also indicated that these individuals represented the most ill among the poor, which would have an impact on their ability to work. Morgue records indicate that the social networks people belonged to did not provide a buffer for these conditions. The disproportionately limited access these individuals had to public relief put them at further risk for 'permanent breakdown.' As mentioned earlier in the chapter, African Americans were unable to provide proof of age or duration of residence. Therefore, people in this group were more likely to 'slip through the cracks' of a relief system with stringent criteria applicants had to meet. In the absence of resources to counter these restrictive criteria, Samuel Burgess is a case in point. The biological consequences of daily life in these different settings are detailed in the following chapter.

Chapter IV: The Biological Consequences of Poverty in Late 19th and Early 20th Century Washington, D.C.

This chapter presents the results of analysis on biological data, and its relationship to the conditions of poverty and inequality presented in the previous chapter. Results indicate that there were indeed negative consequences associated with life in the almshouse and living in the general population. Moreover, disadvantages associated with living in the general population may have put individuals in this group at a particular risk for poor health and activity stress. Details are discussed below.

Statistical tests were conducted organizing data three ways. To recall the data sets, the samples that are the focus of this study come from the Cobb collection. The primary sample from the Cobb collection is made up of individuals who were residents at the city almshouse. The secondary sample is comprised of individuals living in the general population. Each sample from the Terry collection reflects the composition of the primary or secondary sample from the Cobb collection in terms of years of birth and death. The primary sample from the Terry collection has the same years of birth and death as the primary sample from the Cobb collection. Accordingly, the secondary sample from the Terry collection has the same years of birth and death as the secondary sample from the Cobb collection. Tests combining samples from each collection are referred to as tests organizing data by source (that is, Cobb or Terry). For the sake of clarity in tests organizing data by subsample, the Cobb primary and secondary subsamples will be referred to as sample a and sample b, respectively, in the text. Terry primary and secondary subsamples will be referred to as

samples c and sample d, respectively for the same purpose. In addition to conducting tests organizing data by subsample, tests splitting data according to age group are conducted to examine how age influences arthritis patterns. Age categories will be labeled in the following manner: age group 1 (25-45 years), age group 2 (46-65 years) and age group 3 (66-90 years).

Hypotheses, data organization and testing methods were developed primarily to identify and examine differences in arthritis patterns and severity between the Cobb and Terry samples relative to age and sex. Statistical tests were not used to identify interactions between age, sex and arthritis in general. As mentioned in the introductory chapter, the ideological grouping of poor African American skeletal samples has led to research that minimizes differences in patterns of health, disease and social context within and between groups. Unlike previous research, I conducted this study to examine the quality of life and health in poor African American skeletal samples without assuming a particular level of homogeneity existed between them. I argue that this initial treatment of the data was necessary to determine how distinct groups are from one another. Therefore, I did not make assumptions about the social or biological contexts that would justify using statistical tests in which samples and subsamples are treated as distinctly different groups. However, the results of this study will be used to develop and test hypotheses based on more specific predictions and interactions in the future.

Hypothesis 1

Causes of death listed on autopsy records from the Cobb and Terry samples reflect the leading causes of death in the District during the same time period (1931-1961).

Causes of death listed on morgue records from the Cobb and Terry samples were compared with primary causes of death among African Americans listed in District Health Officer records to test the hypotheses noted above. The following tables present the primary known causes of death in the Cobb and Terry subsamples, as well as leading causes of death among Blacks in Washington, D.C.

Table 5. Primary causes of death in the Cobb and Terry samples

Cause of Death	Cobb (%)	Terry (%)	Washington, D.C. (%)
Tuberculosis	22 (21)	52 (49)	2350 (16)
Heart Failure	13 (12)	4 (.3)	N/A
Heart Disease	24 (23)	42 (36)	7084 (49)
Pneumonia	7 (.7)	9 (.8)	2273 (16)
Cancer	10 (.9)	9 (.8)	2606 (18)
Unknown	29 (28)	N/A	N/A
Total	105 (100)	116 (100)	14,313 (100)

Table 6. Primary causes of death in the Cobb and Terry subsamples

Cause of Death	Sample a (%)	Sample b (%)	Sample c (%)	Sample d (%)
Tuberculosis	1 (.05)	21 (99.5)	10 (19)	42 (81)
Heart Failure	5 (38)	8 (62)	4 (100)	0 (0)
Heart Disease	15 (63)	9 (37)	28 (67)	14 (33)
Pneumonia	2 (29)	5 (71)	3 (33)	6 (67)
Cancer	4 (40)	6 (60)	4 (44)	5 (56)

A cause of death was listed in 72% of records from the Cobb sample and 56% of records from the Terry sample. The majority of deaths in the Cobb subsamples were attributed to heart disease and tuberculosis. Heart disease was the leading cause of death in sample a, while most individuals in sample b died from tuberculosis [TB]. Heart disease and tuberculosis were also the leading causes of death in the Terry subsamples. Most deaths in sample c were from heart disease, while most in sample d died from TB. Health officer reports for the District suggest that most Blacks in the general Washington, D.C. population

died from heart disease also, followed by cancer, tuberculosis and pneumonia. Although TB and heart disease were the two leading causes of death in the Cobb and Terry samples, the presence of TB in the Terry sample was much more prominent. Tuberculosis accounted for almost half of the known causes of death in the Terry sample, while as the second leading cause of death in the Cobb sample it accounted for 21% of deaths. The similar percentages of deaths from heart disease and TB indicate a greater burden of infectious disease on the Terry sample. The table listing causes of death by subsample indicates that the secondary subsamples from each collection had more deaths by infectious disease. The greater number of deaths by heart disease in the primary subsample can possibly be attributed to the younger age of individuals in the secondary subsamples.

Differences in the prevalence of tuberculosis in other African American skeletal samples of similar socioeconomic and temporal contexts suggest differential burden of disease among poor Blacks in urban areas throughout the 19th and early 20th centuries. Although TB was the leading cause of deaths among Blacks in Philadelphia throughout the 19th century (Rankin-Hill, 1997), it accounted for only 4% of deaths in the FABC sample. This is likely the product of social networks providing better housing conditions and improved diet among church members. Cedar Grove is another sample considered to be similar in context to the Cobb and Terry samples in which researchers found little skeletal evidence of TB (Rose, 1985). However, less than 10% of tuberculosis cases involve skeletal lesions (Roberts and Manchester, 1995). Therefore, in the absence of records indicating cause of death, it is impossible to determine the prevalence of TB in that sample. The prevalence of deaths by infectious disease in the Cobb and Terry sample is not reflected in the larger Black Washington, D.C. population. Tuberculosis and pneumonia are tied for the

third leading cause of death among Blacks in the District between 1930 and 1960 (16%). Like the Cobb sample, heart disease is the leading cause of death among Blacks in D.C. between 1930 and 1960. However, it accounted for nearly half (49%) of all deaths, which is a substantially greater percentage than what is found in the Cobb sample. Moreover, cancer is the second leading cause of death among Blacks in Washington, D.C., which accounts for a small number of deaths in the Cobb and Terry samples. These results indicate a greater burden of infectious disease in the Cobb and Terry samples. This suggests that as expected, individuals in these collections represent a particularly destitute segment of the populations they represent.

Tuberculous lesions found in skeletons from a mid to late 19th century almshouse cemetery from the northeast provides further evidence for this point (Lanphear, 1988; Phillips, 2001a). In the case of Phillip's Oneida asylum and Albany almshouse samples mentioned earlier in the dissertation, 6.3 and 21.4 percent of skeletons exhibited tuberculous lesions, respectively. Therefore, such a large presence of skeletal lesions suggests an even greater presence of the disease throughout the sample. Since the almshouse was a short-term institution, Phillips attributed the unusually high prevalence of TB in this sample to the home being a 'last resort' for many just prior to death. Therefore, the sample reflects a disproportionate number of destitute and diseased individuals 'culled from the larger population due to destitute circumstances' (Phillips, 2001a, p. 133). Although not an almshouse sample, the prevalence of TB in sample b from the Cobb collection also reflects this characteristic. Notes on morgue records for individuals who were not almshouse residents illustrate their particularly destitute circumstances. Many of these individuals were not connected to their families, or did not have relatives who could afford to bury them. In

addition, records indicate that many of these individuals were not eligible for public assistance, which means they were more than likely a segment of the population that 'slipped through the cracks' of a relief system that had very particular criteria recipients had to meet. As mentioned in the previous chapters, African Americans were often at a disadvantage for meeting criteria for public assistance because they were unable to provide proof of age or duration of residence in the city. As opposed to surmising that sample b was 'less healthy' than sample a, it is likely that each sample suggests the prevalence of certain diseases among younger and older groups of destitute Blacks Washington, D.C.

DJD Patterns – Sample Variation

Hypotheses were designed to identify patterns of osteoarthritis in the Cobb and Terry subsamples. First a set of hypotheses were developed to test whether or not the DJD patterns observed were likely due to systemic factors like age or non-systemic factors such as work stress:

Hypothesis 2: There is a positive association between moderate and severe arthritis and age;

Hypothesis 3: There is a significant difference in the severity of arthritis in the right and left joints of the upper extremities;

Hypothesis 4: There is a significant difference in the pattern of joints affected by moderate and severe arthritis between men and women.

As stated in the methods chapter, there is some debate about the extent to which marginal osteophytes and subchondral surface porosity are considered to be manifestations of osteoarthritis. With this in mind, the following hypothesis was developed to test the relationship between these lesions in the sample:

Hypothesis 5: There is a positive relationship between the presence of moderate and severe marginal lipping and subchondral surface porosity.

Considering on-going debates about using osteoarthritis as a criterion for activity stress, the following hypotheses test the relationship between the presence of osteoarthritis and muscle insertion enthesopathy:

Hypothesis 6: There is a positive relationship between the presence of moderate and severe marginal lipping and enthesopathy in elements of a given joint;

Hypothesis 7: There is a positive relationship between the presence of moderate and severe marginal lipping and enthesopathy.

Finally, one hypothesis was developed to indicate how similar or different DJD patterns in the Cobb subsamples are from the Terry subsamples, as a representative sample of other low SES skeletal samples:

Hypothesis 8: Cause of death and patterns of DJD in the Cobb subsamples are similar to those in the Terry samples.

Hypothesis 2

There is a positive association between moderate and severe arthritis and age.

Spearman's rho correlations for age and moderate and moderate and severe marginal lipping scores are presented in the following table.

Table 7. Age-joint Correlations for the Cobb and Terry Samples

Joint	Rho coefficient – Cobb	Rho coefficient - Terry
Lthumb	.385**	.430**
Rthumb	.237*	.362**
Lshoulder	.628**	.727**
Rshoulder	.664**	.672**
Lelbow	.350**	.596**
Relbow	.353**	.517**
Lhip	.416**	.434**
Rhip	.465**	.480**
Lknee	.397**	.592**
Rknee	.427**	.621**

* Correlation is significant at the .05 level

** Correlation is significant at the .01 level

Testing Cobb and Terry subsamples jointly, we see that there is a significant association between marginal lippling in all joints and age. The Cobb samples present the strongest associations in the shoulders and hips, while Terry scores present the strongest associations in the shoulders and knees. The significant correlation with age seen in both samples is consistent with osteological data illustrating a strong correlation between age and arthritis in contemporary skeletal samples (Jurmain, 1999). Jurmain's study of arthritis in American Whites and Blacks, Alaskan Eskimos and Native Americans from New Mexico included the Terry collection and is worth noting in this discussion. Joint-age correlations from Jurmain's previous studies of arthritis in the Terry collection indicate that the shoulder and hip are the most age-correlated joints, followed by the knee and elbow (Jurmain, 1975, 1980, 1990, 1991). Age correlations for the Cobb sample reflect this pattern. Interestingly, the Terry sample presents a somewhat different pattern. The shoulder is the most age-correlated joint in the sample. However, the knee, elbow and hip follow as the second, third and fourth most age-correlated joints, respectively. This finding underscores the fact that although the influence of age on degenerative changes in the skeleton is well recognized and accepted, understanding differences in the pattern and progression of degenerative changes

between joints requires a more careful examination of factors influencing age distribution in a sample.

Tables listing the presence and absence of moderate and severe marginal lipping organizing data according to source and age group were generated as an interpretive reference for statistical results. These data indicate that moderate and severe lipping occurs earliest in the Terry males and females. Moderate and severe lipping in females peaks in age group 1 except for the left elbow, shoulder and knee. For all joints examined, lipping in males peaks in age group 1 and exhibits a sharp decline in the presence of marginal lipping in age group 3. Although these results contrast with Jurmain's findings, they reflect the early onset of osteoarthritic change among individuals from the Terry collection used for this study. Therefore, results suggest a high prevalence of activity related arthritic change in the Terry sample. Marginal lipping in females from the Cobb sample peaked in the second age group, except for the hips (which peaked in age group 3). Except for the elbows (which peaked in age group 2), moderate and severe lipping in Cobb males peaked in age group 3. This age difference in distribution of arthritic change provides an explanation for the consistency of age correlations in the Cobb sample with Jurmain's sample from the Terry collection.

Hypothesis 3

There is a significant difference in the severity of arthritis in the right and left joints of the upper extremities.

The following tables present results from paired samples t-tests used to determine whether or not the severity of arthritis in right and left joints is equal.

Table 8. Paired samples t-tests by source (Cobb)

Variable	Mean	N	Std. Deviation	T statistic (df)
Lthumb	3.2785	79	2.0314	1.547 (78)
Rthumb	2.9873	79	2.0908	
Lshoul	3.2481	133	2.6697	-3.192 (132)*
Rshoul	3.7519	133	2.9269	
Lelbow	3.5956	136	3.9297	-1.396 (135)
Relbow	3.9632	136	3.8440	
Lhip	1.4462	130	1.6568	-.163 (129)
Rhip	1.4692	130	1.6196	
Lknee	5.1639	122	5.5094	1.462 (121)
Rknee	4.6557	122	5.4009	

*p= <.05

Table 9. Paired samples t-tests by source (Terry)

Variable	Mean	N	Std. Deviation	T statistic (df)
Lthumb	2.2794	204	1.8977	-3.495 (203)*
Rthumb	2.6667	204	1.8347	
Lshoul	2.5024	207	2.6048	-1.319 (206)
Rshoul	2.6377	207	2.5541	
Lelbow	3.2367	207	3.7439	-2.187 (206)*
Relbow	3.6522	207	3.9738	
Lhip	1.7295	207	1.5778	.000 (206)
Rhip	1.7295	207	1.5342	
Lknee	4.9082	207	5.9997	-.519 (206)
Rknee	5.0290	207	5.7512	

*p= <.05

Table 10. Paired samples t-test by subsample (Sample a)

Variable	Mean	N	Std. Deviation	T statistic (df)
Lthumb	3.8980	49	1.7588	2.519 (48)*
Rthumb	3.3061	49	2.0125	
Lshoul	4.6912	68	2.2008	-2.936 (67)*
Rshoul	5.3824	68	2.3246	
Lelbow	4.5070	71	4.1296	-1.298 (70)
Relbow	5.0563	71	4.0844	
Lhip	2.0462	65	1.8408	-.577 (64)
Rhip	2.1846	65	1.5602	
Lknee	7.1333	60	5.8844	.858 (59)
Rknee	6.6167	60	5.8050	

*p= <.05

Table 11. Paired samples t-test by subsample (Sample d)

Variable	Mean	N	Std. Deviation	T statistic (df)
Lthumb	1.7311	119	1.7931	-3.228 (118)*
Rthumb	2.1849	119	1.7754	
Lshoul	1.1653	121	1.9466	-1.926 (120)
Rshoul	1.3884	121	1.8858	
Lebow	1.6198	121	2.3814	-3.181 (120)*
Rebow	2.2479	121	3.0803	
Lhip	1.3388	121	1.4523	.383 (120)
Rhip	1.2893	121	1.4109	
Lknee	2.3471	121	4.0512	-.085 (120)
Rknee	2.3719	121	3.5780	

*p= <.05

Note: tables not produced for samples b and c as tests produced no significant results.

Tests organizing data by source showed a significant difference in arthritis between the left and right shoulders in the Cobb sample, with arthritis on the right side being more severe. In the Terry sample, significant differences between arthritis in the left and right thumbs and elbows. Again, arthritis was more severe on the right side. In tests splitting data by subsample, only samples a and d showed a significant difference in arthritis severity between left and right joints. Along with the significant difference between arthritis in the left and right shoulders mentioned above, there was a significant difference between arthritis severity in the left and right thumbs (arthritis on the right side more severe). Sample d showed significant differences in arthritis severity between left and right thumbs and elbows. In both cases, arthritis on the right side was more severe.

In a paired samples t-test organizing data by sex, only males from the Terry sample presented significant results. The shoulder and thumb had more severe arthritis on the right side.

Table 12. Paired samples t-test by sex (Terry sample, males)

Variable	Mean	N	Std. Deviation	T statistic (df)
Lthumb	.6979	96	.4616	-2.939 (95)*
Rthumb	.8229	96	.3837	
Lshoul	.4742	97	.5019	-2.805 (96)*
Rshoul	.6082	97	.4907	

*p<.05

In paired samples t-tests organizing data by age group, the Cobb sample presented significant results in age group 2. There was a significant difference in the severity of arthritis in the left and right shoulder. Arthritis on the right side was more severe. In the Terry sample, significant differences between arthritis in the left and right thumbs, shoulders and elbows was found in age group 1. In all cases, arthritis on the right side was more severe.

Table 13. Paired samples t-test by age group (Cobb, age group 2)

Variable	Mean	N	Std. Deviation	T statistic (df)
Lshoul	3.5102	49	2.2924	-3.098 (48)*
Rshoul	4.3265	49	2.5608	

*p<.05

Table 14. Paired samples t-test by age group (Terry, age group 1)

Variable	Mean	N	Std. Deviation	T statistic (df)
Lthumb	1.7016	124	1.7059	-4.025 (123)*
Rthumb	2.2419	124	1.7267	
Lshoul	1.0635	126	1.6864	-2.067 (125)*
Rshoul	1.3175	126	1.7693	
Lelbow	1.6984	126	2.6329	-3.475 (125)*
Relbow	2.3730	126	3.2317	

*p<.05

Joints of the upper extremities presented significant differences in marginal lipping, which is where one would expect to find them if activity stress is a likely factor. That the right side is affected most severely reflects right-handedness of most individuals (Jurmain, 1999; Ortner, 2003a). Tests organizing data by age group presented significant differences in younger and middle-aged individuals, which suggests that arthritic severity on the right side is not entirely due to age. These results provide further support for attributing much of the arthritic change in these samples activity-related factors.

Correlation coefficients for right and left sides of the body were also helpful in determining the most asymmetrically affected joints in these samples. Tests were conducted organizing data by sample and sex.

Table 15. Spearman's correlations for right and left sides of the body

Variable	Cobb	Terry
Thumb	.570**	.560**
Shoulder	.636**	.591**
Elbow	.381**	.552**
Hip	.419**	.377**
Knee	.489**	.722**

*p<.05

**p<.01

Table 16. Spearman's Correlations for right and left sides of the body by sex

Variable	Cobb		Terry	
	Female	Male	Female	Male
Thumb	.413*	.635**	.592**	.527**
Shoulder	.524**	.709**	.621**	.551**
Elbow	.504**	.278**	.515**	.566**
Hip	.541**	.345**	.515**	.230*
Knee	.515**	.473**	.787**	.647**

*p<.05

**p<.01

In the Cobb sample, the elbow is the least symmetrically affected joint, followed by the hip, knee, thumb and shoulder. In the Terry sample, the hip is the least symmetrically affected joint, followed by the elbow, thumb, shoulder and knee. For women in the Cobb sample, correlation coefficients show that the thumb was least symmetrically affected joint, followed by the elbow, knee, shoulder and hip. For men in the Cobb sample, the elbow was the least symmetrically affected joint, followed by the hip, knee, thumb and shoulder. Correlation coefficients for women in the Terry sample show that the elbow and hip are tied as the least symmetrically affected joints, followed by the thumb, shoulder and knee. For the men, the hip is the least symmetrically affected joint, followed by the thumb, shoulder, elbow and knee.

The presence of asymmetry suggests differential use between sides of the body, which would point to some non-systemic cause for DJD. Jurmain's research on the Terry collection indicated that the elbow was the most asymmetrically affected joint, followed by the hip, knee and shoulder. As with age correlations, the Cobb sample reflected these findings and the Terry sample did not. It is likely that this inconsistency is a result of the mean age difference between men and women in this sample. As the mean age of women in the Terry sample is 8 years older than that of men (48.05 and 39.63 years, respectively), the women in the sample are likely to have more severe involvement in the hip that would affect statistical results (Jurmain, 1977). However, based on available information, the early peak age of arthritic change in the Terry sample indicated above is the likely reason for the inconsistency with Jurmain's findings. If Jurmain's findings are representative of arthritic changes found in late 19th-early 20th century low socioeconomic status skeletal samples, a tentative explanation for the similar asymmetry patterns between Jurmain's Terry sample and the Cobb sample are necessary. Based on available data, age distribution may play a role in these results. Unlike the Terry sample used in this study, there is only a small difference in mean age between men and women in the Cobb sample (55.79 for women and 56.16 for men). Therefore, the age skewness in the Terry sample presents a statistical limitation to an attempt to reproduce Jurmain's results. However, as stated, the age distribution in the Terry sample is a result of a selection criterion requiring individuals to have the same years of birth and death as individuals from the Cobb samples. Although the composition of the sample presents a challenge to the interpretation of statistical tests, this apparent difference between the two samples serves as case in point about the breadth of variation in samples assumed to

be similar based on generalized social indicators. The implications for these differences as they relate to biocultural interactions will be discussed later.

Hypothesis 4

There is a significant difference in the pattern of joints affected by moderate and severe arthritis between men and women.

An independent samples t-test and chi-square test was conducted to compare pattern and prevalence of arthritic affect between men and women in the Cobb and Terry subsamples. It was not possible to conduct chi-square and t-tests for gender splitting data by age group because of inadequate cell size.

Table 17. Independent samples t-test for gender and arthritis by source (Terry)

Variable	Sex	Mean	N	Std. Deviation	T statistic (df)
Lthumb	Female	2.3945	109	1.9580	.944 (204)
	Male	2.1443	97	1.8314	
Rthumb	Female	2.6514	109	1.9502	-.019 (203)
	Male	2.6563	96	1.7157	
Lshoul	Female	3.1909	110	2.6836	4.253 (204.763)*
	Male	1.7216	97	2.2856	
Rshoul	Female	3.1909	110	2.7344	3.451 (203.041)*
	Male	2.0103	97	2.1818	
Lelbow	Female	3.8364	110	3.8230	2.485 (205)*
	Male	2.5567	97	3.5501	
Relbow	Female	4.1818	110	4.0392	2.058 (205)*
	Male	3.0515	97	3.8307	
Lhip	Female	1.9364	110	1.5929	2.024 (205)*
	Male	1.4948	97	1.5352	
Rhip	Female	1.8091	110	1.4745	.794 (205)
	Male	1.6392	97	1.6020	
Lknee	Female	6.5000	110	6.5086	4.308 (198.850)*
	Male	3.1031	97	4.7904	
Rknee	Female	6.4273	110	6.0236	3.893 (204.278)*
	Male	3.4433	97	4.9999	

*p= <.05

Table 18. Independent samples t-tests for gender and arthritis by subsample (sample a)

Variable	Sex	Mean	N	Std. Deviation	T statistic (df)
Lthumb	Female	4.1500	20	1.2680	.752 (50)
	Male	3.7813	32	1.9466	
Rthumb	Female	3.9048	21	1.4458	2.202 (52.720)*
	Male	2.8235	34	2.1946	
Lshoul	Female	4.9286	28	2.3242	1.078 (70)
	Male	4.3409	44	2.2093	
Rshoul	Female	5.1538	26	2.6936	-.635 (66)
	Male	5.5238	42	2.0864	
Lelbow	Female	3.6552	29	3.4772	-1.338 (70)
	Male	4.9767	43	4.4854	
Relbow	Female	4.4286	28	3.8819	-1.027 (71)
	Male	5.4444	45	4.2456	
Lhip	Female	2.3333	27	2.0569	1.156 (66)
	Male	1.8049	41	1.6914	
Rhip	Female	2.0800	25	1.5253	-.150 (66)
	Male	2.1395	43	1.6122	
Lknee	Female	9.0000	26	6.5422	2.220 (42.624)*
	Male	5.6829	41	4.9063	
Rknee	Female	7.7600	25	6.2335	1.271 (63)
	Male	5.9000	40	5.4103	

*p= <.05

Table 19. Independent samples t-tests for gender and arthritis by subsample (sample c)

Variable	Sex	Mean	N	Std. Deviation	T statistic (df)
Lthumb	Female	2.9623	53	1.8601	-.634 (84)
	Male	3.2121	33	1.6347	
Rthumb	Female	3.0755	53	1.7525	-1.873 (83)
	Male	3.7813	32	1.5603	
Lshoul	Female	4.8113	53	2.0480	2.311 (84)*
	Male	3.6970	33	2.3649	
Rshoul	Female	4.8491	53	2.2136	2.346 (84)*
	Male	3.6667	33	2.3673	
Lelbow	Female	5.8302	53	3.9552	.907 (84)
	Male	5.0000	33	4.3946	
Relbow	Female	5.8491	53	4.2985	.608 (84)
	Male	5.2727	33	4.2299	
Lhip	Female	2.3585	53	1.6183	.584 (84)
	Male	2.1515	33	1.5637	
Rhip	Female	2.2264	53	1.4364	-.963 (84)
	Male	2.5455	33	1.5829	
Lknee	Female	9.8113	53	6.2081	2.436 (84)*
	Male	6.4242	33	6.3690	
Rknee	Female	9.7547	53	5.8042	1.914 (84)
	Male	7.1818	33	6.4588	

*p= <.05

Table 20. Independent samples t-tests for gender and arthritis by subsample (Sample d)

Variable	Sex	Mean	N	Std. Deviation	T statistic (df)
Lthumb	Female	1.8571	56	1.9110	.802 (118)
	Male	1.5938	64	1.6877	
Rthumb	Female	2.2500	56	2.0560	.469 (99.720)
	Male	2.0938	64	1.5089	
Lshoul	Female	1.6842	57	2.3080	2.774 (91.010)*
	Male	.7031	64	1.4218	
Rshoul	Female	1.6491	57	2.2320	1.410 (95.978)
	Male	1.1563	64	1.4930	
Lelbow	Female	1.9825	57	2.5808	1.591 (119)
	Male	1.2969	64	2.1579	
Relbow	Female	2.6316	57	3.0859	1.297 (119)
	Male	1.9063	64	3.0588	
Lhip	Female	1.5439	57	1.4768	1.473 (119)
	Male	1.1563	64	1.4167	
Rhip	Female	1.4211	57	1.4135	.969 (119)
	Male	1.1719	64	1.4092	
Lknee	Female	3.4211	57	5.1615	2.725 (76.570)*
	Male	1.3906	64	2.3679	
Rknee	Female	3.3333	57	4.3725	2.784 (84.884)*
	Male	1.5156	64	2.4102	

*p= <.05

Note: No table produced for sample b because statistical tests produced no significant results.

In tests organizing data by source, there were no significant differences in the severity of marginal lipping between men and women in the Cobb sample. In the Terry sample, significant differences in the severity between men and women were found in the shoulders, elbows, left hip and knees. In all cases, arthritic change was more severe in women. In tests organizing data by subsample, sample a presented significant differences in the severity of arthritis between men and women in the right thumb and left knee. In both cases, arthritis in women was more severe. There were significant differences in the severity of arthritis in the shoulders and the left knee between men and women in sample c. Sample d presented significant differences between arthritis in the left shoulder and knees between men and women. In all cases, women were affected more severely.

The greater involvement of multiple joints and severity of arthritis in women from the Terry sample reflects findings from previous studies of DJD patterns in modern populations

(Kellgren and Lawrence, 1957; Kellgren 1961; Peyron, 1986; Jurmain, 1999). This trend is said to reflect the influence of systemic rather than functional factors on arthritis patterns. Although arthritis involvement is more prevalent among males prior to 55 to 60 years of age, arthritis in females is more prevalent and severe after 60 (U.S. Department of Health, Education and Welfare, 1979). Based on the early peak age of arthritic change in the Terry sample, results of the aggregate test (by source) should reflect the influence of systemic and non-systemic factors on different patterns of arthritic change between men and women. Therefore, test results organizing data by sample are helpful in interpreting the presence of arthritic change caused by both factors. For instance, it is likely that test results for sample c represent the presence of arthritic change in the shoulder resulting from systemic factors. Not only is the shoulder the most age and symmetrically affected joint, but the mean age of women in sample c is 7 years older than men (63.38 and 56.09, respectively). Arthritic change in the knee for this group, however, is likely a product of functional stress. Only the left knee shows a significant difference in severity although the knee is the second most symmetrically affected joint. Sample d represents the youngest individuals in the Terry collection, and the mean ages of women and men are more similar (33.79 and 31.14, respectively). Therefore, the results of this test probably reflect the presence of arthritic change in the shoulder between men and women resulting from functional stress. Results of the test on sample a are a likely result of activity stress. Although osteoarthritis in the hand is generally more prevalent and severe in women than men (Dieppe and Lim, 1998), effect is usually bilateral. The knee is also highly age and bilaterally-affected. Although this is the older segment of the Cobb sample, the mean ages for women and men in sample a are similar

(71.27 and 69.58, respectively). That significant results are only present on one side of the body provides further evidence for this interpretation.

Results of chi-square tests are presented in the following tables.

Table 21. Chi-square test for the relationship between gender and arthritis by source (left shoulder)

	Arthritis	Female (%)	Male (%)	Total (%)	X2
Cobb	Present (%)	40 (39.2)	62 (60.8)	102 (100)	.047
	Absent (%)	13 (37.1)	22 (62.9)	25 (100)	
Terry	Present (%)	77(62.6)	46 (37.4)	123 (100)	11.502*
	Absent (%)	32 (38.6)	51 (61.4)	83 (100)	

*p<.05

Table 22. Chi-square test for the relationship between gender and arthritis by source (left elbow)

	Arthritis	Female (%)	Male (%)	Total (%)	X2
Cobb	Present (%)	21 (37.4)	26 (62.6)	56 (100)	.692
	Absent (%)	34 (44.7)	57 (55.3)	91 (100)	
Terry	Present (%)	75 (43.2)	51 (56.8)	126 (100)	5.270*
	Absent (%)	35 (59.5)	46 (40.5)	81 (100)	

*p<.05

Table 23. Chi-square test for the relationship between gender and arthritis by source (right elbow)

	Arthritis	Female (%)	Male (%)	Total (%)	X2
Cobb	Present (%)	33 (34.7)	62 (65.3)	95 (100)	1.753
	Absent (%)	23 (46)	27 (54)	50 (100)	
Terry	Present (%)	34 (43)	45 (57)	79 (100)	5.236*
	Absent (%)	76 (59.4)	52 (40.6)	128 (100)	

*p<.05

Table 24. Chi-square test for the relationship between gender and arthritis by source (right knee)

	Arthritis	Female (%)	Male (%)	Total (%)	X2
Cobb	Present (%)	35 (39.8)	53 (60.2)	88 (100)	.080
	Absent (%)	16 (37.2)	27 (62.8)	43 (100)	
Terry	Present (%)	79 (60.3)	52 (39.7)	131 (100)	7.356*
	Absent (%)	31 (40.8)	45 (50.2)	76 (100)	

*p<.05

In tests organizing data by source, the Terry sample presented significant relationships between gender and moderate and severe arthritic change in the left shoulder, elbows and the right knee. In all cases except the right elbow, women are more likely to have moderate or severe arthritis in these joints. No significant relationships presented in the Cobb sample.

In combination with independent samples t-tests, chi-square test results indicate that except for the right elbow, there is a positive association between the severity and prevalence of moderate and severe arthritis in women from the Terry sample. As stated above, the higher prevalence and severity of arthritis among women after the 5th decade is an established pattern. Results of the chi-square tests do not reflect all significant results that presented in t-tests because chi-square tests only indicate the prevalence of arthritis, rather than severity. This is underscored in the greater prevalence of arthritis among men in the right elbow, although t-tests indicate it is more severe in women.

The absence of significant results for the Cobb sample suggest a similar prevalence of moderate and severe arthritic affect in men and women, although t-tests indicate that skeletal changes in women were more severe.

Hypothesis 5

There is a positive relationship between the presence of moderate and severe marginal lipping and subchondral surface porosity.

The results of chi-square tests to examine the relationship between gender and enthesopathy in elements of joint complexes are listed in the following table.

Table 25. Chi-square test for the relationship between gender and enthesopathy (left radial tuberosity)

	Enthesopathy	Female (%)	Male (%)	Total (%)	X2
Cobb	Present (%)	30 (33.3)	60 (66.7)	90 (100)	4.931*
	Absent (%)	23 (53.5)	20 (46.5)	43 (100)	
Terry	Present (%)	64 (52.9)	57 (47.1)	111 (100)	.009
	Absent (%)	45 (53.6)	39 (46.4)	84 (100)	

*p<.05

Only tests organizing data by source were conducted to avoid having inadequate cell sizes. In the Cobb sample, the left radial tuberosity showed a significant relationship with gender. Crosstabulations indicated that men were more likely to have these lesions than

women were. No significant relationships presented in the Terry sample. Results of this chi-square test are consistent with research indicating the greater prevalence of hypertrophic reactive bone formation among men (Solomon, 2001; Ortner, 2003). As the radial tuberosity is the insertion site for the biceps muscle, it is a common finding in populations that use their arms in strenuous activity (Mann and Murphy, 1990). Although the authors cited above note that genetic factors may be involved in hypertrophic bone formation, the prevalence of radial tuberosity enthesopathy could also suggest differentials in the range of habitual motion engaged in between men and women in this sample.

That women in the Cobb sample present more severe arthritic change while men are more likely to present enthesopathy suggests a possible gender difference in the type of functional stress experienced by each group. A number of recent studies suggest a correlation between arthritic change and long-duration activity stress (Anderson and Felson, 1988; Felson et al., 1991; Cooper et al., 1994). Other studies indicate a statistically significant correlation between the presence and severity of marginal osteophytes and enthesophytes (such as Rogers et al., 1997). As this is the only functionally-related lesion that is more prevalent in men, it is possible that it reflects a degree of activity related trauma not experienced by women.

Hypothesis 6

There is a positive relationship between the presence of moderate and severe marginal lipping and enthesopathy in elements of a given joint.

Chi-square tests were also used to assess the relationship between the presence of moderate and severe marginal lipping and subchondral porosity. Tests were conducted organizing data by source, as smaller groupings led to inadequate cell size.

The following tables present results of chi-square tests for the relationship between the presence of arthritis and subchondral porosity.

Table 26. Chi-square test for the relationship arthritis and subchondral porosity (left thumb)

	Porosity	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	35 (47.3)	4 (28.6)	1.673
	Absent (%)	36 (52.7)	10 (71.4)	
	Total	71 (100)	14 (100)	
Terry	Present (%)	87 (60.8)	14 (22.2)	26.097*
	Absent (%)	56 (39.2)	49 (77.8)	
	Total (%)	143 (100)	63 (100)	

*p<.05

Table 27. Chi-square test for the relationship arthritis and subchondral porosity (right thumb)

	Porosity	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	28 (41.2)	6 (33.3)	.366
	Absent (%)	40 (58.8)	12 (66.7)	
	Total (%)	68 (100)	18 (100)	
Terry	Present (%)	97 (61.0)	9 (15.6)	28.993*
	Absent (%)	62 (39.0)	38 (84.4)	
	Total (%)	159 (100)	47 (100)	

*p<.05

Table 28. Chi-square test for the relationship arthritis and subchondral porosity (Left Shoulder)

	Porosity (%)	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	70 (76.9)	15 (44.1)	12.242*
	Absent (%)	21 (23.1)	19 (55.9)	
	Total (%)	91 (100)	34 (100)	
Terry	Present (%)	96 (82.1)	128 (64.6)	37.908*
	Absent (%)	21 (17.9)	70 (35.4)	
	Total (%)	117 (100)	198 (100)	

*p<.05

Table 29. Chi-square test for the relationship arthritis and subchondral porosity (Right Shoulder)

	Porosity (%)	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	75 (78.9)	12 (42.9)	13.606*
	Absent (%)	20 (21.1)	16 (57.1)	
	Total (%)	95 (100)	28 (100)	
Terry	Present (%)	112 (84.2)	28 (41.8)	38.178*
	Absent (%)	21 (15.8)	39 (58.2)	
	Total (%)	133 (100)	67 (100)	

*p<.05

Table 30. Chi-square test for the relationship arthritis and subchondral porosity (Left Elbow)

	Porosity (%)	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	45 (57.7)	13 (32.5)	6.714*
	Absent (%)	33 (42.3)	27 (67.5)	
	Total (%)	78 (100)	40 (100)	
Terry	Present (%)	66 (54.5)	16 (21.3)	20.988*
	Absent (%)	55 (45.5)	59 (78.7)	
	Total (%)	121 (100)	75 (100)	

*p<.05

Table 31. Chi-square test for the relationship arthritis and subchondral porosity (Right Elbow)

	Porosity	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	48 (53.9)	16 (45.7)	.679
	Absent (%)	41 (46.1)	19 (54.3)	
	Total (%)	89 (100)	35 (100)	
Terry	Present (%)	75 (62.0)	22 (32.8)	14.669*
	Absent (%)	46 (38.0)	45 (67.2)	
	Total (%)	121 (100)	67 (100)	

*p<.05

Table 32. Chi-square test for the relationship arthritis and subchondral porosity (Left Hip)

	Porosity	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	65 (78.3)	14 (42.4)	14.001*
	Absent (%)	18 (21.7)	19 (57.6)	
	Total (%)	83 (100)	33 (100)	
Terry	Present (%)	121 (80.7)	35 (62.5)	7.322*
	Absent (%)	29 (19.3)	21 (37.5)	
	Total (%)	150 (100)	56 (100)	

*p<.05

Table 33. Chi-square test for the relationship arthritis and subchondral porosity (Right Hip)

	Porosity	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	69 (76.7)	14 (42.4)	12.902*
	Absent (%)	21 (23.3)	19 (57.6)	
	Total (%)	90 (100)	33 (100)	
Terry	Present (%)	122 (84.7)	163 (78.7)	10.103*
	Absent (%)	22 (15.3)	44 (21.3)	
	Total (%)	144 (100)	207 (100)	

*p<.05

Table 34. Chi-square test for the relationship arthritis and subchondral porosity (Left Knee)

	Porosity	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	47 (66.2)	8 (44.4)	2.878
	Absent (%)	24 (33.8)	10 (55.6)	
	Total (%)	71 (100)	18 (100)	
Terry	Present (%)	54 (46.2)	62 (33.5)	22.825*
	Absent (%)	63 (53.8)	123 (66.5)	
	Total (%)	117 (100)	185 (100)	

*p<.05

Table 35. Chi-square test for the relationship arthritis and subchondral porosity (Right Knee)

	Porosity	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	46 (67.6)	9 (42.9)	4.177*
	Absent (%)	22 (32.4)	12 (57.1)	
	Total (%)	68 (100)	21 (100)	
Terry	Present (%)	59 (49.6)	69 (37.3)	12.517*
	Absent (%)	60 (50.4)	116 (62.7)	
	Total (%)	119 (100)	185 (100)	

*p<.05

All joints in the Terry sample presented a significant relationship between the presence of subchondral porosity and marginal lipping. In the Cobb sample, results indicate a significant relationship between arthritis and subchondral porosity in the right shoulder, left elbow, hips and right knee. Therefore, crosstabulations confirm previous findings that the presence of porosity is associated with the presence of marginal lipping. In sum, these features present as skeletal manifestations of osteoarthritis and provide further evidence against assertions denying this relationship (see Rothschild, 1997).

Hypothesis 7

There is a positive relationship between the presence of moderate and severe marginal lipping and enthesopathy.

The results of chi-square tests for the relationship between marginal lipping and enthesopathy in elements of a given joint are presented in the following tables.

Table 36. Chi-square test for arthritis and enthesopathy by source (left elbow and radial tuberosity)

	Enthesopathy	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	65 (73.9)	25 (55.6)	4.562*
	Absent (%)	23 (26.1)	20 (44.4)	
	Total (%)	88 (100)	45 (100)	
Terry	Present (%)	81 (64.8)	40 (50)	4.418*
	Absent (%)	44 (35.2)	40 (50)	
	Total (%)	125 (100)	80 (100)	

*p<.05

Table 37. Chi-square test for arthritis and enthesopathy by source (right elbow and radial tuberosity)

	Enthesopathy	Arthritis present (%)	Arthritis absent (%)	X2
Cobb	Present (%)	77 (81.1)	24 (57.1)	8.594*
	Absent (%)	18 (18.9)	18 (42.9)	
	Total (%)	95 (100)	42 (100)	
Terry	Present (%)	81 (63.8)	39 (50.6)	3.412
	Absent (%)	46 (36.2)	38 (49.40)	
	Total (%)	127 (100)	77 (100)	

*p<.05

The Terry sample presents a significant relationship between the presence of arthritis in the left elbow and enthesopathy in the radial tuberosity. The Cobb sample presents significant relationships between marginal lipping in the elbows and enthesopathy on the radial tuberosities. In all cases, crosstabulations indicate an association between arthritis in the elbow and enthesopathy. Being the most functionally affected joint, it is not surprising that a positive relationship between arthritis in the elbow and enthesopathy at the insertion site for the biceps muscle was found. This suggests that functional stress from heavy lifting was a factor in the presence of arthritis observed in these skeletal samples.

In a test splitting data by source and sex, a positive association between marginal lipping in the left elbow and enthesopathy of the proximal radius was found in males from the Terry sample ($X^2=4.884$). In the right elbow, the same positive association was found in women from the Cobb collection ($X^2=6.958$). It is interesting to recall the results of chi-square tests for the relationship between gender and enthesopathy described in hypothesis 6. Based on the results of that test, males in the Cobb collection were more likely to have radial

tuberosity enthesophytes. However, when the presence of arthritic change is taken into account, the test reveals a positive association between the higher prevalence of marginal lipping in the elbow among women and radial enthesophytes. These results underscore the strong correlation between marginal osteophytes and enthesophytes found in research discussed earlier. These findings also contrast that research in that there is a higher prevalence of enthesophytes among women. Therefore, results suggest a higher prevalence of activity stress among women in the Cobb sample. Although recent studies call attention to the possible role of genetic factors in hypertrophic bone formation (Rogers et al., 1997; Solomon, 2001), the documentary data used to develop an historical and environmental context for this sample make it difficult to attribute this pattern to heredity. That the prevalence of enthesophytes in Cobb sample males does not have a statistically significant relationship with the prevalence of marginal osteophytes underscores this point. Perhaps the relationship between gender and enthesopathy illustrated in hypothesis 6 reflects some genetic influence. In the absence of that assumption (and the generally accepted notion of the association between osteophytes and enthesophytes), the differences in enthesopathy between men and women here suggest that marginal lipping and enthesopathy reflect the different types of stress to which the body is subjected. Given the numerous current debates about the relationship between enthesopathy and certain types of mechanical loading (see Jurmain, 1999 for a detailed overview), it is difficult to surmise the cause of these different lesions.

Understanding the relationship between enthesopathy and marginal lipping is useful in interpreting evidence of activity stress in the Terry sample in light of age distribution. Although women in the sample present a higher prevalence of marginal lipping, the

combination of osteophytes and enthesophytes is more prevalent among males. This may indicate a higher prevalence of activity related stress in the males in the sample males.

Overall, the differences in these results underscore the importance of considering multiple factors when examining skeletal changes that are possibly a result of activity stress.

Hypothesis 8

Cause of death and patterns of DJD in the Cobb subsamples are similar to those in the Terry samples.

Although the Cobb and Terry samples presented general similarities in known causes of death and (in some instances) patterns and prevalence of arthritis, there are a number of differences that deserve attention.

Cause of Death – Heart disease was the leading cause of death in the Cobb sample, while tuberculosis accounted for 49% of the death in the Terry sample. Organizing data by subsample, the leading cause of death in primary samples from the Cobb and Terry collections was heart disease. Most deaths in the secondary sample from each collection were from tuberculosis. In spite of this similarity, results suggest that individuals in the Terry collection may have lived or were exposed to conditions putting them at a greater risk for infection.

Arthritis patterns – The Terry sample had more variation in the severity of arthritis between men and women than the Cobb samples. As stated above, this is most likely due to the higher mean age of women than men. However, the younger peak age for the presence of moderate and severe arthritic change in the sample suggests that activity stress is also a factor in observed patterns. This does not mean that osteoarthritic changes in women from the

Terry collection are all age related. For instance, organizing data by age group, Cobb and Terry females had similar mean ages in each category. However, moderate or severe lipping peaked at age group 1 for Terry females (sharply declining in age group 3) and age group 2 in Cobb females (except the hips, with a slight decline in age group 3). Moreover, the mean age of Terry males is younger than Cobb males in all 3 age groups (by 3, 5 and 3 years, respectively). Moderate and severe lipping peaks in age group 1 in Terry males, with a sharp decline in age group 3. Except for the elbows, moderate and severe lipping among Cobb males peaks at age group 3 without sharp increases or decreases in any age group. The prevalence of eburnation in subsamples provides further understanding of osteoarthritis prevalence in these samples, especially when the mean age discrepancy is taken into account. However, observations were too small to statistically test relationships with age or gender. Nonetheless, the number of cases indicates certain trends.

Table 38. Cases of eburnation in each joint by source

	Lth	Rth	Lshl	Rshl	Lelbow	Relbow	Lhip	Rhip	Lknee	Rknee	Total Cases
Cobb	2	3	4	5	4	5	3	3	13	9	60
Terry	1	3	4	2	5	5	0	0	5	10	35

The table above presents cases of eburnation observed in each joint and the overall number of cases in each sample. There were 35 cases of eburnation in the Terry sample and 60 in Cobb. The following table shows crosstabulations for eburnation according to age group.

Table 39. Cases of eburnation in each joint by age group

	Age	Lth	Rth	Lshl	Rshl	Lel	Rel	Lhip	Rhip	Lknee	Rknee	Total Cases
Cobb	25-45							1		1		2
	46-65	1	3	2	4	2	1		1	5	4	23
	66-90	1	2	2	1	2	4	2	3	7	5	29
Terry	25-45			1	1							2
	46-65			1		2	2			1	2	8
	66-90	1	3	1	2	3	3			4	8	25

As expected, individuals in age group 3 had the most cases of eburnated subchondral surfaces, followed by individuals in age group 2. Both tables indicate that eburnation most often occurred in the knees. Although the Cobb sample has a higher mean age than the Terry sample, the presence of osteoarthritis (as reflected in the amount of eburnation) is not all due to increased age. There are almost as many cases of eburnation in age group 2 of the Cobb sample as there are in age group 3. Eburnation also occurs earlier in the Cobb sample, which indicates the likelihood that these lesions are a result of activity related or non-systemic stress. The sharp increase in the number of eburnation cases between age groups 2 and 3 in the Terry sample is more reflective of age related arthritic change. Therefore, based on cases of marginal lipping, the Terry sample presents earlier osteoarthritis change, while the Cobb sample presents earlier change based on cases of eburnation. The patterns of variation for marginal lipping and eburnation suggest that each condition is, at least in part, caused by activity stress. It is possible that individuals in each sample are expressing that stress differently. Nonetheless, the larger number of eburnation cases in the Cobb sample suggests a greater prevalence of osteoarthritis in these individuals. Although not represented statistically, the peak ages for moderate and severe lipping in the Terry samples suggest that these individuals were subjected to more activity stress, and that women and men were physically taxed to a similar extent.

The small amount of statistically significant variation in arthritis severity between men and women in the Cobb sample serves as a possible indicator of the similar extent to which men and women were physically taxed. Results from chi-square tests for associations between enthesopathies and gender underscore this point and further suggest that women in the sample might have suffered more activity stress than men. This is supported by the younger peak age for cases of moderate and severe marginal lipping in women. Overall, the results of these tests support the notion that women in the Cobb sample represent a class of women who were particularly destitute. Because men were less likely to have access to support from friends or family for support as a migrant, moderately poor and destitute males are more than likely represented in the sample. That the peak age for moderate and severe marginal lipping reflects age-related versus activity-related change provides further evidence that these individuals were not subjected to excessive load stress.

Data on patterns of arthritic change was useful in identifying differences in arthritic patterns between men and women and right and left sides within and between the Cobb and Terry samples. However, its utility for profiling differences between the almshouse and non-almshouse samples was limited. The age distribution of arthritic change in the sample, coupled with the peak ages of arthritic change was the cause of this difficulty. Therefore, information on known causes of death and next of kin was essential to profiling the local context. As for biological data, this study suggests that other skeletal indicators of health should be integrated into the study to identify differences in the biological context of those subsamples. For instance, fractures were observed in 8 skeletal elements examined for arthritic change in the primary sample, while 13 were observed in skeletal elements from the secondary sample. Although this observation suggests a differential risk of trauma between

samples, elements from the entire skeleton must be examined to obtain a true picture of the presence of trauma in this collection (Mueller, 2003). Moreover, more detailed examination of the skeleton for other indicators of trauma observed should be included also. Figures 19 through 25 exhibit the variety of traumas found in skeletal materials from the Cobb collection.

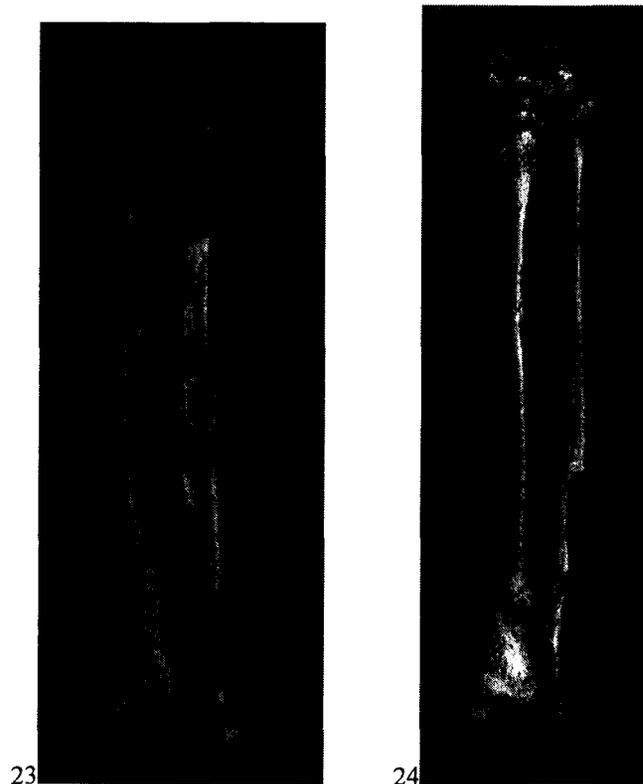


Figure 23. Healed fracture of the left radius and ulna of a 79 year old male (W. Montague Cobb collection).

Figure 24. Improperly set fracture of the left tibia and fibula with subsequent ankylosis from the remains of a 65 year old male (W. Montague Cobb collection).

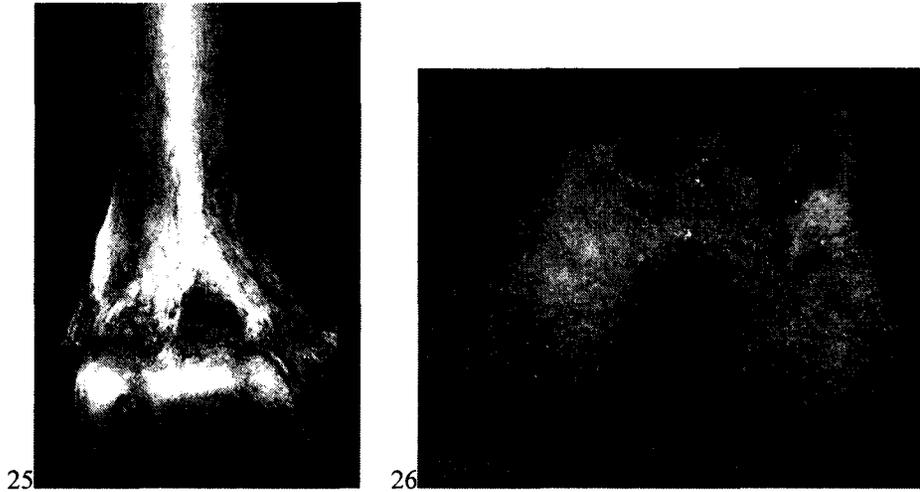


Figure 25. Osteochondritis dissecans on the capitulum of a 72 year old male (W. Montague Cobb collection).

Figure 26. Osteochondritis dissecans on the medial femoral condyle of a 58 year old female (W. Montague Cobb collection).

This research limitation underscores the importance of using a variety of data sources in a biocultural analysis.

Inter-sample variation -- The relative difference in age between men and women in the Cobb and Terry samples reveals an important difference between them. As stated, subsamples from the Terry collection were chosen based on having the same years of birth and death that individuals from the Cobb sample had. In addition to comprising a group with less homogeneity in age, it is clear that individuals from the Terry sample living in St. Louis at the same time individuals in the Cobb sample were living in Washington, D.C. died at a younger age. That this is possibly due to the Terry sample being at a greater health risk than the Cobb sample is reflected in the known causes of death.

These results indicate that a number of factors need to be taken into account during a comparative analysis of groups assumed to be similar because of socioeconomic status. Although both samples represent late 19th-early 20th century poor urban African Americans,

there is a range of difference between these samples in terms of cause of death, age at death and arthritic patterns. With the understanding that social phenomena are embedded in the biological record, I assert that this variation in biological data reflect local historical differences in the social and physical environments of Washington, D.C. and St. Louis Missouri.

Chapter V: Conclusion

The social and historical context developed for this study rendered visible specific features of the environment of inequality in which individuals in the Cobb samples functioned. Specifically, the District's status as 'the seat of government' led to an influx of Blacks to the city unparalleled in other eastern and southern cities during the 19th century. However, Washington, D.C. did not receive the same influx of foreign immigrants other cities did at the time. As a result, a particularly racialized conflation of poverty, crime and illness developed. The analogy constructed between poor Blacks and the 'undeserving poor' immediately following the Civil War underscores this point. Blacks therefore encountered disproportionately limited access to resources necessary to maintain the basic quality of life and health of the poor. Their dependence upon the government for relief was attributed to a 'dependent 'nature' stemming from their former enslavement, rather than the structural and ideological conditions confining them to the bottom of the socioeconomic ladder.

The focus on Blacks as the deviant 'other' in the District was also evident in the willingness of privileged Whites and elite Blacks to forfeit local control to the federal government rather than grant suffrage to the huge numbers of Blacks migrating to the city. As stated, this disenfranchisement of all local citizens had a particularly negative impact on how the District was able to care for its poor, as the individuals who determined appropriations had no local investment in the city, or a first-hand understanding of the local conditions. This result of the fear of Black suffrage remained in place until 1975 when the

District was granted partial local governance.

Unlike other cities to which Blacks migrated after the Civil War, Washington, D.C. was not surrounded by vast farmlands, nor did it develop an extensive industrial economic base. Much of the economic development of the city relied upon the development of the federal government. The lack of a surrounding farm area made it difficult for the Freedmen's Bureau to provide local work relief to Black refugees in the District after the Civil War. The efforts to relocate Blacks to other areas with more job opportunities was met with opposition, as they feared separation from relatives and working arrangements similar to those during slavery. Lack of skills necessary for earning a living in an urban area, combined with racial discrimination and the lack of industry in the city put Black migrants to the District at an extreme disadvantage for employment through the turn of the century. The limited number of industrial jobs was mostly given to Whites. Discriminatory measures were also taken to keep Blacks out of civil service jobs during and long after the Hoover administration. In addition, few businesses that employed Blacks provided them with opportunities for advancement.

In spite of limited job opportunities, the Black population in the District increased 41.9% during the Great Depression. As with earlier migrants to the city, individuals had extremely limited access to poor relief. During this period, a year of continuous residence was required to receive public assistance. For people 65 and over the requirements were even more strict. Food, lodging and employment assistance provided to non-residents at the time was inadequate. That only a small fraction of employment agencies and lodging houses served Blacks meant that these new arrivals, most of whom came to the city poor, continued to live within cycles of poverty they hoped to disrupt.

During the post-1935 New Deal era, more of an effort was made to distribute relief to Blacks. However, job opportunities from programs such as the Works Progress Administration had a minimal effect on Black employment in the District. First, the program in the District focused on sewing and household aid training. Therefore, job training opportunities for men were limited. Second, Washington, D.C. had few sewing factories, and even fewer hired Blacks. Seamstress positions in department stores were also largely unavailable to Black women. As for employment as a household aid, women long out of work lacked the references required by housewives for hire. As Blacks made up the majority of people unemployed for a year or more, many Black women fell into this category. Other job assignments such as those provided by public health nurses were often temporary. The cessation of funds to provide WPA jobs to individuals limited to light work in 1936 limited job opportunities for Blacks even further. Hospital admissions and records of home visits by physicians to the poor indicate that Blacks made up the majority of patients in both cases. Since Blacks represented a disproportionate number of the poor and infirm it is likely that many were only able to perform light work.

Therefore, racial discrimination, the lack of industry and rurally oriented job skills of Blacks all contributed to their underemployment and confinement to low paying, unskilled labor. Between 1880 and 1940, Blacks made up the majority of people employed in domestic and unskilled work. The lack of jobs in general and jobs with adequate pay influenced the quality of housing individuals were able to obtain. Therefore, the housing conditions for Blacks were characteristically substandard, putting individuals at increased risk for infectious disease and other illness.

Personal data from morgue records indicate that the Cobb collection is made up of migrants to the city who lived within these cycles of poverty perpetuated by structural constraints and poor health. This study established in a previous section that individuals from the Cobb sample represent these migrants. Information on morgue records regarding next of kin indicates that migrants were not totally disconnected from relatives or friends. However, relatives and friends did not claim these individuals for burial. This suggests that the social and familial networks they were a part of were probably comprised of individuals who were also poor. The states of poverty or infirmity individuals were in upon arriving to the District were more than likely exacerbated by having to live without public assistance. The unexpected health differences between individuals living at the almshouse and those living in the general population are probably associated with these circumstances.

Blacks received the majority of public assistance relative to the amount of the population they represented. As stated in previous sections, grants remained below the cost of living and were often cut because of the high number of cases. These cuts affected the amount and quality of food intake as well as the ability to pay rent. Therefore, people were unable to improve their economic condition once they were eligible for public assistance because relief was inadequate to prevent 'permanent breakdowns' in families.

The lack of industry in the central city also made the District an attractive residential area to privileged Whites and elite Blacks at the turn of the century. Migrants to the city lacked economic resources to afford prime space in the core of the city. In addition, most of the coveted areas were occupied by the time latecomers arrived. As a result, the earliest migrants to the city were relegated to the outskirts, where public transportation, sewage and housing development were limited. Overcrowding and a lack of sanitary maintenance by the

city made conditions in these areas amenable to the spread of disease. Blacks inside the city also lived in the least desirable blocks and alleyways for the same reason, and under the same conditions. Rather than addressing conditions in these areas, housing reform initiatives focused on middle-class neighborhoods. This was one of many exclusionary tactics used to contain poverty and erect barriers between the poor and privileged classes.

Residents of the Home for the Aged and Infirm are another constituency of poor Blacks who lived within a particular cycle of poverty in the District. The almshouse is part of the continuum of municipal housing and support for the poorest Blacks in the District, originating with housing in contraband camps during and immediately after the Civil War. The living conditions and medical care almshouse residents received was directly affected by the federal governance of the city, which privileged national concerns over local ones. As a result, funding for construction, repairs, adequate staff and medical care was far below appropriations requests by the home superintendent.

Municipal housing was another mechanism for containing poverty influenced by the conflation of poverty, crime and disease. The architectural style, location, resident characteristics, living conditions and quality of health care underscore its form and function. As stated, the almshouse was built in the same style as tuberculosis sanatoriums, and was located outside the core of the city. Residents, often referred to as inmates, were allowed little to no time away from the home. In addition, inmates varied greatly in terms of age, medical condition, mental health and criminal background. Because officials attempted to care for so many indigent groups with inadequate funding under one roof, living conditions as well as the quality and extent of medical care remained substandard. The combined efforts of medical and social authorities were clearly associated with the production and

reproduction of conditions of poverty in which residents lived. Housing such a variety of poor people in one institution outside of city limits erected a clear boundary between those assumed to be racially, economically and mentally deviant and the privileged who feared contamination. Poverty was contained without changing the status quo. Clearly, eliminating structures of poverty was not a part of housing reform, poor relief and anti-disease agendas in late 19th and early 20th century Washington, D.C.

The results of this study show that both almshouse and poor residents living in the general population were subject to exclusionary tactics and intrusions on their daily lives. Based on social context and previous research on the biological consequences of long-term institutionalization, I expected to see certain patterns in biological data. As the almshouse residents represent the poorest segment of the city's Blacks, I expected to see skeletal indicators and causes of death that reflected long term institutionalization in a substandard facility. In addition to high rates of infectious disease, I expected to see evidence of trauma observed in other skeletal samples of individuals from long-term institutions (Higgins, 2001a, 2001b, 2002; Phillips, 2001a, 2001b). Finally I expected to see a prevalence of activity stress that reflected their engagement in unskilled labor prior to residence in the almshouse. Among the District residents living in the general population, I expected to see a lower rate of infectious disease. Because both groups engaged in unskilled labor, I expected to observe an equal amount of activity stress as in the almshouse sample. Finally, I expected that the women in this collection suffered more activity stress than men. Because there were more social support agencies providing assistance to women than men, there were other resources for women to seek out before having to turn to municipal housing. Therefore, it is likely that women in this collection represent those at a particular disadvantage for access to

such resources. In spite of age or infirmity, these women were responsible for supporting themselves.

In contrast to expected results, District residents living in the general population suffered more infectious disease. That there is more infectious disease and activity stress among individuals living in the general population is evidence of the particular disadvantage at which people in this group lived. Limited employment opportunities for Blacks, as well as the prevalence of chronic illness made it difficult for individuals and families to support themselves. Therefore, Blacks represented a disproportionate number of aid recipients relative to their percentage of the population. However, assistance was inadequate, with grant limits consistently set below the cost of living.

As rent for housing was a fixed amount, grant limitations often translated into a lack of regular meals, or a decline in the quality of food consumed. As a result, grants rarely helped to prevent permanent economic breakdowns in families and among individuals. Morgue records confirm that individuals in the Cobb sample were part of social and family networks suffering such breakdowns, as relatives were unable or unwilling to pay for burial. Some of these individuals were also listed as ineligible for public assistance. This means that people in this sample also represented a segment of the population that slipped through the cracks of a relief system requiring individuals to be a certain age and have a specific length of residence in the District. Biological and documentary data suggest that poverty exacerbated by these circumstances left poor Blacks living in the general population in worse economic and physical condition than residents of municipal housing. As stated in chapter 3, African Americans were often at a disadvantage for meeting these criteria because they were unable to provide proof of age or duration of residence in the city. The unorthodox methods

used to secure material assistance for Samuel Burgess indicates the lack of resources and effort invested by local government in recovering individuals who slip through those cracks. As grants provided limited economic security to recipients, people unable to obtain assistance were at an even greater disadvantage for securing housing and food that could disrupt cycles of poverty related to poor health and underemployment. In spite of the substandard living conditions in the Home for the Aged and Infirm, it is possible that the continuous provision of lodging and meals (albeit inadequate) are responsible for the health differences between almshouse residents and those living in the general population.

Knowledge of conditions in the almshouse makes it impossible to state that residents of the home were 'healthier' or more 'well off' than people living in the general population. Rather, these results indicate the gradient of poverty among African Americans in the District represented in the Cobb collection. The spatial and relational aspects of this gradient illustrate how the ideological link between race, poverty, crime and illness fueled a poor relief system in which poor Blacks were at more of a disadvantage relative to poor Whites. Moreover, this system was more concerned with protecting privileged people from the poor than creating a rehabilitative environment, or confronting the structure of poverty by changing the status quo. For instance, the variety of poor people sent to the home made it impossible to provide adequate care to any single constituency. This condition is also what caused many beds in the home needed by poor and infirm people in the general population to be occupied by able-bodied men unable to find work, mentally ill people unable to secure accommodations at St. Elizabeth's and young convalescents from Gallinger hospital. Therefore, the conditions of extreme poverty in the District evidenced in the poorhouse and the general population represent different effects of the same social environment.

If skeletal samples representing African Americans from the late 19th and early 20th century have general characteristics in common with one another, the Terry and Cobb samples should present patterns of activity stress similar to one another. Since most of the individuals from the Terry sample were also unclaimed for burial, I expected activity stress in women to be more prevalent and severe than in men. However, since a segment of individuals in the Cobb sample were known to be extremely destitute, I expected arthritic patterns to be more severe in the Cobb sample overall. The detailed social context developed for this study identified health and demographic differences between the Cobb and Terry samples that would have otherwise been missed. To review, primary and secondary samples from the Terry collection were chosen based on having the same years of birth and death as individuals in the samples from the Cobb collection. If it is assumed that, based on the similarities in socioeconomic and temporal context between them, these samples represent 'the poor,' similar demographic and health patterns should be observed.

Results showed that individuals in the Terry samples died at a younger age than individuals in the Cobb collection with the same years of birth and death. Moreover, there was a higher prevalence of infectious disease in the Terry samples and an earlier peak age for moderate and severe marginal arthritic lipping in joints. In addition, there was a greater difference in the mean age between men and women in the Terry samples than in the Cobb samples. It is likely that the younger mean age for men in these samples in part reflects the less adequate immune response on the part of males (Ortner, 2003). The mean age difference also suggests that men were living under conditions that put them at a greater risk of dying at a younger age. Differences identified within and between samples underscore the importance of using social context as an interpretive frame for health and disease patterns.

Given the relationship between social context and differences in health and activity stress within the Cobb sample, it is likely that differences between the Cobb and Terry samples are also a result of local environmental differences. Future research will include a profile of the local social environment of St. Louis for the relevant time period to more thoroughly test this hypothesis.

One of the goals of this biocultural study was to develop a social context through which to interpret biological data from the Cobb collection. Rather than developing a general social context, considerable time and effort was put into profiling the local history and identifying extra-local factors involved in shaping the local environment. Understanding how local and extra-local forces articulate in a particular environment is integral to identifying and understanding how conditions of poverty are constructed and persist. This in turn allows research on the biological consequences of poverty to go beyond identifying generalized characteristics of health among the poor and treating poverty as a static, naturalized condition.

This study shows that developing a detailed profile of the environment of social and economic inequality not only benefits an analysis of health differences between skeletal samples, but also within skeletal samples. For instance, residential information in Cobb collection morgue records suggested that individuals in this series represented the lower end of a gradient of poverty within the general population. This variation underscores the importance of recent biocultural research trends that go beyond analytical generalizations of the poor and conditions of poverty. The different groups of poor people represented in the samples used for this study illustrate that local conditions of poverty are not only experienced differently by communities, but also within smaller units of the community. In recognizing

the different responses to these conditions represented in the samples, this study provided a profile of the diversity in the quality of life and health in Washington, D.C. rather than analytically treating the collection as a representative sample of poor people in urban areas on the east coast. Attention to documentary data first provided the benefit of identifying different segments of the poor within the sample that would not have otherwise been identified. Engaging documentary data further made it possible to properly interpret differences in infectious burden between these samples, which contrasted with existing research on the biological consequences of life in an institutionalized environment. Moreover, identifying the local environmental context rendered visible examples of human agency within the sample that would not have otherwise been uncovered. Profiling the specific context of poverty in Washington, D.C. led to identifying the specific ways that local and extra-local forces shaped the local environment and influenced the disproportionately limited access African Americans had to housing, jobs and poor relief as well as their disproportionate representation among the chronically ill.

This focus on local historical context and treating the skeletal data as a regionally specific sample allowed this research to address many of the research limitations involved in working with skeletal and historical documentary sources. For instance, the circumstances under which a skeletal collection is uncovered or established affects the extent to which it represents the population from which it comes. There are also inherent biases in historical documents, which are also subject to inaccurate interpretation. As both data sources are prone to interpretive biases regarding their representativeness, this study illustrates the advantage of not positioning the biological record as an 'objective check' for the

documentary record. This positioning is not necessary for identifying or interpreting similarities and inconsistencies between data sources.

The overarching goal of this project was to apply a new biocultural research approach to the study of human biology that would provide a richer understanding of human-environment relationships. Given that this approach was influenced by both physical and ecological anthropology, this study contributes to research in both subdisciplines. Adopting ecological concepts broadening the definition of environment, this study was conducted from the premise that environments of social, political and economic inequality are considered equally worthy of study for their effects on human biology as climactic or geographical extremes. The biological data retrieved from the remains and records of individuals in the Cobb collection did indeed evidence the negative impact their material lives had on their health and mortality. Therefore, research on the biological consequences of inequality contributes to historical ecological research objectives by illustrating a relationship between humans and the environment outside of an essentialized context. The detailed profile of the social context of individuals in the Cobb sample illustrated how extra-local forces influence the local history of area, and the impact that local conditions have on the biology of its inhabitants. Therefore, this research illustrates how making a detailed social context of a population sample part of a human biology research methodology renders visible the relationship between history, biology and the cultural mediations through which the relationship is established. As a result, this research contributes to biocultural research approaches that seek to recognize how social conditions affecting human biology are constructed, rather than treating these conditions as inevitable (naturalized) components of a social system.

The social context developed for this study also shows that understanding how conditions of poverty are created lends to more appropriate interpretations of biological data. Moreover, research that identifies veiled structures of inequality and their biological consequences produces useful data for academic and social organizations working to eliminate economic and health disparities. For instance, this study identifies the origins of the municipal housing system for African Americans in the District. Specifically, processes affecting the quality of housing and medical care are partially rooted in the socially sanctioned spatial and economic marginalization of some of its residents. Identifying these processes is necessary for understanding the conditions under which the almshouse functioned in later years. During the 1970s, the government started reimbursing the home at one of the highest rates of any nursing home in the country. However, these social sanctions continued to negatively affect living conditions and quality of medical care. In 1976, the Department of Health, Education and Welfare threatened to cut off Medicare payments to the home because of poor staffing and care of residents (Washington Post, June 22, 1997). Five years later, the home voluntarily withdrew from Medicaid to avoid a federal inspection it would not have passed because of understaffing. In 1989, the home's eligibility for Medicaid was threatened again because of "asbestos, cockroaches and mistakes in giving residents medication" (Washington Post, June 25, 1996). The infamous home closed in 1996 still referred to as a home for the elderly, mentally retarded, physically disabled and those with nowhere else to go (Washington Post, June 25, 1996). Officials assumed that increased funding would improve conditions in the home and were perplexed when conditions did not change. This research identifies why funding had such a small impact on the condition of the home. Specifically, the connection between race, poverty and disease identified in this study

located a sociopolitical process 'displaced in time and space' that affected the city's care of a portion of its poorest residents during the late 20th century (Goodman et al., 1988, p. 193).

Moreover, the results of this study echo that of present research regarding heterogeneity among the poor. For instance, a 1993 study on opportunities and disincentives for economic independence for the poor highlights the diversity of this group, as well as differences in their access to and use of resources (General Accounting Office, 1993). Like the results of this dissertation research, the study indicated that 'the poor' and recipients of housing and public assistance are not necessarily a part of the same group. Therefore, understanding this diversity has important implications for the development and distribution of social services. This is yet another indication that this biocultural study is relevant to research geared towards addressing disparities within and between socioeconomic groups. In particular, this study of a local group renders visible different segments of poor people within a population not identifiable in studies using larger units of analysis.

A more general goal of this research was to examine how combining theoretical and methodological perspectives from political economy and historical ecology in a biocultural framework contribute to understanding the relationship between health and social context. In this study, the social context served as the interpretive frame for the biological data, helping to identify and interpret differences in biological data between the Cobb and Terry samples, as well as intra-sample variation. All aspects of sample variation revealed show how important it is to take environmental and historical context into account when researching groups that are assumed to be similar based on one or a few variables. The social context of the population samples also illustrated that conditions of poverty should be situated within mechanisms of social control. The interpretations of poverty translated into exclusionary

tactics evidenced in the distribution of poor relief, the structure and conditions at the Home for the Aged and Infirm, and housing reform. In going beyond a discussion of poverty as a mechanism of power, this study profiled the biological effects of this form of power on the people represented in the Cobb skeletal sample. Therefore, it is hoped that this study illustrates some of the methodological and theoretical advantages of making detailed historical research a part of biocultural analyses. This approach is a vital addition to bioanthropological research dedicated to exploring the intrinsic link between biological and cultural processes.

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