



Material Culture and Structural Violence: Reframing Evidence of the Social Gradient in Industrial Contexts

Kyla Cools 

Accepted: 24 September 2021 / Published online: 8 November 2022
© The Author(s) under exclusive licence to Society for Historical Archaeology 2022

Abstract Coal mining is an industry that historically has exposed laborers to a variety of environmental and occupational health hazards that have resulted in injury, illness, and/or physical disability. These health hazards, however, did not impact all laborers involved in coal mining equally. As a coal-mining company town organized with four distinct housing areas that correlate historically with the socioeconomic statuses of the jobs held at the colliery, Eckley Miners' Village provides a case study to explore how these health disparities were lived with and treated by residents of the industrial company town. Through an analysis of health-related material culture from house lots in two different sections of Eckley Miners' Village, evidence of the social gradient can be seen in the quality and quantity of medical ephemera present in the archaeological record. By utilizing archaeology, scholars can develop a longitudinal study of health disparities in the coal-mining towns of northeastern Pennsylvania. Examining contemporary health disparities requires tracing the historical foundations of these inequities, providing a critical space for archaeologists to contribute meaningful insights into the implications of social, political, and economic factors on exposure to health hazards and access to treatment materials.

Resumen La minería del carbón es una industria que históricamente ha expuesto a los trabajadores a una

variedad de peligros ambientales y de salud ocupacional que han resultado en lesiones, enfermedades y/o discapacidades físicas. Sin embargo, estos peligros para la salud no afectaron por igual a todos los trabajadores en la minería del carbón. Como poblado de una empresa minera de carbón organizado con cuatro áreas de vivienda distintas que se correlacionan históricamente con los niveles socioeconómicos de los trabajos realizados en la mina, Eckley Miners' Village ofrece un estudio de caso para explorar cómo vivían y trataban estas disparidades de salud los residentes del poblado de la empresa industrial. A través de un análisis de la cultura material relacionada con la salud de lotes de casas en dos secciones diferentes de Eckley Miners' Village, se puede ver evidencia del gradiente social en la calidad y cantidad de productos médicos de uso temporal presentes en el registro arqueológico. Al utilizar la arqueología, los académicos pueden desarrollar un estudio longitudinal de las disparidades de salud en los poblados mineros del carbón del noreste de Pensilvania. Examinar las disparidades de salud contemporáneas requiere rastrear los fundamentos históricos de estas desigualdades, proporcionando un espacio crítico para que los arqueólogos contribuyan con conocimientos significativos sobre las implicaciones de los factores sociales, políticos y económicos en la exposición a los peligros para la salud y el acceso a los materiales de tratamiento.

Résumé L'extraction du charbon est une industrie ayant historiquement exposé les travailleurs à des risques variés en matière d'environnement et de santé au travail, ayant entraîné des blessures, des maladies et/

K. Cools (✉)
Department of Anthropology, University of Maryland, 7251
Preinkert Drive, 2138 LeFrak Hall, College Park, MD, U.S.A.
e-mail: kcools@umd.edu

ou des handicaps physiques. Toutefois, ces dangers pour la santé n'ont pas affecté de manière égale les travailleurs impliqués dans l'extraction du charbon. En tant que cité ouvrière d'extraction du charbon organisée en quatre quartiers d'habitation différents en corrélation historique avec les statuts socio-économiques des postes occupés à la houillère, le village d'Eckley Miners fournit une étude de cas permettant d'étudier comment ces disparités en matière de santé étaient vécues et traitées par les résidents de la cité industrielle. Dans le cadre d'une analyse de la culture matérielle liée à la santé issue de logements dans deux sections différentes du Village d'Eckley Miners, des preuves du gradient social peuvent être relevées dans la qualité et la quantité des objets éphémères médicaux figurant dans les archives archéologiques. Les chercheurs peuvent en s'appuyant sur l'archéologie développer une étude longitudinale des disparités en matière de santé dans les villes minières du Nord-Est de la Pennsylvanie. L'étude des disparités contemporaines liées à la santé exige d'identifier l'origine des fondements historiques de ces inégalités, apportant ainsi un espace critique aux archéologues afin qu'ils contribuent par un apport riche de sens aux implications des facteurs sociaux, politiques et économiques de l'exposition aux risques de santé et de l'accès aux méthodes de traitement.

Keywords health · well-being · anthracite · Eckley Miners' Village · structural violence · social gradient

Introduction

The Industrial Revolution marks a major turning point in history, influencing dramatic shifts in facets of life, such as production, consumption, migration patterns, and social structures (among other phenomena). Historical archaeologists have worked to further understanding of the various impacts of the Industrial Revolution—particularly surrounding the interpretation and conservation of industrial monuments and landscapes, ranging from factories and mines to company towns (Hudson 1979; Casella and Symonds 2005). However, one aspect of the Industrial Revolution that has yet to be thoroughly addressed by historical archaeologists is that of injury, disability, and debilitating illness of industrial laborers as a result of occupational hazards. Some major questions that need to be explored include: Do all industrial laborers deal with similar exposure to health risks in

their respective roles? What inequities are present in terms of access to medical treatment? What role do intersectional facets, such as social class and/or ethnicity, play in the feasibility of obtaining medical treatment? The coal-mining “patch towns” of northeastern Pennsylvania serve as a case study by which archaeologists can explore these questions.

Coal mining is an industry associated with workplace fatalities and health risks ranging from black lung disease (also known as silicosis and/or coal-workers' pneumoconiosis) to communicable diseases and loss of limb (Fisher 1944; Derickson 1998; Laney and Weissman 2014; American Lung Association 2018). Understanding the impacts of coal mining on the health of miners and their communities is not solely an historical issue, but a contemporary one as well. Research has shown that rates of the coal-mining-related disease black lung have recently reached a 25-year high, with the likelihood of that rate continuing to rise and leading to severe disability resulting from progressive massive fibrosis—a potentially lethal disease that is the most severe manifestation of black lung disease in coal miners (Berkes 2018; Blackley et al. 2018; Syrop 2018). Representing just one of many health risks facing coal miners and their communities, black lung is highly visible in public discourse and a tangible symbol of the hazards found in both historical and contemporary mining communities. With miners embodying the debilitating impacts of the disease with differential social, financial, and political outcomes over time, the contemporary experience of miners with black lung as the result of historical processes that have influenced the treatment of those with black lung in the present can be understood.

In both the past and the present, access to health care, various medical treatments, and perceptions of those with diseases, such as black lung—as well as other health hazards facing coal miners and their families—are all influenced by factors beyond the control of the individual. These factors range anywhere from infrastructure to socioeconomic status (as well as other social and political obstacles) and limit the ability of individuals to make choices that can limit or prevent health risks. These limitations challenge the narrative provided by neoliberal forces influencing presumptions of “deservingness” in contemporary health care (Willen 2012; Holmes and Castañeda 2016; Horton 2016). Media outlets such as Forbes (Pearl 2018) have highlighted debates surrounding perceptions of health-care deservingness and demonstrate that, while the broader

public does recognize a number of issues with the current American health-care system, there is still a substantial portion of the American populace that feels those suffering from health issues only deserve the care they can afford. These sentiments surrounding health care and deservingness are not a new phenomenon, however. Just as the health risks facing coal-mining communities are historically rooted, perceptions of deserving health care are also influenced by historical perceptions and opinions regarding who deserves care.

A notable facet impacting both historical and contemporary access to health care, as well as broader opinions regarding health-care deservingness, is ethnicity and immigration status—factors that are prominent within the history of anthracite coal miners and their communities. As argued by Castañeda et al. (2015), immigration/holding immigrant status is a factor that can have both social and economic impacts on an individual and can be considered a social determinant of health—i.e., a socially and politically constructed health disadvantage rather than a natural state of health inferiority (Marmot 2006). The significance of this argument is the implication that the health status of immigrants and access to/quality of care for immigrants with health care in the United States (both past and present) is influenced by social and political factors—factors that, once identified, can be addressed and rectified. Understanding how these factors have developed and influenced contemporary access to health care in the United States requires a longitudinal analysis of immigrant health in American society.

This article will focus on how broader social structures have maintained and perpetuated systems that have enabled and encouraged health inequality amongst coal-mining communities in the anthracite coal region of northeastern Pennsylvania (Fig. 1). These risks, however, did not impact all colliery workers and their families equally. To illustrate how these risks impacted different groups, I utilize archaeologically recovered material from Eckley Miners' Village to examine the ways that structural violence and the social gradient manifest themselves in the archaeological record. This emphasis on material culture is significant because much of the literature on the archaeology of health inequalities and disabilities has been explored through bioarchaeology in prehistoric and medieval contexts (Hubert 2000). By reframing the way material culture is interpreted in historical archaeology, archaeologists can better understand the nuances regarding how contemporary health

inequality and disability can be recognized and studied in the archaeological record. This more nuanced understanding regarding historical health inequalities can subsequently be utilized in identifying and addressing the structural roots of contemporary health inequalities that become increasingly visible as the ongoing COVID-19 pandemic continues to impact the world.

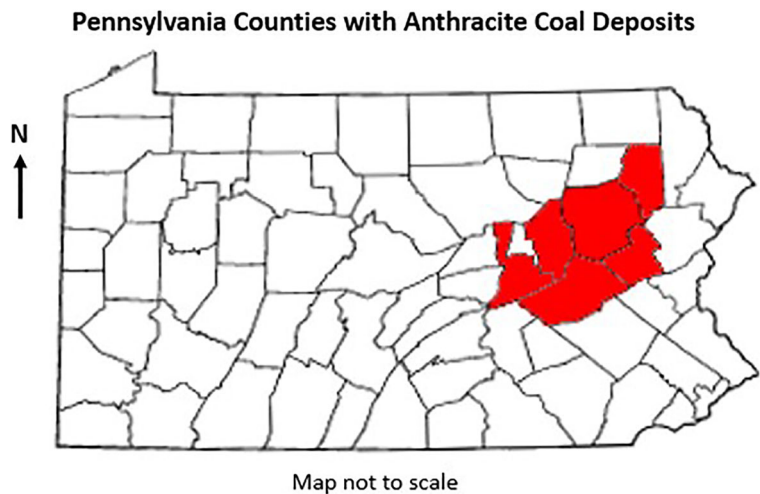
Structural Violence and the Social Gradient

The need for longitudinal studies to provide a broader perspective on long-term health impacts (particularly on immigrant groups) in American society has been expressed by Acevedo-Garcia and Bates (2008:108). Archaeology can help to provide this longitudinal analysis by historically contextualizing the longevity of health inequality. By providing material and documentary evidence of stigmatization and discrimination related to health care in historical immigrant groups, archaeologists can supplement and add another dimension to limited (or nonexistent) ethnographic and qualitative data surrounding the lived experiences of historical immigrant groups, such as those that made up large proportions of anthracite coal-mining communities. Helping to broaden the understanding of how health care was perceived and practiced by historical immigrant groups can lead to a better contextualization of the ways their descendants have been influenced to think about and understand health and wellness.

By rooting the health outcomes of contemporary populations in the historical health trajectories of their immigrant ancestors (as well as the structural factors that have worked to reproduce the social, political, and economic environments that make these health trajectories possible), a better understanding of how certain practices and expectations have contributed to concentrated health disparities in certain groups and places can be gained. Though this perspective may not have been the longitudinal study design originally envisioned by Acevedo-Garcia and Bates (2008), an archaeological approach can help to highlight how health inequality is historically rooted in time- and place-specific contexts.

Referring to the social structures and/or institutions that do harm, structural violence disproportionately prevents specific people from meeting their basic needs (Galtung 1969, 1990; Shackel 2017). Scholars from a variety of fields have used the concept of structural violence to frame the various ways broader economic,

Fig. 1 Map of Pennsylvania with the anthracite coal region highlighted. (Creator unknown; labels and insets added by author, 2022; Courtesy of the Pennsylvania State University Library, Pennsylvania State University, University Park.)



social, political, and historical processes have intertwined to impact the health of communities. Utilized in analyses ranging from impacts on emotional health (J. Roberts 2009) to enabling direct bodily harm (Farmer 1996, 2004; Scheper-Hughes and Bourgois 2004), structural violence has laid the groundwork for questioning the role of agency in the health outcomes an individual may experience. While social and political discourse often paint health as the result of individual choices (or lack thereof) (Daniels 2017; Jacobs 2018), structural violence helps to challenge this individualistic narrative of health and well-being. Within a structural-violence framework, individual choices are limited by such factors as racism, sexism, political violence, and poverty (Farmer 1996:335). In the case of immigrant populations, ethnicity, gender, and legal status also act as factors that limit choices that impact individual (and, by extension, community) health (Cartwright and Manderson 2011; Quesada et al. 2011; Castañeda et al. 2015).

Expanding on the structural-violence framework, the structural vulnerability experienced by those on the lower rungs of the social ladder helps to contextualize the specific ways in which structural violence is experienced by a specific group. Defined as “a positionality that imposes physical/emotional suffering on specific population groups and individuals in patterned ways” (Quesada et al. 2011:340), structural vulnerability emphasizes and incorporates explicit considerations of cultural and idiosyncratic sources of physical and psychological distress (Quesada et al. 2011:341).

The patterned nature of this suffering produces a perception of inevitability and normalization in the populations most affected by it. The normalization of suffering based on structural factors creates a hierarchy socially, politically, and economically that privileges people with specific traits (i.e., appearance, cognitive status, affect, cultural capital, occupation, etc.) over others. At Eckley Miners’ Village, new immigrants, women, and children held some of the most vulnerable positions—primarily based on perceptions of usefulness regarding industrial labor.

Expanding on these concepts is the idea of the social gradient. The social gradient describes how, within a community, people farther down the social ladder face higher risk of illness and premature death than those at the top of the ladder due to social and economic conditions (Wilkinson and Marmot 2003; Marmot 2006). Applying the concept of the social gradient has particular use in the analysis of company towns due to their formulaic design. As demonstrated by Francaviglia (1991), there are four primary layouts for company towns that include: (1) A grid layout in which residences and manufacturing operations develop around the commercial center of the town, most common in the anthracite region; (2) a linear layout in which a town is stretched out along a line, such as a canyon or railroad; (3) a convergent layout where towns develop along intersecting routes (natural or man made); and (4) a fragmented layout in which towns are loosely connected units. As noted by Boyle (2018), Eckley most resembles a mixture of the grid and linear layouts, with architectural features that speak to the subtle ways in which the village

was designed to enforce class- and ethnicity-/nationality-based segregation.

Eckley Miners' Village and Historical Immigration Patterns

Located in a rural environment roughly 8 mi. west of the city of Hazleton, Eckley Miners' Village has a quaint yet derelict and slightly abandoned feel as visitors arrive by driving on roads that cut through active strip mines. Originally a coal-mining company town, also referred to as a "patch" town,¹ Eckley Miners' Village is now an open-air history museum in Luzerne County in northeastern Pennsylvania. Built in 1854 by Sharpe, Leisenring and Company, the village continued to operate as a center of colliery operations and a patch town until the mid-20th century. However, employment and population began to decline dramatically after the turn of the century as the industry shifted from deep-tunnel mining to strip mining (Dublin and Licht 2005; Westmont 2017). Following the 1968 filming of the Paramount Pictures movie, *The Molly Maguires*, members of the surrounding community formed the Anthracite Historical Site Museum, Inc., and purchased Eckley Miners' Village from current property-owner George Huss for \$100,000. They then donated the property to the Commonwealth of Pennsylvania, and the Pennsylvania Historic and Museum Commission was charged with the preservation and management of Eckley Miners' Village as a history museum (Wesolowsky 1996; Westmont 2017).

Though Eckley currently has fewer than a dozen residents, at its height in the late 19th century the village was home to more than 1,200 individuals (Westmont 2017). The anthracite industry in northeastern Pennsylvania attracted native-born Americans and immigrants alike. Early 19th-century immigrants to the region were English, German, and Welsh (Miller and Sharpless 1985; Shackel 2017; Westmont 2017). By the mid-19th century Irish immigrants began flocking to the area, and, with them, labor and ethnic hierarchies became increasingly apparent. English and Welsh immigrants began to hold more managerial and skilled

positions in the anthracite industry, while Irish immigrants held semiskilled and unskilled positions. These power dynamics in the workplace, combined with religious, class, and imperial hostilities lingering from their old-country backgrounds, led to labor conflicts that would escalate as new immigrants from Southern and Eastern Europe began arriving in the 1890's (Dublin and Licht 2005).

The arrival of new immigrants from Southern and Eastern Europe was viewed by mine bosses and proprietors as an opportunity to save on wages and boost profits by paying new immigrant laborers less than their Western European and native-born American counterparts—a sentiment that was shared by manufacturers across the United States at the turn of the 20th century (Barrett 1987; Blatz 1994; Howard 2001; Dublin and Licht 2005). By 1910, two-thirds of workers in 21 major manufacturing and mining industries were either new Southern and Eastern European immigrants or native-born American Blacks (Gutman 1973). The incorporation of new immigrants and Blacks into the working class employed in industrial manufacturing and extraction was met with suspicion and resentment by native-born white Americans who felt that these populations were backward and unable to assimilate to the Anglo, Protestant norms that characterize(d) American nativism (Barrett and Roediger 1997). Both in the past and in the present, these sentiments are rooted in a misplaced frustration over broader structural factors impacting wages, job security, and communal values/cohesion. Rather than acknowledging the economic and political influences creating conflict within the working class of the anthracite coal region, the newest immigrants became scapegoats, and the broad sweeping impacts of prejudice and racism became embedded in the broader social structures that shape opportunity for social, economic, and physical well-being. The importance of the longevity of immigration (and subsequent prejudice against new immigrants) in the region cannot be understated. As a community that historically held a large immigrant population, Eckley Miners' Village—and the broader anthracite coal region—is a landscape that reflects physical manifestations of social and ethnic segregation.

Identifying the health-related impacts of this segregation over time is a task for which archaeology is particularly suited. The impacts of various types of segregation (ethnic, socioeconomic, etc.) that have manifested in both the physical layout of the village and the

¹ Coal patch towns are company-built and managed towns that are frequently located in rural areas. These company towns were largely stratified along class and ethnic lines, with the larger, better-constructed homes housing owners, bosses, and foremen, while the smaller and cheaper housing units were occupied by immigrants and unskilled workers (ExplorePAhistory.com 2019).

structure of labor hierarchies within northeastern Pennsylvania’s anthracite-mining industry. Interpreting the physical layout of the village has been a major research component of almost all archaeological excavations at Eckley. As early as 1860, just six years after the establishment of the village, Matthew Henry (1860:368), while writing a local history of the Lehigh Valley, describes the general settlement of the village as possibly “the most complete of any mining town in the State.” He goes on to detail the four sections of the town that correlated with grade (meaning the socioeconomic status of the job an individual held at the colliery). Henry (1860:368) provided the following description of these sections: “[T]he cottages of the proprietors in one section, the boss laborers and contractors in another, the miners in a third, and second-class miners and slate pickers in another” (Fig. 2). This socioeconomic correlation between career and house grade in the company town can be viewed as a material manifestation of the social gradient.

The concept of the social gradient is particularly significant in relationship to health at Eckley Miners’ Village and, by extension, other coal-mining patch towns in northeastern Pennsylvania because it implies that, in lower grades of colliery work (which received lower wages), individuals had a lesser ability to obtain professional medical treatment from the company doctor provided. Despite the theoretical feasibility of having a certain level of access to the company doctor due to the regular payroll deductions from colliery workers’ wages to pay for the doctor’s services, in practice many families were unable to afford the additional fees and treatment costs that could be incurred by utilizing the “prepaid” company-doctors’ services—particularly those on the lower rungs of the social ladder at Eckley Miners’ Village. These additional fees and treatment costs were typically incurred by women and children, whose health needs were not prioritized by mining companies and therefore subjected to additional charges (Weaver 2011), adding an intersectional dimension to how social circumstances impact access to professional health care.

This inequity regarding access to professional health care also has ties to the concepts of structural violence and structural vulnerability when the level of control mining companies held over their employees is considered (Elridge 2015; Roller 2015; Shackel 2017), particularly their capacity to shape the social, physical, and financial environments within which workers were embedded. With the creation of communities that are

economically and socially segregated, hierarchies manifest. These structural hierarchies cast some in positions of privilege, while others are left to face challenges those in privileged positions are not forced to encounter.

When it comes to health and wellbeing in anthracite coal-mining communities, these positionalities become increasingly clear based on the priorities of the colliery. Embodying a kind of bio-power (Foucault 1990) over colliery workers and their families, it becomes increasingly clear that mining companies had an exorbitant amount of power over the health of their employees. By creating policies and practices in the work and social environments that operate as mechanisms of capital-driven governmentality, collieries created structural forces that simultaneously encouraged and profited from health-risking behavior while creating hierarchical structures that are embedded in aspects of everyday life. From the built environment to social interactions in the workplace, to even retail options, coal-mining companies established systems in which those on the lower rungs of the labor hierarchy faced greater obstacles for avoiding disease, injury, and death. As Farmer (2004) notes, structural violence can present itself through manifestations of wealth disparities, illness, and disease—serving as an interpretive reinforcement to perceiving the graded organization of the village layout as a manifestation of these disparities.

Identifying the Injured, Physically Disabled, and Ill Colliery Employees at Eckley Miners’ Village

Using Henry’s (1860) graded organization of Eckley Miners’ Village and the connotations associated with it, archaeologists can use the house lots (and associated archaeological assemblages) within these different sections of the village as a basis for comparative analysis of material culture. Since archaeological excavations first began at Eckley Miners’ Village in 1986 (Parrington and Zatz 1986), there have been a total of 13 archaeological excavations and surveys that have identified 58 archaeological sites. This provides a significant amount of data for analysis. In order to identify which archaeological collections are associated with households where someone with a physical disability or debilitating illness resided, I used several historical documents. These include the U.S. federal census records, the colliery accident records, applications to the Anthracite Health and Welfare Funds, and company-doctor patient cards. Using these records together it is possible to identify

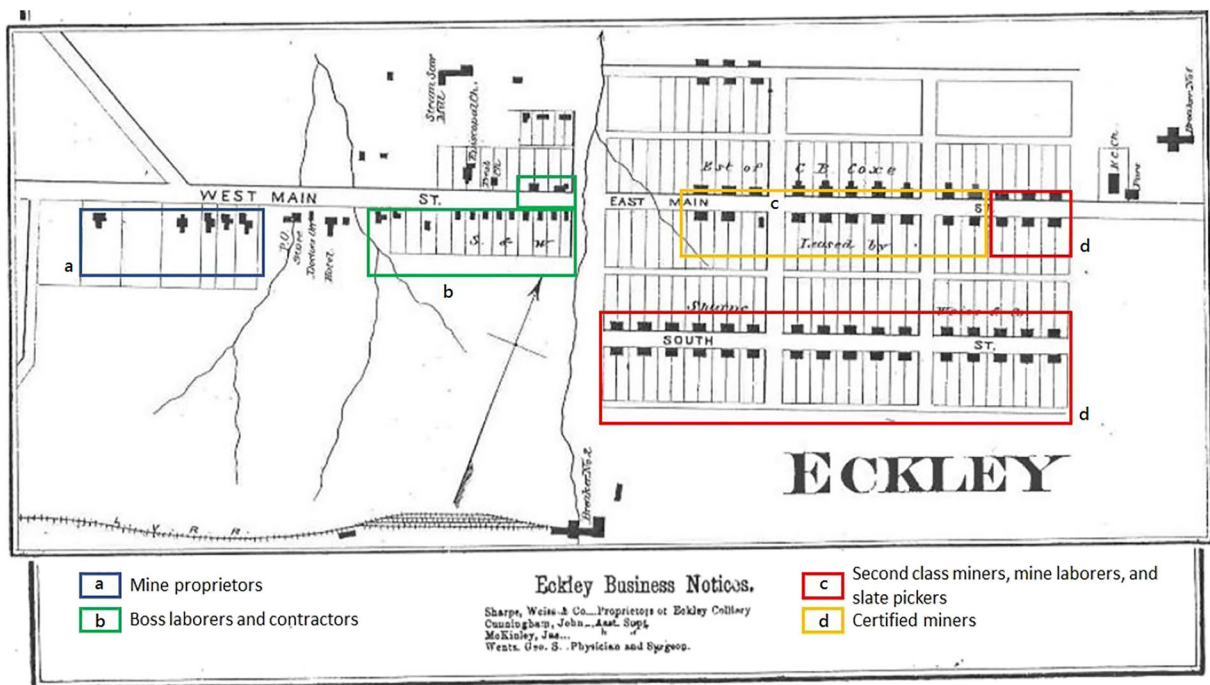


Fig. 2 Map of Eckley from the 1873 D. G. Beers *Atlas of Luzerne County*, with graded sections outlined by author (Beers 1873:73).

the households in Eckley Miners' Village where residents were living with a physical disability, debilitating illness, or both. For example, to identify individuals who may have been injured or physically disabled in colliery accidents, I used the Registers of Mine Accidents for the Anthracite Districts from 1899 to 1972. (Pennsylvania Historical and Museum Commission 1972). Once individuals from Eckley Miners' Village were identified in the Registers of Mine Accidents, I cross-referenced the miner with the census data (U.S. Bureau of the Census 1920, 1930, 1940). Therefore, it is possible to identify the households and village lots in which these individuals lived. Additional sources, such as applications to the Anthracite Health and Welfare Funds (Anthracite Heritage Museum 1960b)—both for general financial support for medical and disability needs and other essentials not covered by public assistance—and to a research study that documents the treatment of silicosis by Jefferson Medical College Hospital (Anthracite Heritage Museum 1946), and patient cards from company-town doctors, provide additional details surrounding household location and the various injuries and ailments from which colliery workers were suffering, as well as the perceived causes of injury or disease (Anthracite Heritage Museum 1960c). These

documents also record whether applications were approved or rejected.

These data allow researchers to identify specific assemblages to analyze as well as to identify specific households on which to perform targeted excavations. By comparing these assemblages against households that did not have residents recorded as having been injured in workplace accidents or suffering from debilitating disease, valuable information regarding frequencies of specific artifacts in the archaeological record can be established. For example, the proportions of patent- vs. ethical-medicine (i.e., prescribed or medically regulated) bottles can provide information about how families at both ends of the social ladder chose to allocate scarce funds in order to treat a variety of ailments. However, when considering that professional medical care was not always economically feasible (Weaver 2011), reflections surrounding folk medicine and self-medication must also be considered. As folk medicines frequently consist of organic materials, they present a challenge to identify and interpret archaeologically—particularly since the anthracite coal region has highly acidic soils. Self-medication, however, may be identified a bit more easily in the archaeological record.

As Weaver (2011:25) notes, most miners turned to alcohol to deal with the symptoms of diseases such as black lung. Through informal conversation with descendant family members, there has been mention of taking a shot of whiskey and chasing it down with a beer to help clear the lungs. This specific combination of a shot and a beer is also noted in Dublin's (1998) oral histories from the anthracite coal region as a routine part of a colliery worker's day. Drunk as an end-of-work ritual while "shoot[ing] the shit with the guys [about] how many cars [they loaded] today and what [they] are going to do tomorrow" (Dublin 1998:45), alcohol also became a key component of social bonding and establishing informal support networks with colleagues and neighbors. Compounding this exposure to alcohol, many patent medicines of the time contained significant amounts of alcohol. The multifaceted ways in which alcohol was a part of mainstream medicine, a staple of social engagement, and a method of self-medication provide additional layers of nuance to the presence of alcohol bottles and the discourse surrounding addiction in both historical records and contemporary communities.

Case Study: Back Street vs. Main Street

To illustrate how the aforementioned sources can be utilized to explore questions relating to health through the material record, I examine two assemblages from the 2015 and 2018 excavations at Eckley Miners' Village. The assemblage from the 2015 excavations comes from house lot No. 38 on Back Street at Eckley, while the assemblage from the 2018 excavations is from house lot No. 104 on Main Street.

House lot No. 38 consists of one of the halves of a one-and-a-half-story double house (Westmont 2017). Located on Back Street, residents in this area of the village were often newer immigrants and those who held some of the lowest-paying jobs in the colliery. As Henry (1860) notes, these positions include second-class miners (i.e., those who are not certified miners), mine laborers, and slate pickers. Back Street was located closer to the colliery's breaker² and, as such, was exposed to higher levels of noise pollution, coal dust, and piles of waste from processing the coal (also known as "culm piles"). Due to limitations in the census data, only

² A breaker is a processing plant where coal is broken down into various sizes and where impurities, such as slate, are removed.

information from the 1920, 1930, and 1940 census records identify the individuals who once lived in the household. According to the federal censuses, the Ondeck family was living at 38 Back Street in both 1930 and 1940. The Ondeck family consisted of an American-born couple of Czechoslovakian descent, George (a miner) and his wife Mary, and five children. Census records from the 1920s show George and Mary as living at 9 Back Street with George's parents and siblings (U.S. Bureau of the Census 1920, 1930, 1940).

House lot No. 104 consists of one of the halves of a two-story double house. Located in a section of the village where certified miners resided, this section was the second lowest in the labor hierarchy at Eckley Miners' Village.³ As listed in the 1930 federal census, the residents of 104 Main Street were the members of the Sulkosky family. Anthony and Eva Sulkosky were a U.S. born couple of Russian and Polish descent who had six children together (U.S. Bureau of the Census 1930). Anthony was born, raised, and died in Eckley Miners' Village; in the 1930s his employment with the colliery was listed for the first time. By the 1940s Anthony was working as a miner; he continued to work for the colliery until 1958. At some point he became the head of his chapter of the United Mine Workers of America (UMWA). Unfortunately, in 1961 Anthony passed away at the age of 63 due to complications from black lung (*Plain Speaker* 1961). Less than a year before his passing, Anthony made an application to participate in a Jefferson Medical College Hospital study for research on/treatment of silicosis (black lung disease) (Anthracite Heritage Museum 1960a). This application recorded that Anthony struggled from shortness of breath that left him unable to walk up coal-vein slopes or stand, and that he also struggled with frequent chest colds and pain in his chest.

A notable aspect of these residence patterns is that the occupation of 38 Back Street is similar to that of 104 Main Street. However, there are some stark differences in regard to material evidence of how pain, injury, and

³ This does not imply that community members perceived this section as "less than" or undesirable. In fact, former residents have described this section of the village as being a good part of town, particularly since the homes in this section frequently had porches built in the front of the home—a feature that had been lacking in many homes on Back Street. Rather, this designation means that, in terms of socioeconomic status, power in the workplace, and power in society, these residents had more than most on Back Street, but less than mine foremen and mine owners who lived farther west down Main Street in single-family homes/mansions.

illness may have been treated. Despite George Ondeck being a miner, similar to Anthony Sulkosky, I have been unable to identify any recordation of Ondeck as an applicant for any type of UMWA silicosis or disability aid. This lack of recordation could be for a number of reasons, including structural barriers, such as socioeconomic status and ethnicity. One possibility is that George Ondeck was one of the lucky ones who never developed black lung or suffered a traumatic injury from extended periods of colliery work. Another possibility is that George Ondeck opted to not be a member of the UMWA and therefore did not have access to these resources. Opting out could have been the result of not wanting to pay union dues and/or other social deterrents, such as fear of repercussion or replacement by the company with the influx of new Southern and Eastern European immigrants that came to the region in the early 20th century. However, as I was unable to find any record of George Ondeck in a number of UMWA archival resources, these possibilities remain speculation rather than fact. A more tangible understanding of the ways being on the bottom rungs of the labor hierarchy at Eckley Miners' Village manifested in issues of health can be explored through the archaeological record.

When it comes to archaeological materials that could have been associated with health-care needs at 38 Back Street, there was a notably lower frequency and diversity of medicine and alcohol bottles than there were at 104 Main Street, and even fewer could be identified beyond being a patent- or prescription-medicine bottle. The only identifiable alcohol-related artifact from 38 Back Street was a beer tankard with a mean manufacturing date of 1905.⁴ No brand and/or product information for the bottles with a mean manufacturing date falling within the time period for which former residents can be definitively identified (1920s–1940s) could be discerned from the fragmented collections.

Potential health-related artifacts that were manufactured and deposited prior to the 1920s–1940s period of occupation differ significantly in that they are made up primarily of chemical- and patent-medicine bottles. As Westmont (2017:97) notes, the presence of these bottles reveals a complex story of resource allocation. Patent medicines in the early 20th century were products that are often referred to as “snake-oil” treatments. The purchase of these products is an interesting note

regarding the former residents' purchase decisions, as they would have had the company-doctors' fee regularly deducted from their paychecks. Yet instead of seeking treatment from a service for which, technically, they had already paid, they chose to treat their ailments through an outside source (that, in some cases, may have been the company store).

The artifact I find most interesting from this site is the recovered base of a Lysol bottle, manufactured between 1880 and 1910. Created during the period of epistemic transition to germ theory in health care/health knowledge, Lysol was invented in Germany in 1889 to combat a cholera epidemic. The product's use as an antiseptic spread quickly and it soon became a household name. As Lysol's popularity grew, it began to be used for birth control and feminine hygiene. Advertised as a douching product in the 1920s through the 1950s, Lysol douching was thought to kill sperm and prevent pregnancy; it was also a cheaper alternative to condoms and diaphragms. However, Lysol was also extremely dangerous. Tone (2001) indicates that, by 1911, at least five women had died of Lysol poisoning while conducting uterine irrigation. Lysol remained the most popular form of birth control in the United States until the oral contraceptive pill was introduced in the 1960s. While it is impossible to know whether this particular bottle of Lysol had been used for vaginal douching or other functions, the social norms of the time, paired with the brand-specific marketing, speak to issues of bodily autonomy, female agency, and child rearing in the section of Eckley Miners' Village that was home to those lowest in the labor hierarchy.

Within the archaeological assemblage recovered from 104 Main Street there are a number of artifacts that could be relevant to the recorded health issues Anthony Sulkosky faced as an anthracite coal miner. Some of these artifacts, such as a Pond's cold-cream jar and a Listerine bottle, are typically associated with personal cosmetic treatments. When considered from a different lens, however, these artifacts take on a different meaning. Associated with the cooling sensation that gives cold creams their name (Bennett 2018), the product—particularly when mentholated—has also been advertised as being effective for ailments ranging anywhere from aches and burns to skin inflammation and sore muscles (Altman 2011; Cosmetics and Skin 2022). Though it is impossible to definitively associate this artifact with Anthony Sulkosky, it is worth considering that he may have used this cold cream to deal with

⁴ This is not to say that none of the Ondecks drank much or regularly, it merely implies that they may not have done much drinking at home.

the skin irritations and aches that can be incurred from mining activities.

Similarly, Listerine, though typically associated with oral health to treat bad breath and sore throats, has a lesser-known history. Advertisements from the early 20th century indicate that Listerine was also sold as a surgical disinfectant and remedy for communicable diseases ranging from diphtheria, dysentery, and ringworm to smallpox and gonorrhea (Old Main Artifacts 2011; Emery 2012; National Museum of American History 2018). Considering the numerous ways by which colliery workers faced risks of skin laceration, Listerine would have been a product much more vital to a miner's household than it may initially appear. Additionally, Anthony Sulkosky's application materials to the Anthracite Health and Welfare Funds (Anthracite Heritage Museum 1960a) indicate that he experienced coughing fits for up to 7 h. a day. It is possible he also used Listerine in a more traditional manner, i.e., orally, to help treat a sore throat.

Several alcohol bottles were also recovered. Coal miners have historically been criticized for their alcohol consumption, often being described in some sociological studies as alcoholics (P. Roberts 1904). However, when considering Weaver's (2011) insights surrounding black lung, this description lacks room for circumstantial stresses that may have encouraged high levels of alcohol consumption. Given that black lung had no effective treatment throughout the majority of the 20th century, Weaver (2011) notes that miners suffering from the disease frequently turned to alcohol as a form of self-medication. Seeking to ease pain, it can be argued that the described abuse and dependence on alcohol stemmed from or was influenced by the suffering caused by a debilitating disease such as black lung. A future analysis of alcohol-bottle frequencies in different sections of Eckley Miners' Village could provide insight into how issues of alcohol dependence may have disproportionately impacted colliery workers based on which jobs they held and in which section of the village they lived. Since alcoholism has been identified by various parties since the 19th century as a disease that can have debilitating and deadly effects (Levine 1984), it can be argued that those at the lower end of the social gradient at Eckley Miners' Village faced a double burden of disease.

Common health-related artifacts found at both sites are vials of Bumstead's Worm Syrup. This and other vermifuge brands were common treatments in the

homes of colliery workers. Former residents of the village have reminisced about how "everybody" had worms. The commonality of having parasitic worms is unsurprising, given the long-held association between miners and hookworms. In large part due to issues of hygienic infrastructure (or lack thereof) in the mines, it was easy to be exposed to hookworm through holes in one's shoes or in common defecation areas in the mines, as there were no restrooms underground. In the miners' homes the outhouse was another common site of exposure to hookworm—particularly for family members who might visit the outhouse barefoot. As S. McElroy and J. McElroy (2016) note, hookworm was so common amongst miners it was colloquially known as "miners' itch." The primary difference between sites, when it comes to the presence of vermifuge bottles, is that 104 Main Street had a high frequency of intact Bumstead's vials compared to the very few fragmented pieces of Bumstead's vials that were recovered from 38 Main Street. This difference in frequency could be a result of sampling methods, although it is also highly possible that this difference is due to different fiscal capacities for the purchase of vermifuge treatments. Though a singular case study, this brief discussion demonstrates some ways in which commonly recovered material culture at historical sites can be reframed to explore questions of health and well-being.

Discussion

While the assemblages from these two sites were only briefly highlighted, the objects chosen for analysis here speak to broader issues rooted in societal structures. Some of these include issues of access to care and perceptions of health deservingness. As noted earlier, colliery-company doctors tended to give priority treatment, likely at the instruction of the company, to miners over their wives and children. It is important to note, however, that children employed by the colliery did hold a more privileged position in regard to access to the company doctor than did their family members who worked in the home or elsewhere. This increased access was influenced by their role in the colliery as sources of cheap labor.

Prioritizing laborers' health and well-being over the broader well-being of the communities created by collieries reflects the hierarchical systems embedded within various facets of colliery towns such as Eckley Miners'

Village. Outside of the company, unions were additional institutions that provided health care. However, membership in the union was often a prerequisite for access to care. Not only that, but, even when one was a member of a union, access to certain treatments or benefits was not guaranteed—as is evidenced by the vast number of rejected aid applications in UMWA archival materials.

These systems that highlight various avenues for professional health care, despite operating long before the current medical infrastructure, are similar to the insurance-based systems seen today. Quality of care continues to be reliant on membership in a preferred group. Historically, at Eckley Miners' Village this could mean belonging to the union or being a certified miner, whereas today in northeastern Pennsylvania this could mean having a full-time job with benefits. Regardless, in both past and present these structures systematically leave people out.

The gaps in these structures that systematically leave certain groups disproportionately vulnerable have become even more pronounced as the world continues to grapple with the ongoing impacts of the COVID-19 pandemic. Emphasizing one of the structural roots of health disparities in northeastern Pennsylvania (particularly in small, rural towns), Boden (2020) highlights how the shrinking population density following the downturn of the coal-mining industry in the 20th century influenced the closure of many hospitals that had been built decades earlier, when the coal-mining industry was thriving. With the reduction of institutions providing health care in the region over time, other structural vulnerabilities, such as race, gender, and immigration status are exacerbated in the pursuit of health care.

Prior to the COVID-19 pandemic, the anthracite coal region was already identified as one of the sickest and unhappiest regions in the entire commonwealth of Pennsylvania (Huang 2019). Like Boden (2020), Huang (2019) points to the decline of the coal-mining industry in the region as one of the roots of the area's current health issues. Where patch towns once thrived, there are now shrinking communities where residents are “more likely to die from chronic illnesses, drug overdoses and suicides than people who live in many other parts of the state” (Huang 2019). Today, many of these outcomes are possibly even more likely, as factors ranging from occupational risks to structural barriers to accessing health care are even more prominent during the time of COVID-19.

As issues, such as the opioid epidemic and chronic diseases resulting from one's occupation (such as black lung and other respiratory diseases associated with industries that operate in rural areas), disproportionately impact the region, the already limited capacity of rural hospitals in northeastern Pennsylvania to handle these preexisting issues becomes even more limited, as complications from COVID-19 fill hospital beds around the world. Additionally, for many residents of areas such as Luzerne County (the county in which Eckley Miners' Village is located), many social distancing, quarantine, and testing/safety recommendations put out by institutions, ranging from the Center for Disease Control to state and local governments, are disproportionately difficult to follow for those living and working in industrial manufacturing jobs that support much of the region. For workers with lower levels of education, W. Finch and M. Finch (2020) note that they

are less likely to work from home, suggesting that they therefore may also be less able to physically distance than those with higher levels of education. In turn, these individuals may be faced with the choice between staying home and not getting paid, or going to work and increasing their risk of becoming infected with the virus.

In addition to considerations of level of education, the United States Census Bureau (2019a, 2019b)⁵ identified Luzerne County as having a poverty rate of 15.2% compared to Pennsylvania's overall poverty rate of 12%. For those in the county living near or under the poverty line, taking an extended period of time off work to quarantine after possible exposure to COVID-19 can cause significant financial distress—influencing individual decisions about whether or not to follow quarantine protocol and possibly contributing to increasing transmission rates within poorer communities. Arguably, another manifestation of the social gradient in contemporary society, W. Finch and M. Finch (2020) also note that vaccinations are generally less available to residents of poorer counties as compared to those that are more affluent.

Though the factors that influence contemporary disparities in health, wealth, and education in northeastern Pennsylvania are complex and multifaceted, they are not

⁵ Publicly available census data as of early November 2021 only goes up to 2019, as the COVID-19 pandemic greatly impacted the U.S. Census Bureau's data collection throughout 2020.

inherent facets of life in the anthracite coal region. Rather, the social gradient observable is the result of historical, social, and political processes in the region that were established with the rise of industrialization by coal-mining companies. The bio-power of collieries over miners and their families sets standards in both the social and political fabric of northeastern Pennsylvania that have enabled health disparities to worsen over time there. Through the creation of systems that prioritize specific groups of people, those with various social vulnerabilities at the lower rungs of the social hierarchy continue face obstacles for access to health care.

Conclusion

By considering health inequities and the perilous employment conditions colliery workers faced, archaeologists can (and should) contribute meaningful discussions and insights into the ways structural violence and structural vulnerability have impacted health over time and how the social gradient can be reflected in material culture assemblages. Through a brief analysis of how these forces manifest themselves at Eckley Miners' Village and the subsequent resources that can be utilized to identify where people with injuries, disabilities, and debilitating illnesses resided, I have provided an example of how archaeologists can explore questions of health and well-being at industrial sites.

This longitudinal exploration of health inequalities and disparities is an important line of inquiry for gaining a better understanding of both the lived experiences of colliery workers in the anthracite coal region and the broader experiences of laborers who acquired disabilities and/or debilitating diseases in the early to mid-20th century. This longitudinal perspective helps to shed light on how issues of access to care and perceptions of health deservingness have been perpetuated and (re)produced. Additionally, historically rooting the structural forces that have influenced and perpetuated health disparities in the past contributes to a better understanding of the ways these forces continue to make their presence felt in contemporary populations. While the world continues to struggle with the long-term social, economic, and biological repercussions of the COVID-19 pandemic, the importance of having a nuanced understanding of the development and perpetuation of health inequalities is a vital component that archaeologists can contribute to current discourse.

References

- Acevedo-Garcia, Dolores, and Lisa M. Bates
2008 Latino Health Paradoxes: Empirical Evidence, Explanations, Future Research, and Implications. In *Latinas/os in the United States: Changing the Face of América*, Havidán Rodríguez, Rogelio Sáenz, and Cecilia Menjivar, editors, pp. 101–113. Springer, New York, NY.
- Altman, Julia
2011 Milk Glass at the Kooskia Internment Camp, 17 April. The Kooskia Internment Camp Archaeological Project Blog <<https://kooskiaarchaeology.wordpress.com/2011/04/17/147/>>. Accessed 24 August 2022.
- American Lung Association
2018 Coal Worker's Pneumoconiosis Symptoms and Diagnosis. American Lung Association <<https://www.lung.org/lung-health-and-diseases/lung-disease-lookup/pneumoconiosis/pneumoconiosis-symptoms-causes-risks.html>>. Accessed 24 August 2022.
- Anthracite Heritage Museum
1946 U.M.W.A. Union Local 1507 (Eckley) Anthracite Health and Welfare Benefits from 1946 to 1950s including Applications to Jefferson Medical College Silicosis Study. Slot AC84.1.30, Anthracite Heritage Museum, Scranton, PA.
- Anthracite Heritage Museum
1960a Anthony Sulkosy, 14 July. Slot AC84.1.30, U.M.W.A. Union Local 1507 (Eckley) Anthracite Health and Welfare Benefits from 1946 to 1950s including Applications to Jefferson Medical College Silicosis Study, Anthracite Heritage Museum, Scranton, PA.
- Anthracite Heritage Museum
1960b Anthracite Health and Welfare Fund Medical and Death Benefit Applications. Slot AC:B1-0397, Martin Kollenz Collection, Anthracite Heritage Museum, Scranton, PA.
- Anthracite Heritage Museum
1960c Personal Papers and Records of Dr. Alexander Armstrong, Company Doctor for the Lehigh Valley Railroad in White Haven and Head Physician of White Haven Sanitarium. AC86.11, Anthracite Heritage Museum, Scranton, PA.
- Barrett, James
1987 *Work and Community in the Jungle: Chicago's Packinghouse Workers, 1844–1922*. University of Illinois Press, Urbana.
- Barrett, James, and David Roediger
1997 In between Peoples: Race, Nationality and the 'New Immigrant' Working Class. *Journal of American Ethnic History* 16(3):3–44.
- Beers, D. G.
1873 *Atlas of Luzerne County, Pennsylvania*. A. Pomeroy & Co., Philadelphia, PA.
- Bennett, James
2018 Cold Creams. Cosmetics and Skin <<https://cosmeticsandskin.com/aba/cold-cream.php>>. Accessed 24 August 2022.

- Berkes, Howard
2018 Black Lung Rate Hits 25-Year High in Appalachian Coal Mining States, 19 July. Special Series: Black Lung Returns to Coal Country, National Public Radio <<https://www.npr.org/2018/07/19/630470150/black-lung-rate-hits-25-year-high-in-appalachian-coal-mining-states>>. Accessed 24 August 2022.
- Blackley, David, Cara Halldin, and A. Scott Laney
2018 Continued Increase in Prevalence of Coal Workers' Pneumoconiosis in the United States, 1970–2017. *American Journal of Public Health* 108(9):1220–1222.
- Blatz, Perry
1994 *Democratic Miners: Work and Labor Relations in the Anthracite Coal Industry, 1875–1925*. State University of New York Press, Albany.
- Boden, Sarah
2020 COVID-19 Highlights Rural Health Care Disparities in Pennsylvania, 26 March. 90.5 WESA <<https://www.wesa.fm/science-health-tech/2020-03-26/covid-19-highlights-rural-health-care-disparities-in-pennsylvania>>. Accessed 24 August 2022.
- Boyle, Katherine
2018 Combined Methodologies: Findings of the Summer 2017 Field Season at Eckley Miners' Village, PA. Paper presented at the Middle Atlantic Archaeology Conference, Ocean City, MD.
- Cartwright, Elizabeth, and Lenore Manderson
2011 Diagnosing the Structure: Immigrant Vulnerabilities in Global Perspective. *Medical Anthropology* 30(5): 451–453.
- Castañeda, Heide, Seth Holmes, Daniel Madrigal, Maria-Elena DeTrinidad Young, Naomi Beyeler, and James Quesada
2015 Immigration as a Social Determinant of Health. *Annual Review of Public Health* 36:375–392.
- Casella, Eleanor Conlin, and James Symonds (editors)
2005 *Industrial Archaeology: Future Directions*. Springer Science+Business Media, New York, NY.
- Cosmetics and Skin
2022 Ponds Extract Company, 6 April. Cosmetics and Skin <<http://www.cosmeticsandskin.com/companies/ponds.php>>. Accessed 22 August 2022.
- Daniels, Norman
2017 What Does Choice Mean When It Comes to Health Care? 3 August. The Conversation <<http://theconversation.com/what-does-choice-mean-when-it-comes-to-health-care-81800>>. Accessed 22 August 2022.
- Derickson, Alan
1998 *Black Lung: Anatomy of a Public Health Disaster*. Cornell University Press, Ithaca, NY.
- Dublin, Thomas
1998 *When the Mines Closed: Stories of Struggles in Hard Times*. Cornell University Press, Ithaca, NY.
- Dublin, Thomas, and Walter Licht
2005 *The Face of Decline: The Pennsylvania Anthracite Region in the Twentieth Century*. Cornell University Press, Ithaca, NY.
- Elridge, Erin
2015 The Continuum of Coal Violence and Post-Coal Possibilities in the Appalachian South. *Journal of Political Ecology* 22(1):279–298.
- Emery, Katy Meyers
2012 More on the Brody Bottles, 8 August. MU Campus Archaeology Program <<http://campusarch.msu.edu/?p=jtrfmafzz&paged=46>>. Accessed 22 August 2022.
- ExplorePAhistory.com
2019 Chapter 3: Life in the Coal Patches. King Coal: Mining Bituminous, Stories from PA History, ExplorePAhistory.com <<https://explorepahistory.com/story.php?storyId=1-9-18&chapter=3>>. Accessed 23 August 2022.
- Farmer, Paul
1996 On Suffering and Structural Violence: Social and Economic Rights in the Global Era. In *Partner to the Poor*, Haun Saussy, editor, pp. 328–349. University of California Press, Berkeley.
- Farmer, Paul
2004 On Suffering and Structural Violence: A View from Below. In *Violence in War and Peace: An Anthology*, Nancy Scheper-Hughes and Phillipe Bourgois, editors, pp. 281–289. Blackwell, Oxford, UK.
- Finch, W. Holmes, and Maria E. Hernández Finch
2020 Poverty and Covid-19: Rates of Incidence and Deaths in the United States during the First 10 Weeks of the Pandemic, 15 June. *Frontiers in Sociology*, frontiers <<https://www.frontiersin.org/articles/10.3389/fsoc.2020.00047/full>>. Accessed 25 August 2022.
- Fisher, Sydney W.
1944 Health Hazards of Coal-Mining. *British Journal of Industrial Medicine* 1(3):153–158.
- Foucault, Michel
1990 *The History of Sexuality*, Vol. 1, Robert Hurley, translator. Vintage, New York, NY.
- Francaviglia, Richard V.
1991 *Hard Places: Reading the Landscape of America's Historic Mining Districts*. University of Iowa Press, Iowa City.
- Galtung, Johan
1969 Violence, Peace, and Peace Research. *Journal of Peace Research* 6(3):167–191.
- Galtung, Johan
1990 Cultural Violence. *Journal of Peace Research* 27(3): 291–305.
- Gutman, Herbert
1973 Work, Culture, and Society in Industrializing America, 1815–1919. *American Historical Review* 78(3):531–588.
- Henry, Matthew
1860 *History of the Lehigh Valley: Containing a Copious Selection of the Most Interesting Facts, Traditions, Biographical Sketches, Anecdotes, etc., etc., Relating to Its History and Antiquities: With a Complete History of All Its Internal Improvements, Progress of the Coal and Iron Trade, Manufactures, etc.* Bixler and Corwin, Easton, PA.

- Holmes, Seth, and Heide Castañeda
2016 Representing the ‘European Refugee Crisis’ in Germany and Beyond: Deservingness and Difference, Life and Death. *American Ethnologist* 43(1):12–24.
- Horton, Sarah
2016 Debating ‘Medical Citizenship’: Policies Shaping Undocumented Immigrants’ Learned Avoidance of the U.S. Health Care System. In *Hidden Lives and Human Rights in the United States*, Lois Ann Lorentzen, editor, pp. 298–319. Praeger, Santa Barbara, CA.
- Howard, Walter
2001 The National Miners Union: Communists and Miners in the Pennsylvania Anthracite, 1928–1931. *Pennsylvania Magazine of History and Biography* 125(1&2):91–124.
- Huang, Binghui
2019 Pennsylvania Coal Region's Industry Burned out. What Remains Are Pockets of Poverty Where Sick People Get Sicker, 27 January. The Morning Call <<https://www.mcall.com/news/watchdog/mc-nws-health-coal-country-project-20181216-htmlstory.html>>. Accessed 22 August 2022.
- Hubert, Jane
2000 *Madness, Disability, and Social Exclusion: The Archaeology and Anthropology of "Difference."* Routledge, New York, NY.
- Hudson, Kenneth
1979 *World Industrial Archaeology*. Cambridge University Press, London, UK.
- Jacobs, Douglas
2018 A Tortured Choice for Immigrants: Your Health or Your Green Card? 10 October. The New York Times <<https://www.nytimes.com/2018/10/10/opinion/immigration-trump-health-public-charge.html>>. Accessed 22 August 2022.
- Laney, A. Scott, and David N. Weissman
2014 Respiratory Diseases Caused by Coal Mine Dust. *Journal of Occupational and Environmental Medicine* 56(S10):18–22.
- Levine, Harry Gene
1984 The Alcohol Problem in America: From Temperance to Alcoholism. *British Journal of Addiction* 79(4): 109–119.
- Marmot, Michael
2006 Health in an Unequal World: Social Circumstances, Biology and Disease. *Clinical Medicine* 6(6):559–572.
- McElroy, Sydney, and Justin McElroy (hosts)
2016 Hookworm, 3 March. Podcast, Sawbones: A Marital Tour of Misguided Medicine, Episode 126, MaximumFun Network <<https://maximumfun.org/episodes/sawbones/sawbones-hookworm/>>. Accessed 24 August 2022.
- Miller, Donald, and Richard Sharpless
1985 *The Kingdom of Coal: Work, Enterprise, and Ethnic Communities in the Mine Fields*. University of Pennsylvania Press, Philadelphia.
- National Museum of American History
2018 Listerine. Smithsonian, National Museum of American History: Behring Center <http://americanhistory.si.edu/collections/search/object/nmah_1170944>. Accessed 22 August 2022.
- Old Main Artifacts
2011 Listerine, Lambert Pharmacal Company, St. Louis, MO, 16 October. Old Main Artifacts <<https://oldmainartifacts.wordpress.com/2011/10/16/listerine-lambert-pharmacal-company-st-louis-mo/>>. Accessed 22 August 2022.
- Parrington, Michael, and Karyn L. Zatz
1986 Archaeological Investigations at House Lot 106/108, Eckley Miners’ Village, Weatherly, Luzerne County, Pennsylvania. Manuscript, Pennsylvania Historical and Museum Commission, Harrisburg, PA.
- Pearl, Robert
2018 7 Surveys that Say a Lot about U.S. Healthcare (Part 2), 19 June. Forbes <<https://www.forbes.com/sites/robertpearl/2018/06/19/7-healthcare-surveys-2/?sh=481719bc2f19>>. Accessed 23 August 2022.
- Plain Speaker
1961 Anthony Sulkosky. *Plain Speaker* 23 February:22. Hazleton, PA.
- Quesada, James, Laurie Kain Hart, and Philippe Bourgois
2011 Structural Vulnerability and Health: Latino Migrant Laborers in the United States. *Medical Anthropology* 30(4):339–362.
- Roberts, Jane H.
2009 Structural Violence and Emotional Health: A Message from Easington, a Former Mining Community in Northern England. *Anthropology and Medicine* 16(1):37–48.
- Roberts, Peter
1904 *Anthracite Coal Communities: A Study of the Demography, the Social, Educational and Moral Life of the Anthracite Regions*. MacMillan Company, New York, NY.
- Roller, Michael
2015 *Migration, Modernity and Memory: The Archaeology of the Twentieth Century in a Northeast Pennsylvania Coal Company Town, 1897–2014*. Doctoral dissertation, Department of Anthropology, University of Maryland, College Park. University Microfilms International, Ann Arbor, MI.
- Scheper-Hughes, Nancy, and Philippe Bourgois
2004 *Violence in War and Peace: An Anthology*. Blackwell, Malden, MA.
- Shackel, Paul
2017 Transgenerational Impact of Structural Violence: Epigenetics and the Legacy of Anthracite Coal. *International Journal of Historical Archaeology* 22(4):865–882.
- Syrop, Jackie
2018 CDC Issues Alert on Resurgence of Progressive Massive Fibrosis in Coal Miners, 27 December. AJMC [American Journal of Managed Care] <<https://www.ajmc.com/newsroom/cdc-issues-alert-on-resurgence-of-progressive-massive-fibrosis-in-coal-miners>>. Accessed 24 August 2022.

- Tone, Andrea
2001 *Devices and Desires: A History of Contraceptives in America*. Hill and Wang, New York, NY.
- U.S. Bureau of the Census
1920 Eckley District, Luzerne County, Pennsylvania. U.S. Bureau of the Census, Washington, DC. Ancestry <<https://www.ancestry.com>>. Accessed 19 October 2018.
- U.S. Bureau of the Census
1930 Eckley District, Luzerne County, Pennsylvania. U.S. Bureau of the Census, Washington, DC. Ancestry <<https://www.ancestry.com>>. Accessed 19 October 2018.
- U.S. Bureau of the Census
1940 Eckley District, Luzerne County, Pennsylvania. U.S. Bureau of the Census, Washington, DC. Ancestry <<https://www.ancestry.com>>. Accessed 19 October 2018.
- United States Census Bureau
2019a Luzerne County, Pennsylvania. QuickFacts, United States Census Bureau <<https://www.census.gov/quickfacts/luzernecountypennsylvania>>. Accessed 1 November 2021.
- United States Census Bureau
2019b S1701/Poverty Status in the Past 12 Months. American Community Survey, United States Census Bureau <<https://data.census.gov/cedsci/table?q=pennsylvania%20poverty%20rates&tid=ACSS1Y2019.S1701>>. Accessed 1 November 2021.
- Weaver, Karol K.
2011 *Medical Caregiving and Identity in Pennsylvania's Anthracite Region, 1880–2000*. Pennsylvania State University Press, University Park.
- Wesolowsky, Tony
1996 Jewel in the Crown of Old King Coal: Eckley Miners' Village. *Pennsylvania Heritage Magazine* 22(1):30–37.
- Westmont, V. Camille
2017 Archaeological Investigation of Site 36LU332 House #38/40 Back Street, Eckley Miners' Village, Luzerne County, Pennsylvania. Manuscript, Department of Anthropology, University of Maryland, College Park.
- Willen, Sarah
2012 How Is Health-Related 'Deservingness' Reckoned? Perspectives from Unauthorized Im/migrants in Tel Aviv. *Social Science and Medicine* 74(6):812–821.
- Wilkerson, Richard, and Michael Marmot (editors)
2003 *Social Determinants of Health: The Solid Facts*, 2nd edition. World Health Organization, Copenhagen, Denmark. Publications, Europe, World Health Organization <http://www.euro.who.int/__data/assets/pdf_file/0005/98438/e81384.pdf>. Accessed 24 August 2022.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.