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## The Historical Experience of Labor: Archaeological Contributions to Interdisciplinary Research on Chinese Railroad Workers

劳工的历史经验：考古学对于中国铁路工人之跨学科研究的贡献

### ABSTRACT

Since the 1960s, archaeologists have studied the work camps of Chinese immigrant and Chinese American laborers who built the railroads of the American West. The artifacts, sites, and landscapes provide a rich source of empirical information about the historical experiences of Chinese railroad workers. Especially in light of the rarity of documents authored by the workers themselves, archaeology can provide direct evidence of habitation, culinary practices, health care, social relations, and economic networks. As archaeologists expand collaboration with each other and with scholars in other fields, interpretations of archaeological research move beyond site-specific description into analyses that trace the changing experiences of workers as they entered new environments and new landscapes. The materiality of daily life at railroad work camps is interconnected with the risks the workers endured and the wealth that their labor generated for railroad owners and investors.

自1960年代以来，考古学家已经研究了修建美国西部铁路的中国移民与美国华裔劳工的劳工营。这些文物、现场以及景观为我们提供了有关中国铁路工人之历史经验的丰富实证材料。尤其在工人们自身书写的文件相对匮乏的情况下，考古学能为他们的居住，饮食，健康，社会关系与经济网络提供直接的证据。随着考古学家拓展彼此协作，以及他们与其它学科学者之间合作，考古学研究的诠释范围已经超出了对特定现场的描述：如今，我们已能够追踪分析工人们在进入新的环境与景观后所发生的经验变化。铁路劳工营的日常物质生活与工人们所承受的风险，以及他们为铁路拥有者和投资者所创造的财富，都是相互关联的。

### Introduction

The story has been repeated in history books since shortly after the completion of the first transcontinental railroad: in 1865, Leland Stanford and E. B. Crocker, investors in the Central

Pacific Railroad, complained about the scarcity of white labor in California. Crocker proposed that Chinese laborers would be hardworking and reliable; both he and Stanford had ample prior experience hiring Chinese immigrants to work in their homes and on previous business ventures (Howard 1962:227; Williams 1988:96). Railroad construction superintendent J. H. Strobridge balked but relented when faced with rumors of labor organizing among Irish immigrants. As Crocker's testimony to the Pacific Railway Commission later recounted: "Finally he [Strobridge] took in fifty Chinamen, and a while after that he took in fifty more. Then, they did so well that he took fifty more, and he got more and more until we finally got all we could use, until at one time I think we had ten or twelve thousand" (Clark 1931:214; Griswold 1962:109–111; Howard 1962:227–228; Chiu 1967:46; Kraus 1969a:43; Saxton 1971:60–66; Mayer and Vose 1975:28; Tsai 1986; Williams 1988:96–97; Ambrose 2000:149–152; I. Chang 2003:56); see also Heath (1927).

The 10,000 to 12,000 Chinese who labored on the first transcontinental railroad were the largest corporate wage-labor force in the 19th-century Americas. Some historians argue that the actual number was much higher, at least 14,000 and perhaps 23,000 (Griswold 1962; Mayer and Vose 1975; Tsai 1986; Chew 2004). Working alongside an estimated 2,000 additional non-Chinese workers—mostly European immigrants, but also European Americans, African Americans, and Native Americans—the Chinese laborers on the first transcontinental railroad were recruited first from within California and possibly Nevada. Most were young men who had earlier worked in mining, logging, road building, and other trades. Some may have worked on earlier railroads, as small numbers of Chinese immigrants were employed on railroad construction on the Central California Railroad as it passed by Marysville in 1858, and on the San Jose–San Francisco Railroad constructed in the early 1860s (Barth 1964:117–120; Chiu 1967; Chinn et al. 1969:43; Bain 1999:209). But, for most, railroad construction was a new line of work.

Soon the potential pool of new Chinese immigrant laborers in California was exhausted, and beginning in March 1865 the Central Pacific Railroad contracted with Cornelius Koopmanschap, a Dutch sea captain, to recruit thousands of new workers directly from villages in southern China (Griswold 1962:17).

Construction Superintendent Strobridge and the acting chief engineer, Samuel S. Montague, marveled in late 1865 at how quickly Chinese workers became “skillful in the performance of their duty. Many of them are becoming very expert in drilling, blasting, and other departments of rock work” (Heath 1927:12). Through these skills, Chinese workers on the first transcontinental railroad were responsible for some of the most significant civil engineering feats in the 19th-century United States: carving roadbeds out of cliff faces at the Cape Horn passage and blasting tunnels through Sierra Nevada bedrock. Their experienced and efficient labor was also central to the epic feat of laying 10 mi. and 56 ft. of track in a single day on 28 April 1869. At the driving of the Last Spike (Figure 1) on 10 May 1869, E. B. Crocker remarked to the assembled crowd: “In the midst of our rejoicing at this event, I wish to call to your minds that the early completion of this railroad we have built has been in great measure due to that poor, despised class of laborers called the Chinese—to the fidelity and industry they have shown” (Griswold 1962:322).

Chinese immigrant and Chinese American workers continued to build and operate the railroads of the American West for several decades following the completion of the first transcontinental in 1869. Yet for all of their significant accomplishments, there is very little known about their own perspectives and experiences. To be sure, Chinese railroad workers were described (often in racially charged language) by newspaper journalists, and the owners and managers of the Central Pacific Railroad described Chinese workers in reports, letters, and congressional testimony (U.S. Congress 1877; Hoffmann 1879; Heath 1927; Kraus 1969a, 1969b; Williams 1988; Bain 1999:222,237). But, in the archives the voices of the workers themselves are silent. With few exceptions (Chew 2004), the Central Pacific Railroad did not record the names of the individual Chinese workers, instead “working and paying them by the wholesale” (Kraus 1969a:51,54, 1969b:204,221; Williams 1988:97–98; Huang 2006:90). Journalists of the time and historian Hubert Howe Bancroft’s researchers interviewed only white supervisors and workers (Kraus 1969a; Deverell 1994). Chinese workers were not called to testify in the court proceedings and congressional hearings that unfolded in the wake of the completion of the Central Pacific Railroad, including the 1876–1877 congressional investigation of Chinese immigration and the 1887 investigations of the United States Pacific Railway Commission (1887).

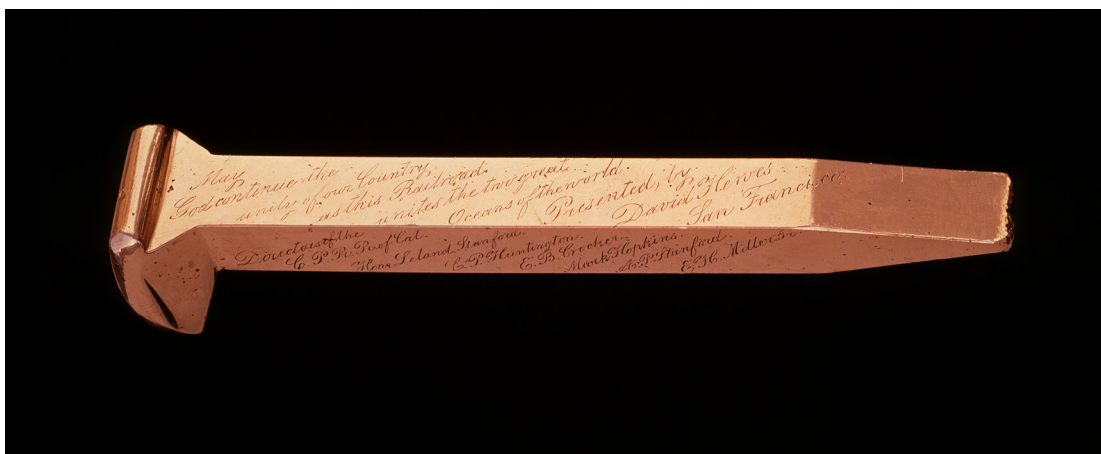


FIGURE 1. The Last Spike. William T. Garrett Foundry, San Francisco, 1869. (1998.115, Iris & B. Gerald Cantor Center for Visual Arts at Stanford University; gift of David Hewes.)

Additionally, to date, no personal writings, letters, or diaries of Chinese railroad construction workers on the first transcontinental have been found, although concerted international efforts are underway to locate such traces (Chang and Fishkin, this issue). Unlike the correspondence of white railroad workers, letters sent home by Chinese workers to villages in Guangdong and Hong Kong did not end up in regional historical society archives in the United States. In China, the many wars, revolutions, and cultural upheavals throughout the 20th century also led to the widespread destruction of family and town archives.

As a consequence, the same few descriptions of Chinese railroad workers on the Central Pacific Railroad are repeated again and again in history books and on public monuments. They note that Chinese railroad workers were hired and managed in gangs of 12 to 20 people, each of which had its own cook and a headman who handled accounts. They describe how Chinese workers were responsible for their own board and ate a diet that included imported Chinese staples, such as dried shellfish, fish, fruits, vegetables, and seaweed, as well as locally sourced rice, pork, poultry, and tea. They recount that Chinese railroad workers bathed daily, changing into clean clothes after work, and preferred to build their own dugouts and stone shelters rather than use company-provided tents. The Chinese railroad workers, it is recounted, kept to themselves and, other than gambling, enjoyed few vices.

Yet nearly all of these widely repeated descriptions are derived from a handful of primary sources. For example, Nordhoff's (1874) *California*, which is widely quoted in the historical accounts of Chinese railroad workers on the first transcontinental, actually describes a small crew of Chinese railroad workers in the Central Valley of California nearly a decade later. Another widely quoted source is a three-paragraph description of the "First Chinese" by Heath (1927), an employee of the Southern Pacific Railroad public relations department, published in the corporate newsletter *Southern Pacific Bulletin*. This, however, was written nearly 60 years after the fact. Similarly, journalists' accounts from short publicity junkets to view railroad construction are also frequently reprinted by historians as generalized

descriptions of the lives of Chinese workers. In this context, historical archaeology—always an important source of information about "those of little note" (Scott 1994)—emerges as a critical body of evidence that can provide direct access to the lived experiences of the tens of thousands of Chinese immigrants who labored to build the railroads that transformed 19th-century North America.

### **Archaeology and the Chinese Railroad Workers in North America Project**

In 2012, Gordon H. Chang and Shelley Fisher Fishkin formed the Chinese Railroad Workers in North America Project (CRWNAP) to "give a voice to the Chinese migrants whose labor on the Transcontinental Railroad helped to shape the physical and social landscape of the American West" (Chinese Railroad Workers in North America Project 2012). Gordon H. Chang (2001, 2008), an historian who has been central to the development of interdisciplinary Asian American studies, and Fishkin (2005), an American-studies scholar who, among other accomplishments, is widely credited with developing transnational American studies, articulated a clear vision for an interdisciplinary, international research collaboration that would open new perspectives on a topic that is paradoxically emblematic of American history, yet often represented through stereotypes and misinformation (Chang and Fishkin, this issue) (Figure 2).

### **New Directions, New Challenges**

Chang contacted me in February 2012 to ask if I knew whether archaeologists had ever studied Chinese railroad workers, and, if so, whether I and other archaeologists might be interested in joining in this effort. Over the next few months, I met several times with Chang, Fishkin, and other researchers on the CRWNAP to explore possibilities for archaeological collaboration. I also met with scholarly delegations from Guangdong, China, the home province of most 19th-century Chinese immigrants to North America, including those who worked on the railroads. These conversations identified several priorities for archaeological involvement, along with several core challenges.





FIGURE 2. Public commemorations of Chinese railroad workers on the first transcontinental railroad: (a) *The Chinese Coolie*, Kenneth H. Fox, 1972, Auburn, California; and (b) detail of mural *Shadows Past*, J. Bowers Foxey, 2012, Colfax, California. (Photos by author, 2012.)

For the CRWNAP, the research priority for archaeology was clear. In the absence of direct written evidence from the workers themselves, could archaeology be used to reconstruct the historical experience of Chinese laborers who built the first transcontinental and many of the other railroads in the American West? What was daily existence like? How was it the same or different on particular segments of the railroad? What was the workers' sensory experience—what did they see, smell, touch, hear, and taste? What did they eat, and how did they cook their food? What was their housing like, their bedding, and any furniture they might have had? How did they manage sanitation? What health challenges did they face, and how did they care for themselves in this new environment? What leisure activities did they enjoy?

Along with the potential for archaeology to reconstruct historical experience, CRWNAP scholars posed a number of questions related to demography and social life. What was the social organization of work camps? Were women and children present in the railroad work camps, even though they are not documented in historical records? What was the relationship between Chinese and non-Chinese laborers? Can anything be learned about the relationship between railroad workers and their home villages in China?

Still another set of questions focused on material culture and economics. How were the goods found on railroad worker camp sites procured? What was brought from China, and how were imported goods obtained and distributed? Did Chinese railroad workers participate in local and regional economies? Did they produce their own objects from local materials and eat food gathered from the local environment?

These research priorities are all questions that archaeology is well positioned to address. Where people lived, what objects they used in daily life, how they interacted with their environment and each other, and how they cared for their bodies and nourished themselves are central themes in archaeological research. They are also questions that move the historical archaeology of Chinese railroad workers in new directions. As discussed at greater length below, much prior archaeological research on

Chinese railroad workers has been largely descriptive. Studies that have moved beyond description to interpretation often focused on questions of assimilation and acculturation. In contrast, the questions posed by the CRWNAP challenge archaeologists to reconstruct the experience of Chinese railroad workers from the workers' own vantage point, a deeply contextual, inside-out perspective.

Chang, Fishkin, and I also noted several challenges in bringing archaeology into this interdisciplinary, transnational collaboration. First, there are problems of translation. Few North American archaeologists speak or read Chinese, and consequently historical archaeology has not engaged very much with Chinese-language archives and scholarship. Similarly, the historical archaeology of Chinese immigrants and Chinese Americans is exclusively published in English. The CRWNAP's translation programs are addressing the former; the publication of this thematic issue with titles and abstracts translated into Chinese is a small first step toward remedying the latter. Beyond language, there is the issue of disciplinary translation. The jargon and conventions of historical archaeology are largely opaque to those outside the field. The practice of thinking with places and objects is unfamiliar to those who are trained in the analysis of texts. Bridging these disciplinary differences requires sustained communication, as non-archaeologists learn about the practice of archaeology, and we archaeologists reframe our research in ways more compatible with humanities-centered scholarship.

The second challenge is methodological. Archaeology is inherently place-based, and most archaeological research on 19th-century railroad workers is site specific. Yet the construction and operation of 19th-century railroads was inherently about expanding and transforming mobility. How can the place-based strengths of archaeology contribute to this study of movement? Similarly, one of archaeology's core methodological strengths is the study of change over time. Railroad construction occurred rapidly, and work camps were short term, some occupied for only a day. What can archaeology bring to the study of such ephemeral sites? These place- and time-based methodological issues challenge us as archaeologists to think beyond our site-specific



research and ask how we can collaborate better with each other to study the highly mobile historical populations of the 19th-century American West.

The third challenge concerns access. The majority of historical archaeology studies are presented in “gray literature”: site records, cultural resource management reports, government agency studies, environmental impact studies, technical reports, and unpublished theses. Most of these documents are stored in regional or government agency repositories; many contain privileged information and are not accessible to other researchers or the public. Consequently, even though a large body of scholarship on the archaeology of Chinese railroad workers already exists, it has been nearly impossible for non-archaeologists to access this research. This thematic issue of *Historical Archaeology* is an important step toward bringing this research into broader circulation and dissemination.

### **Into Action: Forming the Archaeology Network**

To address these challenges and begin work on the research priorities identified by the CRWNAP, Chang, Fishkin, and I decided to establish a network to facilitate communication with and among archaeologists studying railroad contexts. To date, more than 90 archaeologists have joined the Archaeology Network of the Chinese Railroad Workers in North America Project. The first face-to-face meeting occurred as an informal gathering at the 2013 annual meeting of the Society for California Archaeology. Since then, regular conference meet-ups have occurred at annual meetings of the Society for American Archaeology, the Society for Historical Archaeology, the American Anthropological Association, the Association of Asian American Studies, and the Northwest Anthropological Conference, as well as subsequent annual meetings of the Society for California Archaeology.

In October 2013, the CRWNAP hosted a workshop at the Stanford Archaeology Center to begin the process of collaboration between archaeologists and other CRWNAP scholars (Figure 3). Over 65 people attended: roughly 40 archaeologists representing diverse government, cultural resource management, museum, and academic affiliations; about 20 other CRWNAP

scholars representing history, literature, visual studies, cultural studies, urban studies, geography, American studies, Asian American studies, and digital humanities; and several descendants of railroad workers. A key priority that workshop participants identified is to make archaeological research on Chinese railroad workers more accessible to other scholars and to the public, both here and in China. This thematic issue of *Historical Archaeology* is one concrete step in that direction, more than doubling the number of published articles and book chapters on the subject. For public outreach, Rebecca Allen, Mary Maniery, and Sarah Heffner are developing an interpretive book centered on artifacts found on Chinese railroad worker sites. To facilitate access to gray literature, Christopher Merritt coordinates an archaeology bibliography for the CRWNAP: <<http://web.stanford.edu/group/chineserailroad/cgi-bin/wordpress/researchmaterials/archaeology/>>. Members of the Archaeology Network are also working with state offices of historic preservation and federal and state agencies to develop protocols for redacting privileged information from other gray literature sources so that those too can be publically released. Eventually, all these materials will be incorporated into a digital archive being developed by the CRWNAP.

The workshop also identified new directions for research. While individual railroad worker sites have been identified and studied (discussed below), comprehensive archaeological survey is rare, and only small segments of historical railroad alignments have been studied. New surveys along some segments of the first transcontinental railroad are underway (Molenda, this issue; Polk, this issue), and additional projects are in the planning stages. Alongside new field research, workshop participants emphasized the importance of analyzing existing understudied collections (Baxter and Allen, this issue; Molenda, this issue), as well as intersite analysis of reported data to address broader themes (Akin et al., this issue; Harrod and Crandall, this issue; Heffner, this issue; Kennedy, this issue; Urbaniak and Dixon, this issue). Finally, participants noted that many railroad worker sites are endangered by erosion, development, illegal artifact hunting, and vandalism, and discussed the importance of protecting these sites through nominations to the National Register of Historic Places (Baxter and Allen, this issue).



FIGURE 3. October 2013 workshop of the Archaeology Network of the Chinese Railroad Workers in North America Project. (Photo courtesy Chinese Railroad Workers in North America Project, 2013.)

Under Chang and Fishkin's leadership, Archaeology Network scholars are forging transnational connections with scholars in China and other Asian countries. In September 2014, representatives of the Archaeology Network participated in a CRWNAP delegation to Sun Yat-sen University in Guangzhou. As historical archaeology is still an emerging field in Asia, the strongest connections at present are with researchers in folk culture, overseas Chinese history, architecture, and geography. Looking ahead, future interdisciplinary conferences and workshops are planned, both in the United States and China; the CRWNAP is also developing

digital humanities platforms for international collaboration.

### **The History of Archaeological Research on Chinese Railroad Workers in North America**

The rich history of archaeological research on Chinese railroad workers in North America has much to contribute to this shared effort. Formal investigations of Chinese railroad work camps began in the 1960s, although undoubtedly sites and artifacts had been studied prior to this by railroad historians, avocational archaeologists, and collectors. This coincided with the formalization

of historical archaeology as a professional and academic discipline in North America (the Society for Historical Archaeology, for example, was founded in 1968) and the advent of historic preservation laws in the United States, such as the 1966 National Historic Preservation Act, that required assessment of historical archaeological resources. Since then, the archaeology of Chinese railroad workers has largely been conducted as part of the growing field of overseas Chinese archaeology (Schuyler 1980; Greenwood 1993; Wegars 1993; Maniery 2004; Voss 2005; Voss and Allen 2008; Staski 2009; Ross 2013), also referred to as Chinese American archaeology and Asian American archaeology.

Most archaeological studies of Chinese railroad worker sites have been conducted to comply with historic preservation laws. In research for this overview, a thorough effort was made to locate site records and cultural resource management (CRM) reports related to Chinese railroad workers, but undoubtedly many more remain. Besides CRM studies, student theses have generated important bodies of research, most notably through anthropology programs at the University of Nevada at Reno, University of Idaho, University of Montana, Western Wyoming Community College, and University of Texas at Austin.

This overview of the history of archaeological research on Chinese railroad workers in North America is organized by railroad line, beginning with the western divisions of three United States transcontinental railways: the Central Pacific, the Southern Pacific, and the Northern Pacific. In all three, Chinese immigrants were the majority of workers for the western divisions, while white (American-born and European immigrant) workers were recruited for the eastern divisions. (Chinese immigrants also constructed two other transcontinental lines: segments of the Atchison, Topeka & Santa Fe Railroad and the western division of the Canadian Pacific Railway. However, no archaeological studies of Chinese work camps on these railroads have been identified.) Discussion of regional, branch, and narrow-gauge railroads follows.

### **Central Pacific Railroad, 1865–1869**

Connecting Council Bluffs, Iowa, with Sacramento, California, the eastern (Union Pacific) and western (Central Pacific) divisions

of the first U.S. transcontinental were joined on 10 May 1869, at Promontory Summit, Utah, in the famous Golden Spike ceremony. The first known professional presentation of archaeological research on a Chinese railroad worker site was delivered nearly 100 years later, at the 1969 annual meeting of the Society for Historical Archaeology. Chace and Evans (1969) reported the findings of a surface survey at Summit Camp at Donner Pass, California, where Chinese immigrants labored for four years to blast tunnels through the Sierra Nevada summit. The transcript of Chace and Evans's presentation is printed as the opening article in this thematic issue, making it publically available for the first time. Their research at Summit Camp supported important descriptive analyses of artifacts commonly found on Chinese immigrant and Chinese American sites (Chace 1976; Etter 1980; Evans 1980). Summit Camp, in Tahoe National Forest, was formally recorded in 1997 and was recommended for eligibility to the National Register of Historic Places in 2008. The California State Office of Historic Preservation concurred with this recommendation in 2009. As one of the largest and longest-occupied residential bases for Chinese railroad workers in North America, Summit Camp has continued to be a focus of archaeological research (Baxter and Allen, this issue; Molenda, this issue).

Railroad grade survey in the Tahoe National Forest has also yielded evidence of two other substantial Chinese worker camps: Windmill Tree and China Kitchen (Molenda, this issue). The Tahoe basin is also notable for extensive studies of Chinese immigrant woodcutters and colliers who provided lumber and fuel to the Central Pacific Railroad during its construction and operation (Chung 2003; Smith and Dixon 2005; Lee 2008).

Promontory Summit near Ogden, Utah, has also been the subject of long-term archaeological research programs. The symbolic and historical importance of the "meeting of the rails" led to this area being designated as Golden Spike National Historic Site (GSNHS) in 1957. As Polk (this issue) summarizes, the archaeological and historical resources of the GSNHS have been the subject of multiple historical and archaeological surveys since the 1960s, although little subsurface work has



been conducted. The GSNHS contains at least 19 construction camps, many of which likely represent worker residences during the bitterly cold 1868–1869 winter. At least four camps are identified as Chinese (Polk and Simmons Johnson 2012; Polk, this issue). The work camp sites in the GSNHS are notable for the variety of architectural remains represented, including dugouts, pit structures, leveled platforms, and masonry foundations (Anderson 1983).

One of the most unusual documented archaeological sites associated with Chinese workers on the first transcontinental is a deposit of Chinese cultural material, including a Chinese brown-glazed stoneware liquor jar, on a small knoll near Monument Rock on the Central Pacific Railroad grade near Promontory Summit. Unlike the large-group work camps at Summit Camp and Promontory Summit described above, the presence of this jar “indicates an individual act of agency, possibly seeking a place of quiet refuge from the daily toils of laboring” (Merriitt 2013).

Prior archaeological work on the first transcontinental shows a tendency toward study of large base camps used for specialized operations. As Molenda (2013:5) notes: “larger and more permanent camps tend to be located near walls, culverts, and tunnels, with stone structural remains visible on the surface. ... In contrast, the Overseas Chinese seem to have occupied much more ephemeral ‘tent camps’ in areas where construction proceeded quickly.” For example, archaeologists studying the Fenelon, Nevada, railroad grade identified sparsely distributed Chinese ceramic fragments that were interpreted as possible evidence of 1860s Chinese railroad construction crews (Turner 1982:19). Molenda’s ongoing survey in the Tahoe National Forest identified several diffuse artifact scatters adjacent to the railroad grade that may also represent these ephemeral tent camps.

After the construction of the first transcontinental was completed, many Chinese workers were hired as section hands to repair and maintain the lines. Notably, the Union Pacific, which did not hire Chinese workers during construction, quickly engaged Chinese veterans of the Central Pacific to support railroad operations in the eastern division of the first transcontinental. Raymond and Fike (1981) conducted surface studies and historical research

on 25 Utah branch stations, 6 of which showed evidence of substantial Chinese habitation from the 1870s to the 1910s. Gardner (2004, 2005) and colleagues (Gardner et al. 2002; MacNaughton 2012) have studied Chinese workers at the Aspen and Hampton Union Pacific station camps on the first transcontinental railroad in Wyoming.

### **Southern Pacific Railroad, 1873–1883**

Formally incorporated in 1865, the Southern Pacific Railroad was acquired by the Central Pacific Railroad in 1868, with the formal merger completed in 1870. Construction of this southern transcontinental railway began in 1873. The route connected Sacramento, California, to New Orleans, Louisiana, via Los Angeles, California. Strobridge, the former construction supervisor for the Central Pacific Railroad, came out of retirement to complete the job. The Southern Pacific relied heavily on the labor of veteran Chinese workers from the first transcontinental. By completion, the Southern Pacific employed an estimated 6,000 workers, 5,000 of whom were Chinese (Briggs 1974:31). The Golden Spike joining the western and eastern divisions was driven on a bridge crossing the Pecos River in Texas on 12 January 1883.

Fedick and Stone (Fedick and Stone 1988; Stone and Fedick 1990) conducted an archaeological survey near Phoenix, Arizona, on a 100 ft. wide corridor along 22 mi. of the historic Southern Pacific Railroad. They identified seven sites associated with railroad construction and maintenance. One of these, Site 12, was investigated through surface collection, test excavation, and data recovery. “An abundance of Chinese ceramics, and opium cans, and food remains associated with a traditional Chinese diet” (Stone and Fedick 1990:146) indicate the site was inhabited primarily by Chinese workers. Chronologically sensitive artifacts indicate that the site was more likely related to maintenance and repair of the railroad, pointing to the important role of Chinese employees in the operation of the Southern Pacific Railroad, as well as in its construction (Stone and Fedick 1990:144–145).

Briggs (1974) investigated two railroad construction worker encampments, the Langtry

Camp and the Upper Rio Grande Tunnel No. 1 Camp, at the Pecos River crossing in Val Verde County, Texas. The Langtry Camp, which housed Chinese workers, consisted of stone-lined tent platforms associated with double-hearth features. Briggs (1974:53) estimated the camp likely housed between 500 and 665 Chinese residents. Artifacts were primarily residential and include a much higher percentage of European- and American-produced goods than seen at Chinese construction camps on the first transcontinental. The remote location of the camp, distant from both the Pecos River and the railroad alignment, may have been selected to minimize confrontations with white and Mexican workers on the eastern division. This locale placed stress on Chinese workers by increasing distance to water sources and increasing Chinese dependence on company suppliers (Briggs 1974:197–204).

The Chinatown in El Paso, Texas, was established by Southern Pacific construction veterans, many of whom continued to work for the southern transcontinental railroad after its completion. Archaeological research has shown that in contrast to coastal Chinatowns where residents had ready access to imported goods from China, El Paso's Chinese community relied heavily on locally available material culture and foods. For example, American-manufactured bottles were often relabeled for secondary purposes, including laundry bluing, Chinese wines, and traditional Chinese medicines (Staski 1993).

### **Northern Pacific Railroad, 1870–1883**

The Northern Pacific, linking Chicago to Seattle, employed an estimated 3,000 to 5,000 Chinese construction workers, most of whom were also veterans of the first transcontinental. The railway was completed on 8 September 1883, with the driving of a golden spike near Gold Creek, Montana.

Avocational archaeologist Gary Weisz (2003) and colleagues (Merritt 2010; Merritt et al. 2012; Akin et al., this issue) have identified and recorded nine line camps on the Northern Pacific Railroad (NPRR) alignment through the rugged valley of the Clark Fork River in western Montana. A 10th, the NPRR front town known as Cabinet Landing, was studied by

Landreth and colleagues (Landreth et al. 1985). Comparative analysis of the 10 sites shows several general similarities: they are oblong, linear camps along river valleys, and they all have tools representing the labor of railroad construction, along with horseshoes and other hardware from draft-animal tack (Merritt et al. 2012:677). Beyond this, the distribution of material culture bifurcates along ethnic lines. Spatial analysis shows clear segregation, with distinct separate areas for Chinese workers, often with natural topography creating a spatial buffer between Chinese and white workers. Chinese encampments were invariably located in uneven, mosquito-infested areas, indicating that camp geography reinforced ethnic hierarchies among workers. The material remains on Chinese camps “emphasize foodways, folk beliefs, and leisure—all of which represent means to help balance a life of hard work” (Merritt et al. 2012:686). The loss of life among Chinese railroad workers on the NPRR was severe, and the Thompson River, Heron, and Noxon camps include rare extant examples of graves and grave markers (Merritt et al. 2012:680–681). Additional work to document Chinese work camps along the NPRR is currently under way in Bonner County, Idaho, through the University of Idaho (Stokeld and Petrich-Guy 2014). Research by Urbaniak and Dixon (this issue) also documents the eventual replacement of Chinese workers on the NPRR with a multiethnic workforce including Japanese, Norwegian, and English immigrants.

### **Other Railroads**

Along with the transcontinentals, railroad companies soon built “thousands of rail lines—large and small gauge—leaving extensive dendritic networks of railroad grades, trestles, and tunnels throughout the West” (Dixon 2014:193). From the 1860s to the 1890s, Chinese workers were central to the construction and operation of many of these railroads.

In Nevada, the Virginia & Truckee Railroad (V&TRR), linking the Comstock Lode in Nevada with silver ore processing and supply centers in Reno, Carson City, Silver City, and Virginia City, was constructed primarily by 1,200 Chinese workers recruited after the completion of the first transcontinental. Chinese

workers on the V&TRR were especially targeted by the anti-Chinese movement, which marched on railroad work camps in American Flats near Virginia City and drove Chinese workers off the grade into the surrounding hills. Railroad executives brokered a deal that reserved some railroad segments for white workers. Wroblewski (1996) conducted a pedestrian survey of a 6 mi. section of the V&TRR grade and analyzed three Chinese construction worker sites. One site was badly eroded; the second was a residential site with 13 tent platforms, as well as numerous hearth features; and the third included a single flat area with a dense distribution of artifacts related to food, alcohol, and opium consumption. Wroblewski concluded that this third site likely represented a separate recreation area, possibly the headquarters of a sutler who sold goods to railroad workers. Wroblewski (1996:66–68) interprets this separation of recreational activities from sleeping and resting areas as a common aspect of working-class life, in which the shared consumption of foods and social drugs facilitated camaraderie in the midst of a harsh, centralized, and regimented work life.

A fourth V&TRR work camp, the Lakeview Camp, was recorded and excavated in the late 1990s (Rogers 1997; Furnis and Maniery, this issue). The site housed an estimated 40 to 70 Chinese men during grading and tunneling. In their contribution to this issue about the Lakeview Camp, Furnis and Maniery show how systematic excavation and recording methods can reveal patterns of activity areas even in shallow and ephemeral work camp sites. Echoing Wroblewski's findings, Furnis and Maniery found distinct public spaces for cooking, eating, and socializing separate from sleeping areas.

Like the V&TRR, the Eureka & Palisades Railroad was built to link silver mines in the Eureka, Nevada, region with the first transcontinental in Palisades, Nevada. Zier (1985) investigated a Chinese railroad workers' site representing a temporary camp possibly occupied for only a few days. The site included three artifact clusters, interpreted by Zier as each representing one group of 12–20 workers.

Other railroads in Nevada, such as the narrow-gauge Bodie & Benton Railroad, served local interests. Operated by the same

consortium as the V&T, the Bodie & Benton linked lumber mills with mining sites. Currently studied by Sunseri (this issue), the Mono Mills site associated with the Bodie & Benton was a locale in which Chinese workers lived alongside Native American Paiutes. Sunseri's investigations reveal evidence of transcultural interactions and cooperation between these two subjugated worker populations.

In Utah, archaeologists recorded a small itinerant Chinese railroad encampment associated with the Utah & Pleasant Valley Railway, completed in 1879, and identified rock structures likely representing Chinese work camps on the Denver & Rio Grande Western Railroad, completed in 1883 (Merritt 2013). In Mesa County, Colorado, Conner and Darnell (2012) conducted an archaeological assessment of the Excelsior Train Station site on the Denver & Rio Grande Railway. Their research identified a distinct concentration of Chinese artifacts, including porcelain tablewares, Chinese brown-glazed stoneware, and opium paraphernalia. They conclude that, although historical records for the railroad do not list any Chinese employees, the site represents a Chinese labor camp associated with the railroad's construction or operation (Conner and Darnell 2012:36)

In Roundup, Montana, Urbaniak and Dixon (this issue) identified rock inscriptions likely carved by Chinese workers employed to mine coal for the Milwaukee Road. In San Diego County, California, Hallaran et al. (1989) studied a late-1910s construction camp on the San Diego & Arizona Eastern Railway. Research revealed a diverse multiethnic workforce including Mexicans, European Americans, Native Americans, Indians, Pakistanis, Greeks, Swedes, and Chinese.

### Existing Themes and New Directions

Prior archaeological research reveals tantalizing glimpses of the historical experience of Chinese railroad workers in the American West, and it also exposes large gaps in archaeological knowledge. Only a few short segments of historical railroad alignments have been systematically surveyed. Most archaeological investigations have centered on a few large, long-term work camps associated with intensive grading, tunneling, and bridgework.



These represent only one aspect of railroad construction: most railroad construction workers typically lived in small groups in isolated short-term camps. While archaeologists have developed models predicting the locations and attributes of railroad worker camps based on slope, water access, and relationship to railroad features (Briggs 1974; Buckles 1983; Wroblewski 1996:24), more field research is needed.

Methodologically, surface survey and collection predominate, although important case studies show the value of excavation at both short-term (Furnis and Maniery, this issue) and long-term work camps (Briggs 1974; Wroblewski 1996; Baxter and Allen, this issue; Sunseri, this issue).

Many of the reports are primarily descriptive, providing an account of the work camp's location, visible archaeological features, and observed artifacts. This provides a rich corpus of primary observations for comparative analysis, and since the 1970s archaeologists have successfully drawn on these descriptive reports to develop taxonomic studies of the material culture of Chinese immigrants in North America, including guides for ceramics (Chace 1976; Evans 1980), opium paraphernalia (Etter 1980; Wylie and Fike 1993), and gaming-related artifacts (Jolly 2012). Additionally, the study of Chinese railroad worker sites affords opportunities for fine-grained chronological comparison. Sando and Felton (1993) noted that Double Happiness-pattern rice bowls prevailed in camps in the 1860s, being replaced by Bamboo-pattern rice bowls after about 1870. Similarly, Akin, Bard, and Weisz (this issue) note that the temporal control afforded by railroad worker camps enables refined models of the import of Asian coins to North America.

Researchers have also used evidence from Chinese railroad worker camps as a point of comparison with daily life in historic Chinatowns, which had greater diversity in age, gender, and class. Felton and colleagues (Felton et al. 1984; Sando and Felton 1993) note that, while ceramic assemblages at Chinese railroad worker sites are dominated by inexpensive Double Happiness- and Bamboo-pattern rice bowls, urban Chinatowns tended to include the more expensive porcelains decorated with Winter Green and Four Seasons patterns. Wylie and Fike (1993:292) compared the relative

frequency of opium-pipe bowls on nonurban work camps, including railroad sites, with that on urban Chinatown sites. They concluded that there was a pattern of heavier opium use in work camps, perhaps to buffer work-related discomforts. This finding was recently corroborated by research on Northern Pacific Railroad camps in Montana, where the ubiquity of opium paraphernalia was interpreted as a source of "relief from the physical and psychological pain of manual labor ... the most effective pain remedy on the market until the introduction of aspirin in the 1890s" (Merritt et al. 2012:689). Gust's (1993) foundational comparative study of faunal remains at Chinese immigrant sites included several historical communities formed largely through railroad construction and operation; drawing on more recent studies, Kennedy (this issue) expands on this analysis to highlight patterns and local variations in railroad workers' diet.

While artifact-focused studies of railroad worker sites have tended to emphasize material culture unique to Chinese immigrants, several recent projects have emphasized the importance of Chinese railroad camps to working-class history and the formation of the capitalist world system. In a programmatic archaeological research design for work camps, the California Department of Transportation (2013:8) notes that, from 1848 to 1941, most new migrants and immigrants to the American West participated in work camps at some point in their lives, yet for "most of the 19th century, neither the government nor private companies made any concerted effort to document the state's transient labor force or its work camps." Such camps, including those used by railroad workers, were "integral parts of profit-driven enterprises and often were the direct result of large expenditures of capital. ... The economy of work camps involved the flow not only of capital and commodities but also of the workers themselves" (California Department of Transportation 2013:10). In this context, Chinese railroad camps share characteristics with work camps associated with other industries in the American West: a narrow economic focus; relative geographic isolation; impermanence; and interconnections with and dependence on regional, national, and global economies (Van Bueren 2002; Dixon 2014). Engaging with

this world-system approach, Gardner (2004, 2005) has argued that regional core–periphery relationships developed within Chinese immigrant communities in the American West: Chinatowns near large permanent operations, such as mines, functioned as core settlements, whereas peripheral Chinese settlements, such as those associated with railroad section camps, faced isolation, which is materially reflected in decreased dietary diversity and greater reliance on non-Chinese material culture.

Concern with race, ethnicity, and nationality circulates throughout prior research on the archaeology of Chinese railroad workers. But the question of how race, ethnicity, and nationality came to matter in these archaeological studies merits closer discussion. From the beginning, archaeologists have studied the distinctive assemblages left by Chinese railroad laborers to define and describe the material culture of overseas Chinese communities. Archaeological research aiming to investigate assimilation, acculturation, or traditionalism through the study of Chinese railroad worker assemblages is common, but archaeologists have rarely considered how the commodity chains created by railroad labor contractors and suppliers may have constrained workers' consumption practices. It is unclear, for example, whether the ubiquity of certain Asian ceramic types at railroad work camps reflects the preferences of the workers themselves or the profit-driven decisions made by the labor contractors, railroad suppliers, and their import/export partners.

Emergent capitalist enterprises throughout the 19th-century American West recruited their workforces from diverse local, regional, national, and international populations (Dixon 2014; Sunseri, this issue; Urbaniak and Dixon, this issue). Workers were often organized into ethnically distinct work groups—at times, as the opening vignette of this article indicates, in order to deliberately divide workers from each other and suppress labor organizing. The Central Pacific Railroad's approach to staffing the construction of the first transcontinental was particularly significant in forging and codifying this ethnic contract-labor system during the early stages of industrial development in the American West. Briggs (1974) and MacNaughton (2012) note that this practice provides an

opportunity for comparative archaeological research on ethnicity and consumption, for the archaeological record of railroad labor contains spatially discrete sites occupied by working-class men of different ethnic and racial groups. Yet, as Merritt et al. (2012) noted, the separation of workers' camps by ethnicity was itself a process of racialization that produced, not simply reflected, social categories. As Molenda (this issue) and Sunseri (this issue) demonstrate, Chinese railroad workers were not passive recipients of the racist ideologies that fostered a segregated workforce.

The articles presented in this issue also begin to contribute to the “inside-out” perspective on the historical experience of Chinese railroad workers that CRWNA scholars requested. Chace and Evans's (this issue) study of Summit Camp introduces the suite of material culture that most Chinese railroad workers used in day-to-day life, while Molenda (this issue) questions whether such material culture can be studied to address common themes in the archaeology of labor, such as overt and covert resistance to capitalist ideals. Baxter and Allen's (this issue) article, also discussing Summit Camp, emphasizes the power of place in evoking the hardships and accomplishments of Chinese laborers in the High Sierras, while Polk's (this issue) synthesis of archaeological research at the Golden Spike National Historic Site calls attention to a landscape fractured by corporate greed and ethnic and religious divisions. Furnis and Manieri's (this issue) work presents a methodology for differentiating activity areas within ephemeral work camps. Sunseri's (this issue) study of Chinese laborers at Mono Mills documents the interconnections forged between Chinese immigrants and Native American Paiutes, while Urbaniak and Dixon's (this issue) report on rock inscriptions documents the presence of Chinese, Japanese, and European immigrant workers in railroad-associated labor contexts.

Other contributions move beyond site-specific research, bringing together evidence from multiple work camps and, in some cases, multiple railroads. Akin, Bard, and Weisz (this issue) analyzed Asian coins from railroad worker sites on the NPRR, noting the uses of such coins to promote health, bring good luck, and for gambling. Kennedy (this issue)

traces dietary practices through comparative analysis of animal-bone studies, challenging stereotyped historical accounts with evidence of local variation. Heffner (this issue) examines health-related artifacts, affording an entry point into ways that railroad workers managed the physical stress of their work, as well as their vulnerabilities to exposure and disease. Harrod and Crandall (this issue) presents the findings of bioarchaeological research, revealing not only the physical toll caused by hard labor, but also the impact of interethnic violence on individual life histories. This thematic issue closes with two commentaries. Praetzelis and Praetzelis (this issue) and Chung (this issue) note the value, and the current limitations, of the rich, place-based, descriptive evidence generated by archaeology. Both commentaries encourage archaeologists to reach beyond the discipline to work closely with descendant communities in North America and in China as sources of new, interesting questions for future research.

### **The Other Materialities of Chinese Railroad Workers**

The research presented in this thematic issue is a strong beginning for an ongoing collaboration that will open new research directions in the years to come. Along with conventional archaeological survey, excavation, artifact studies, and data analysis, plans are underway for geographic information systems, digital humanities archives, and three-dimensional visualizations that can integrate archaeological, archival, pictorial, geographic, oral-history, and cultural-studies sources. Transnational research partnerships promise to forge unprecedented collaboration between historical archaeologists in the United States and scholars in related fields in Asia.

As archaeologists and others develop new methods and new questions for analyzing the archaeological landscapes, features, architectural traces, dietary remains, and fragmented material traces of Chinese railroad workers, it is equally important to consider other materialities of railroad labor that are rarely represented in the archaeological record of laborers' camps.

The first is the bodies of the workers themselves. Although widely heralded as a vanguard

of the industrial age, 19th-century railroads in the American West were built with manual labor. Brush clearing, grubbing, grading, tunneling, bridging, track laying—all of these relied primarily on human muscle. Most of the construction work was painstakingly completed with hand tools under time pressures driven by profit motives and government incentives. The pride of work that many laborers rightfully felt at their accomplishments was shadowed by a tremendous loss of life caused by work accidents, environmental exposure, illness, and interethnic violence. To fulfill their obligations, labor contractors and work-gang headmen on the first transcontinental often maintained a pool of able-bodied camp followers who could replace injured and dead workers at a moment's notice (Hoffmann 1879:221–225; Barth 1964; Saxton 1971:60–66). The Central Pacific and most other railroads did not keep records of Chinese construction casualties (Ambrose 2000:156; N. Lee 2002; I. Chang 2003:59). Many historical texts estimate that as many as 1,000 to 1,500 Chinese workers lost their lives in construction of the first transcontinental alone, which, if correct, would indicate a death rate of around 1 in 10 workers (Kraus 1969a; Saxton 1971; Yen 1976; Tsai 1986). For years following the completion of the first transcontinental, veteran railroad workers journeyed back to the Sierra to search for the human remains of their lost colleagues in a practice called *jup seen you* (retrieving deceased friends) (I. Chang 2003:63–64). In light of the precariousness of workers' bodies, seemingly mundane results of archaeological research—traces of shelter, nourishment, medicine, and pain-numbing opium—take on heightened significance as efforts to care for one's own and one's fellows in a dangerous environment.

The government incentives that rewarded speed of railroad construction without regard to worker safety no doubt contributed to the callous disregard for life shown by railroad magnates and construction bosses. The profits from railroad construction—and the financing schemes that developed around it—were considerable indeed (Riegel 1926; Saxton 1971; Mayer and Vose 1975; White 2011). It is no coincidence that the Chinese Railroad Workers in North America Project began at Stanford



University, which was founded by Leland and Jane Stanford with the wealth that they had amassed through the construction of the Central Pacific Railroad and their related economic and political enterprises. Leland Stanford had a particularly contradictory relationship with Chinese immigration: early in his political career, he supported legislation to restrict Chinese immigration, referring to Chinese immigrants as “an inferior race” (Stanford 1862). Yet as one of the “Big Four” owners of the Central Pacific Railroad, he reversed his anti-immigrant stance only two years later, at one point suggesting that it would be good if a half-million more Chinese immigrated to the United States (Williams 1988:97). The self-interested opportunism of this reversal is revealed by Stanford’s later support of the 1892 Geary Act, which extended and strengthened exclusion of Chinese immigrants (Tsai 1986). Throughout these political machinations, the Stanfords continued to employ hundreds of Chinese workers at their ranches and vineyards, as well as in the construction and operation of Stanford University

(Figure 4). The lavish landscape and monumental architecture of the campus are one of many Gilded Age materialities that should be credited to Chinese workers.

Few Chinese railroad workers became wealthy themselves. Paid less than most white workers and responsible for their own room and board, they had few financial resources and often owed considerable debts to immigration recruiters and labor contractors (Griswold 1962:118–119; Chiu 1967:46–47; Kraus 1969b:217; Saxton 1971:60–66; Daniels 1988:19; Williams 1988:97–98; White 2011:294–297). For some, however, railroad construction led to steady careers in railroad operations (Southern Pacific Company Bureau of News 1917; Chiu 1967); for others, savings from their wages enabled them to pay off loans, support their kin in North America and China, and start small businesses that afforded greater stability and self-determination (Kraus 1969a; Cassel 2002). This opportunity to earn and invest wages, however small, is another significant materiality of Chinese railroad



FIGURE 4. The other materialities of Chinese railroad workers: entrance to the main quadrangle at Stanford University. (Photo by author, 2012.)

laborers' historical experience. In the American West, the business districts of towns and cities were transformed by expanding Chinatowns, fueled by businesses supplying workers and supplies to the railroad construction projects, as well as new businesses started by former railroad workers (Chiu 1967; Tsai 1986; Chan 1991:30). In China, remittances from railroad workers and other migrants transformed the landscape of 19th-century Guangdong Province, sponsoring public works, such as schools, orphanages, hospitals, assembly halls, roads, bridges, and even railroads (Dehua 1999).

The workers who built the railroads constructed far more than a new means of commercial transportation. The identities and communities they formed reshaped the fabric of social life in the Americas and China, and the wealth generated by their labor continues to influence commerce, education, and philanthropy today. Through the study of the material objects, residues, and places that the railroad workers left behind, archaeology provides a tangible point of entry into these dense webs of political machinations, economic relations, cultural meanings, and historical experiences.

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