



# *Proceedings of the Society of Architectural Historians, Australia and New Zealand 30, Open*

Papers presented to the 30th Annual Conference of the Society of Architectural Historians, Australia and New Zealand held on the Gold Coast, Queensland, Australia, July 2-5, 2013.

<http://www.griffith.edu.au/conference/sahanz-2013/>

Andrew Johnston, "Ethnicity Underground Race, Work and Landscape in the California Quicksilver Industry, 1845-80" in *Proceedings of the Society of Architectural Historians, Australia and New Zealand: 30, Open*, edited by Alexandra Brown and Andrew Leach (Gold Coast, Qld: SAHANZ, 2013), vol. 2, p 685-697.

ISBN-10: 0-9876055-0-X

ISBN-13: 978-0-9876055-0-4

# *Ethnicity Underground*

## Race, Work and Landscape in the California Quicksilver Industry, 1845-80

Andrew Johnston

*Xi'an Jiaotong-Liverpool University*

*How to think about the relationship between race and architecture is an open question. By examining the relationship between the physical spaces of quicksilver (mercury) mining in California and the racial and ethnic organization of the industry in the mid-19th century, this paper examines the relationship between a racialized work structure and the built form of the place of work. In so doing, it goes beyond and complicates an understanding of race and architecture as best seen in ghettoized neighborhoods (including mining camps) or ethnic enclaves where buildings reflect the ethnic identity of the residents. Using a wide range of sources, both documentary and physical, this paper engages a cultural landscapes approach to deepen our inquiry into the relationships of race and architecture.*

“The Yard Gang,” a photograph from the early twentieth century, shows a group of thirteen men and a dog at the New Idria quicksilver (mercury) mine in California.<sup>1</sup> Together these men, the reduction yard workers, sorted and crushed the ore coming from the mine, loaded the ore into quicksilver furnaces and then bottled the resulting mercury for market.<sup>2</sup> The photograph is most interesting for its careful composition highlighting that the men who worked “the yard” at the mine came from many different races and ethnicities. The owner of the postcard recognized the photographer’s message, for on the back is handwritten: “Quite a cosmopolitan bunch. Spanish, German, Korean, Italian, Mexican, American and Hindu.” The message of this postcard is a theme from gold rush days, of peoples coming from around the globe to reap riches and to forge a new life in California. Here in the early twentieth century, sixty years after the gold rush, this theme was still celebrated by this photographer at New Idria.<sup>3</sup> The “yard

1. The postcard is in the California State Library and is filed under: Mines & Mining: Quicksilver: New Idria Mines, 1998-0442.

2. The 1910 manuscript census for the New Idria mine lists many more than thirteen men working in the “yard,” but these other men add no additional nativity diversity to the group of men in the photograph. 13th Census of the United States, San Benito County, California, Panoche Township, (page numbers and enumerator are illegible).

3. For more on this theme of multi-ethnic and multi-racial societies see James J. Rawls and Walton Bean, *California: An Interpretive History* (Boston: McGraw Hill, 1998); J.S. Holliday, *The World Rushed In* (New York: Simon and Schuster, 1981); J.S. Holliday, *Rush for Riches* (Berkeley: University of California Press, 1999); Susan Lee Johnson, *Roaring Camp: The Social World of the California Gold Rush* (New York: W.W. Norton, 2000).



gang” was a remarkable group, marking the New Idria mine, and by extension California, as a multi-ethnic and multi-racial society. Due to this multiplicity California and New Idria were places where race relations were not simple oppositions, such as black-white, but instead were complex and many-tiered.<sup>4</sup>

For the “cosmopolitan” group of men in the photograph race and ethnicity were major factors in dictating their work and working conditions at the yard as well as their living conditions at the mine camp. Company records and census details for New Idria tell a story of racially stratified living and working relationships for these men as evidenced by the jobs they did and the spaces in which they worked. This paper explores the relationship between the physical spaces of the mercury mines in California and the racial and ethnic organization of the quicksilver industry, focusing especially on the places of work. While aboveground ethnic landscapes have been explored extensively, industrial sites of work, and mines in particular, have been much less studied.<sup>5</sup> This look at the quicksilver industry tells a multi-ethnic history of California, of racialization as a process grounded in, and visible in, the physical landscapes of the industry.<sup>6</sup>

This paper argues that how race and ethnicity were negotiated within the quicksilver industry shaped the underground landscapes of work at the mines. By landscapes of work I

4. This has been argued by Tomas Almaguer and Ronald Takaki, as well as New Western Historians such as Patricia Nelson Limerick. Tomas Almaguer, *Racial Fault Lines: The Historical Origins of White Supremacy in California* (Berkeley: University of California Press, 1994); Ronald T. Takaki, *Strangers from a Different Shore: A History of Asian Americans* (New York, N.Y.: Penguin Books, 1990); and *Iron Cages: Race and Culture in 19th-Century America* (New York: Oxford University Press, 1979); Patricia Nelson Limerick, “Disorientation and Reorientation: The American Landscape Discovered from the West,” *Journal of American History* 79, no. 3, (1992).

5. There are many examples of excellent work on ethnic neighborhoods and their architecture, including: Ellis and Ginsberg, *Cabin, Quarter, Plantation: Architecture and Landscapes of North American Slavery* (New Haven: Yale University Press, 2010); Upton and Vlach, *Common Places: Readings in American Vernacular Architecture* (Athens: University of Georgia Press, 1986).

6. Racialization can be defined as the process of seeing groups as a race based in contested constructions of racial identities.

Figure 1. The Yard Gang, New Idria Quicksilver Mining Company, Idria, Cal. 1910s. This picture postcard shows a few of the men who worked the furnace yard at the New Idria quicksilver mine. (Courtesy of the California History Room, California State Library, Sacramento, California, 1998-0442).



7. Landscapes of work have often been the subject of scholarly research by cultural landscape historians. Few of these studies, however, concern mining landscapes, and particularly the distinctive nature of the underground landscape. Robert McCarl, "Contested Space: The Above and Below Ground Landscape of Idaho's Coeur d'Alene Mining District," PhD diss., University of Utah, 1992.

mean the reciprocal relationship between the groups of people working at the mines and the spaces (the mines, yards, offices, and surrounding areas) in which they worked.<sup>7</sup> How work was organized, and what group of people did particular jobs, was based in ethnic and racial relations and the process of racialization and these relations influenced the physical form of the underground world of the mines.

While the yard gang exemplifies work at the New Idria mine in central California, this paper focuses on the landscape of the first and largest mercury mine in California, the New Almaden mine, just south of San Francisco Bay. Mercury was valuable in nineteenth-century California because it was used to refine gold and silver. Whoever controlled mercury could exert powerful control over gold and silver production. The New Almaden mine, developed in the early 1840s by Barron, Forbes and Co., a British merchant house trading throughout the Pacific, was the single richest mine in the history of California and made its owners fabulously wealthy. At its founding the mine was part of Mexico, on the northern frontier of Alta California. The merchant house established a "hacienda," or Spanish industrial plantation at the mine, and brought workers from silver mines in Mexico and Chile with the goal of freeing their own mines, and the mines of the New World, from a reliance on Old World mercury. With powerful capital backing, New Almaden became the most industrialized center in pre-gold rush Alta California.

Like any remote industrial site constructed for resource exploitation, the New Almaden mine was composed of work landscapes and camp landscapes, and these were created through the struggles of various groups of people involved with the mine each attempting to further their own interests. These groups of people can be defined by many factors including race, ethnicity, class and gender. While these factors were intertwined, close study of the mines and camps of New Almaden, and other quicksilver mines in the nineteenth century, demonstrates the importance of the racialization process to the structuring of the work and camp landscapes of the industry, and the change of these landscapes over time.

The camp landscape established at New Almaden in the early days of Barron, Forbes & Co. ownership formed an armature of camp life at New Almaden that persisted for the life of the mine. There were distinct camps at the mine: the village in the valley below Mine Hill called Hacienda Village, and a camp on the Hill near

the mine.<sup>8</sup> Hacienda Village was for the European and American mine officers, while the camp on the Hill was for the Spanish-speaking workers (Mexicans, Chileans, and Californios) and came to be known as Spanishtown. The distinctions between the camps were by race and ethnicity, and secondarily by class, with different rules and landscape forms in the camps based in the racialization of the groups.

The Hacienda Village, built in the long, narrow valley, was the formal show-village of the mine, composed of the superintendent's house, the Casa Grande; the company-built residences for mine officers; and other company buildings including a company store, a butcher, a grocer, and a hotel for visitors. It was a street village built along the road from San Jose that ended at the reduction works. Linear design elements added cohesiveness to the settlement. From the Casa Grande at one end of the Hacienda Village to the reduction works at the other the road was lined with sycamore trees. The creek running through the valley was partially diverted to create a small stream that ran between the sycamore trees and the sidewalk. The company-owned houses, mostly four-room wood-framed structures, were carefully spaced along this road, each with a front garden surrounded by picket fencing.

For the visitor to the mine, or for the superintendent making his trips between the Casa Grande and the mine office at the reduction works, the Hacienda Village was a long promenade, carefully designed to create a striking visual impression. For residents the pressure to maintain appearances must have been intense, as their houses and gardens functioned as the image of the mine. Years later, author and illustrator, Mary Hallock Foote, felt this power in the landscape.<sup>9</sup> She described Hacienda Village in an article published in 1878:

The charms of the Hacienda are of the obvious kind: a long, shady street, following the bright ripples of a stream, at one end the manager's house, with its double piazzas and easy hospitable breadth of front, a lonely background of mountains at the other, and the vine-covered cottages between. These agreeable objects can be as well appreciated in a drive along the main street as in a year's residence there,—it is very pretty; but as the “show” village of the mine, ever conscious of the manager's presence, the Hacienda wears an air of propriety and best behavior, fatal to its picturesqueness.<sup>10</sup>

8. For extensive photographs and history on the camps at New Almaden see Jimmie Schneider, *Quicksilver: A Complete History of Santa Clara County's New Almaden Mine* (San Jose: Zella Schneider, 1992), and Milton Lanyon and Laurence Bulmore, *Cinnabar Hills: The Quicksilver Days of New Almaden* (Los Gatos: Village Printers, 1982). For insights into the Spanish-speaking community and the camps at New Almaden see Stephen Pitti, “Quicksilver Community: Mexican Migrations and Politics in the Santa Clara Valley, 1800-1960,” PhD diss., Stanford University, 1998. For issues of race and ethnicity generally, especially concerning Native Americans, at the camps of New Almaden see Mary L. Coomes, “From Pooyi to the New Almaden Mercury Mine: Cinnabar, Economics, and Culture in California to 1920,” PhD diss., University of Michigan, 1999.

9. Mary Hallock Foote was the wife of mining engineer Arthur Foote, who was employed as a surveyor at New Almaden. Her memoir is: Mary Hallock Foote, *A Victorian Gentlewoman in the Far West*, ed. Rodman Paul (San Marino: Henry E. Huntington Library and Art Gallery, 1972). Wallace Stegner used Foote's writings as the basis for his novel: Wallace Stegner, *Angle of Repose* (New York: Penguin, 1971).

10. Mary Hallock Foote, *New Almaden: Or, a California Mining Camp: Life in 1877 at New Almaden as Pictured in Word and Illustration* (Fresno: Valley Publishers, 1969).

Figure 2. The Hacienda at New Almaden, 1863. Following the road into New Almaden, from lower right, the visitor encountered a Protestant church, the Casa Grande and its extensive, landscaped grounds, the row of mangers' and reduction workers' cottages, and in the distance the reduction works. Mine Hill is off the photo to the upper right. (Sullivan and Felton, *A Contested Election in California* [1887]).



At the entrance to the Hacienda valley was the Casa Grande, a three-story, twenty-seven-room stately brick building that was office for the mine, residence for the mine manager, and hotel for visiting guests. One of the grandest buildings in California at the time of its construction, the Casa Grande, with its extensive grounds, served as a country retreat for the dignitaries to the mine.<sup>11</sup> A Chinese pagoda, presented to the mine in the 1850s by powers in China, who were at the time buying New Almaden quicksilver, graced the grounds of the Casa Grande for decades, and was always a centerpiece in the formal garden design.

By comparison to Hacienda Village, Spanishtown was on Mine Hill, and from the earliest days of Barron, Forbes & Co. development the village housed a few hundred workers and their families, and was a settlement of significant size in early California.<sup>12</sup> The village was perched on a dramatic ridge connecting Mine Hill and Cemetery Hill.<sup>13</sup> Like Hacienda Village, Spanishtown was a street village, but unlike the uniformly-spaced managers' cottages Spanishtown was characterized by densely packed buildings and houses which formed a long street down the crest of the ridge from Mine Hill to its end at the Catholic Church. A steep drop in elevation from Mine Hill caused the village to have an upper and lower section, with the Catholic Church and main plaza in the lower village.

11. Phyllis F. Butler, "New Almaden's Casa Grande," *California Historical Quarterly*. Halleck was also largely responsible for the construction of the Montgomery Block, the largest office building in San Francisco, in the mid-1850s. Halleck later served as President Lincoln's Secretary of War.

12. There are few records on the original development of Spanishtown—however, it is known that Spanishtown residents owned their houses and paid no rent to the company. But while Spanishtown residents had some autonomy, Barron, Forbes & Co. played an active role in the development of the town, providing money and materials to see that their workforce, imported to the mine at significant expense, was provided for.

13. The English, or Protestant, cemetery at New Almaden was in the Hacienda. Over time a second Catholic cemetery, the Hidalgo Cemetery, was established around the other side of Cemetery Hill from Spanishtown.

Spanishtown had a diverse collection of buildings, including mine company buildings, houses built by Spanishtown residents for themselves, houses that residents built for rental income and company-built residences that were rented to employees. Most of the Spanishtown buildings were of wood-framed construction with pitched roofs. Miners' cabins were basic two-room board and batten structures with a porch on the front and an added lean-to on the back. Many Spanishtown houses were built right up to the street in front, with the front porch as an intermediate space between the street and the house interior. This is in contrast to the houses at Hacienda Village that had fenced front gardens. In back the Spanishtown houses had fenced areas for performing household chores, raising chickens, and growing vegetables. The Catholic Church was the most elaborate structure in the village, an elegant, classically inspired four-bay frame structure sheathed with clapboards. A free-standing structure at one side of the plaza, the church was a standout while most non-residential structures (stores, saloons, halls) in Spanishtown were part of the densely- packed street. Instead of front porches these structures had arcades, which like the front porches on the houses served to buffer the buildings from the street.

In the mid-to-late 1850s a settlement of non-Spanish-speaking employees living on Mine Hill took form. This settlement, which came to be known as Englishtown, grew up a few hundred yards downhill and to the east of Spanishtown and the main planilla (the workyard at the mine entrance). Centered on the Hill Office of the mine company, Englishtown eventually included boarding



Figure 3. Spanishtown, New Almaden Hill, 1880s. This photograph shows Spanishtown from Mine Hill. The Catholic church and the plaza are near the center left of the image. The main planilla and Englishtown are off to the bottom left. (Sullivan and Felton, *A Contested Election in California* [1887]).

houses, a school, other company buildings, and a Methodist Episcopal Church. In comparison to the dense street village form of Spanishtown, Englishtown was very different, a collection of hillside cottages radiating out from a company-dominated center. The miners' cottages (generally larger than those of the Mexican miners) were simple wood-framed structures, each sited individually on the hillsides surrounding the center of Englishtown. These cottages all had picket fences defining gardens with ornamental shrubs, vines, and flowers and outdoor areas for chores. The native live oak trees were carefully pruned and were an integral part of the overall appearance of Englishtown. As with Spanishtown there was a mix of worker-owned and company-owned houses.

The differences in appearance between Spanishtown and Englishtown are striking. In Spanishtown the most important aspect of the community was the street and the plaza; the buildings were built to define these spaces. Community life took place in these spaces. Most Spanishtown houses had a front porch, where one could be part of the street yet also at one's home. The Cornish cottages were carefully spaced from one another over the hillsides, with gardens and yards defined by fences. All of the cottages were oriented the same, facing down and out the canyon, towards a scenic view. Englishtown cottages also had front porches, but here the porches connected the interior to a fenced garden, while facing the distant view. Unlike the one main street of Spanishtown, hillside paths connected the cottages to one another and to the center of Englishtown. For residents, the center of Englishtown was a place you went to, not something your cottage was part of. Going to the center of Englishtown meant a deliberate trip. The Spanish-speaking workers, in their own village, were out of sight of the genteel Euro-American visitor. Spanishtown was many things to many different groups of people. To the Mexican population it was a safe haven in an increasingly unfriendly state, while to the larger community of the Santa Clara Valley Spanishtown was commonly seen as a haven for outlaws. In contrast, the company presence was dominant in Englishtown with the center of town containing company offices, boarding houses, and stores. The hillside cottages, distant from Englishtown center, may have been in part an escape from the company eye.

The racialization of space at New Almaden was stark as it was established under Barron, Forbes & Co. management in the 1850s. There were three distinct camps, inhabited by groups of people defined by their race and ethnicity, and class. Studying the aboveground landscape of the camps tells us a story of the racialization process in California, of who groups were, who groups were becoming in the turbulent, revolutionary times of early California, and the power relations between groups.

The camps, however, are at best half of the story that can be told from studying the New Almaden landscape. In the mercury mining landscapes of California and the West the focus of human endeavor—the greatest effort in reshaping the

earth—occurred underground in the mines. Unlike aboveground landscapes, which are created by “positive” built forms in open space, a mine is “negative” space hollowed out from the solid earth. As we have seen the aboveground landscapes of the camps at the mines were shaped by race, ethnicity, and class differentiation.<sup>14</sup> However, it is striking that the underground landscape, usually thought of as reflective primarily of geology and technology, was also shaped by the same social categories. Work was organized and people were assigned to do particular jobs based on race, ethnicity, and class relations at the mines, and these relations influenced, and can be seen in, the physical form of the mines.

Workers in the quicksilver mines had to perform two industrial processes: they had to mine the ore, cinnabar, and then they had to process the ore to produce mercury. Mercury mining was “hardrock” mining where miners dug tunnels and shafts through rock to reach and then exploit bodies of ore. Once this ore was brought to the surface it was processed by reduction, that is, heating the ore until the mercury content vaporized, and then cooling the resulting mercuric gas until it condensed into liquid mercury. There were many ways for mine managers and workers to accomplish these two basic functions—mining and reduction.

14. David Emmons, *The Butte Irish: Class and Ethnicity in an American Mining Town, 1875-1925* (Evanston: University of Illinois Press, 1989).

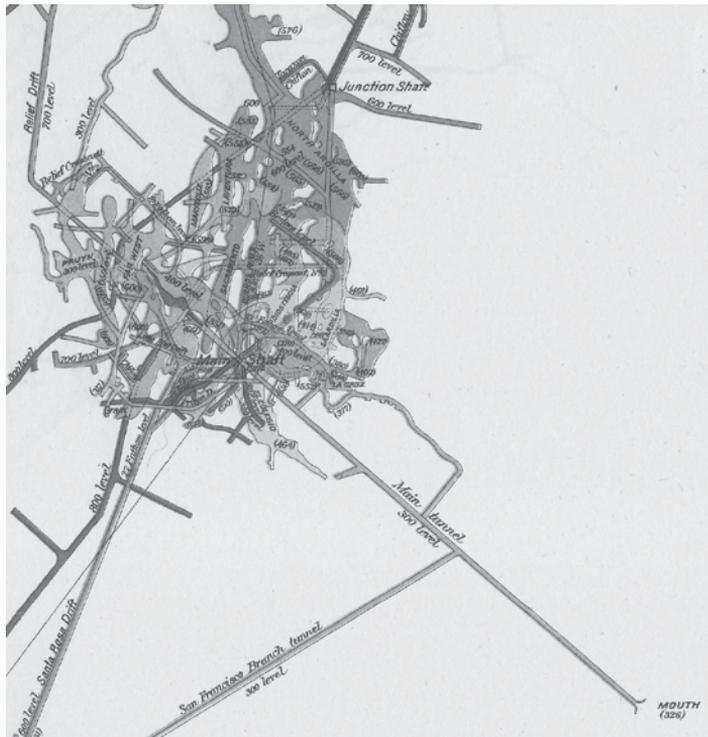


Figure 4. Plan of Early Mine Workings (1840s and 1850s). Early mine workings were created by El Sistema del Rato, or the system of the moment. In this mining method, used by Mexican miners at New Almaden, miners followed ore wherever it led, removing only that rock necessary to follow the ore. (Plan compiled by F. Reade to accompany Becker, *Geology of the Quicksilver Deposits of the Pacific Slope* [Washington: Government Printing Office, 1888])

15. Otis E. Jr. Young, *Western Mining: An Informal Account of Precious-Metals Prospecting, Placing, Lode Mining, and Milling on the American Frontier from Spanish Time to 1863* (Norman: University of Oklahoma Press, 1970), 79-89. According to Young this system was instituted during the Spanish conquest of the New World.

The original Mexican and Chilean workers at New Almaden practiced a method of mining called El Sistema del Rato—"the system of the moment."<sup>15</sup> Derisively called the "rat-hole" method by later mining engineers dismayed at the irregular passages leading in all directions, the system was better described as the practical or empirical system. Miners working with this method followed bodies of ore wherever they led, digging out the ore and only as much of the surrounding rock as was necessary to get the ore that was in sight. The New Almaden mine was first developed with this system, and an early visitor to the mine, writer Mrs. S.A. Downer, said in 1854 of the resulting underground landscape:

the crossings and re-crossings, the windings and intricacies of the labyrinthine passages could only be compared to the streets of a dense city, while nothing short of the clue, furnished Theseus by Ariadne, would insure the safe return into day, of the unfortunate pilgrim, who should enter without a guide.<sup>16</sup>

16. Elisabeth L. Egenhoff, *De Argento Vivo: Historic Documents on Quicksilver and Its Recovery in California Prior to 1860* (San Francisco: State Dept. of Natural Resources, 1953), 117.

El Sistema del Rato was imported to the New World by the Spanish in the sixteenth century, and was a well-developed, long-practiced system that was very efficient in removing only valuable ore at a time when both ore and waste rock had to be packed out of mines on the backs of men. The *Mineros* worked digging ore out of the labores, or ore bodies, their pay based on the quality and quantity of ore as measured at the surface. *Tenateros* packed the ore out of the mine, and their pay was based on the weight of ore they carried.

In contrast, the Cornish and European miners hired at New Almaden in the mid-1850s were trained in scientific mining methods developed in conjunction with systematic mine surveying, advanced mathematics, and understandings of geologic theory. Rather than empirically following a vein of ore as the Mexican and Chilean miners did in El Sistema del Rato, the Cornish miners of the "advanced" system constructed elaborate systems of mine infrastructure based on theories by geologists of where ore was to be found as well as on the mathematics of mine surveyors and engineers about how to get there. Mine sections of time show shafts descending deep into the earth from which tunnels ran horizontally at regular intervals, while mine plans show tunnels radiating from these shafts. Mine development at this scale involved removing vast amounts of waste-rock in order to get to the ore, and as a result required elaborate lifting mechanisms in the shafts. As well, deep shafts and tunnels often required massive

pumping operations to keep the mines from flooding. Technologies such as steam power and dynamite were necessary for these scientific mining techniques.

In this plan (fig. 5) of the New Almaden mine the Sistema del Rato and the scientific method are both visible. In the Sistema del Rato the Mexican miners did both the tunnelling and the ore removal. The actions were largely one and the same, and the resulting mine took a particular form based on this organization. In contrast, under the “scientific system,” tunnelling and ore removal were separate jobs, with two distinct groups, divided by race and ethnicity, doing the work.

The mine landscape at New Almaden bears the mark of this racial and ethnic separation, with an extensive system of mine infrastructure supporting the mining and removal of ore. This was a hybrid system of mining based on race, and a unique case within the larger mining industry. These two racially and ethnically defined groups had different value to the mine owners and managers. The Cornish miners on yardage contracts were in a position where they had to be treated better.

The preponderance of tunnels and shafts is reflective of the ethnic position of this group. The Mexican miners were also crucial to the success of the mine, being the miners who actually mined the ore. However, their precarious racial and ethnic position in California after statehood gave this group few options for alternative work. Their experience was one of tighter control and policing, and of less freedom. Given the comparative lack of attention to their aboveground needs, the Mexican miners as a group were treated less well than the Cornish.

A unique system of contract mining developed to allow each group to do what they do, and this helps explain the complicated structure of the mine. By the mid-1850s labor at New Almaden was organized by racially stratified mining contracts. In the contract system work was organized into discreet jobs that self-organized groups of workers bid on. Interestingly New Almaden was the largest mine of any type in the American West worked solely on contracts, and the quicksilver industry was the only mining industry in the West to use contract mining to organize most work. Why this was so has to do with the British and Mexican roots of New Almaden, and the powerful position of this mine within Western mining because of its great wealth.

The mining contracts defined space within the mine. The winning of a contract meant that a group of miners had purchased the right to earn their living operating within a certain space and doing a certain task. The mine managers established spatial boundaries and defined a set of rules and guidelines. The contract nature of the work helped determine the physical shape of the mine, as discrete tasks suited to the assumed skills and “natural” attributes of different racialized groups required particular physical spaces.

Figure 5. Plan of the Underground Workings at the New Almaden Mine, early 1880s. This plan of the underground workings at New Almaden shows the physical, built legacy of the various mining methods used in the construction of the mine. (Plan compiled by F. Reade to accompany Becker, *Geology of the Quicksilver Deposits of the Pacific Slope* [Washington: Government Printing Office, 1888])



There were three contracts underground: “yardage” involved getting to the ore; “tributing” involved digging out the ore; and “skip-filling” involved getting the ore to the surface. From descriptions of work at the mine, and mine records, the race and ethnicity of workers were a determining factor in the kind of work that a man did. What developed was a hybrid system where Cornish miners had yardage contracts building the mine infrastructure, while Mexican miners worked in the ore chambers extracting cinnabar (fig. 4). Swedish skip-fillers shovelled the ore into skips, which were then raised through the shafts on their way out of the mine.

The Cornish miners on yardage contracts dug tunnels and shafts in an effort to extend the mine to reach new ore deposits. These miners contracted to dig a certain length of tunnel, and hoped the ground was easier to work than they suspected. The vastness of the underground world at New Almaden meant that the Cornish miners worked in distant and hard to reach areas. Because of the difficulty and danger in reaching these far-flung areas, mine managers did not supervise this work: they went to these distant areas only occasionally to measure and gauge the quality of the work, and to survey for the next contracts. At the end of contracts both the miners and the managers could measure the work, and thus both groups could directly determine the rate of pay. Mine managers stated that Cornish miners “have been the most successful men in making wages under the yardage system . . . It

may be accounted for by the fact that their ancestors were miners, and they were brought up in Cornwall on a system of contracts somewhat similar to what is carried on here.”<sup>17</sup>

17. Sullivan and Felton, *A Contested Election in California. \_\_\_\_\_ Vs. Hon. C.N. Felton*, Testimony of the Qualified Electors and Legal Voters of New Almaden, 21.

Spanish-speaking miners took contracts to work a certain area of an ore body for a set period of time and were paid on the basis of the quality and quantity of the ore they dug out. The tribute miners drilled and blasted, and then sorted the ore and loaded it into ore carts that were then pushed to loading areas. They also maintained the labore, timbering and expanding it as necessary to continue extracting ore. The exceedingly rich ore bodies at New Almaden meant that the labores were often large caverns where various groups of contract miners might be working in close proximity. Mine managers closely watched this work, watching for leads and signs of color that might indicate the location and trends of the ore body. Tribute miners could not, however, measure their own work. Sorting and weighing different grades of ore occurred in large sorting areas on the surface. Mine managers claimed that Mexicans had an uncanny ability to find veins of ore and to follow them wherever they led, because they had been doing this kind of work at New Almaden since the earliest days of the mine.<sup>18</sup>

18. Sullivan and Felton, *A Contested Election in California*, 21.

The trammers, part of the tribute groups, took the ore from their tribute company, loaded it into ore cars and then pushed these cars through candlelit tunnels and abandoned labores on often long, winding paths to the shafts. Acting as intermediaries between the Mexican tribute miners and the surface were skip-fillers, who were mostly Swedish. The trammers deposited the ore next to the shafts in “plats,” or assigned areas for each of the tributor companies. The skip-fillers took the ore from the plats and loaded it into skips, large buckets that were used to haul ore up (and occasionally down) the shafts.

The work of the trammers was estimated by the ton from the skip loads hauled to the outlet tunnel. Both the skip-fillers and the surface engineers kept counts for determining pay. The skip-fillers, as non-Spanish-speakers and Europeans, were a buffer group between the Mexican tribute miners and the mostly Mexican ore sorters on the surface. Positioned on various levels throughout the mine, these men provided a check and balance for the mine managers between the Mexican groups below and above ground, providing a policing function between the various tribute companies. According to mine managers, skip filling was done by the Swedish, who in their estimation did not have great mining skill, but who did have great physical endurance.<sup>19</sup>

19. Mexicans also worked as trammers at New Almaden. Sullivan and Felton, *A Contested Election in California*, Testimony of Superintendent Jennings.

Figure 6. Photograph of Trammers in the New Almaden Mine, 1880s. Trammers pushed and pulled ore carts through the dark tunnels of the mine to the shafts. While many trammers were Swedes, Mexican men also worked tramping ore. Photograph is by Robert Bulmore. (Sullivan and Felton, *A Contested Election in California*. 1887).



The aboveground landscapes of the camps at New Almaden, with distinctions such as Spanishtown and Englishtown, were shaped by the racial, ethnic, and class differentiation, but it is striking how the underground landscape was also highly reflective of the same social categories. Like aboveground landscapes, underground landscapes were hybrid and constantly evolving. The process of racialization was contested in the everyday practice of working in the mine, just as the process of racialization was worked out in the practice of the camps. At New Almaden, racialization was a tool of social control, separating groups by race and ethnicity while discouraging unity through class. This control was embedded in the physical landscapes of the mines and camps. The New Almaden mine had a carefully calibrated system of racialized contracts and associated work landscapes unique in Western mining. Work was organized and people were assigned to do particular jobs based on ethnic and racial relations at the mines, and these relations influenced and can be seen in the physical form of the mines. As I have shown in the example of the underground landscape of New Almaden, race was a dynamic category integrally tied with class and power relations, not solely an expression of ethnic culture. In the underground landscapes we have seen how racial power dynamics were architecturally expressed as the result of struggles between the many groups inhabiting the mine landscapes.