

HISTORIC STONE QUARRIES AS RURAL CULTURAL LANDSCAPES: AN EXAMPLE FROM SONOMA COUNTY, CALIFORNIA

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ABSTRACT

Rapid urban development created a demand for millions of cut stones to pave the streets of northern California cities between 1880 and 1920. One Sonoma County quarry area is described to illustrate ways the archaeological and documentary records of this industry reflect the economic boom-and-bust cycles characteristic of extractive resource industries in the American West. As a rural cultural landscape, this historic quarry area includes quarry pits, waste rock piles, blacksmith sites, access/haul roads, remains of a funicular tram system, earth cuts and berms from a railway, as well as trash dumps. European immigrants made up the labor force in the quarries--predominantly Northern Italians. The basalt quarry industry declined dramatically with the introduction of asphalt pavement and the automobile, as exploitation of petroleum resources expanded.

Stone production is one of the oldest and largest mineral industries in California (Goldman 1957:591). In Sonoma County, California, 50 miles north of San Francisco, native people quarried local sources of stone (i.e., basalt, chert, and obsidian) for chipped tools and other types of implements as well as red ochre (hematite), which was used as a pigment (Heizer and Treganza 1944). After contact times -- during the late eighteenth century and through the nineteenth -- both quarried and field stone was used for columns, foundations and general building construction (Turner 1951:238). After 1880, rapid urban development in northern California created a strong demand for a large and continuous supply of durable stone paving for the streets of San Francisco and other California cities (Olmsted 1991:15).

As this demand grew, quarries were opened up along a seven-mile stretch of the Sonoma

Mountains southeast of the city of Santa Rosa. The andesite and basaltic andesite from this area is hard, dense, and shock- and abrasion-resistant -- desirable characteristics for durable paving stones (Goldman 1957:600; Higgins 1983:238). Between 1887 and 1913 more than 98 million paving blocks -- valued at over \$3,500,000 -- were cut from quarries in Marin, Napa, Solano, and Sonoma Counties and used to pave the streets of Oakland, Sacramento, San Francisco, San Jose, and Stockton (Bradley 1916:352). The quarries usually employed several hundred men, although during periods of high demand the workers' ranks swelled to several thousand (Bradley 1916:351; Crawford 1894: 396).

Coinciding with the demand for paving stones in the mid-1880s was a large influx of European immigrants into Sonoma County. Many of these immigrants came from the marble quarries of Carrara in the province of Tuscany, Northern Italy

(LeBaron et al. 1985:83-85). To successfully operate stone quarries one needed a source of capital to develop the resource, crews of workers able and willing to perform the skilled but strenuous task of working the heavy stone into paving blocks by hand, and a nearby and cost-effective means of transportation (Olmsted 1991:16). These were all available in Sonoma County.

The quarry industry was most active between 1887-1913. However, as early as 1896 the State Mineralogist had noted a decrease in demand for paving blocks "owing to the introduction of asphalt and bituminous rock pavement" (Crawford 1896:634). The demand for paving blocks fluctuated and increased after the 1906 earthquake, but declined dramatically after 1913, causing the quarries to cut production and eventually close down (Bradley 1916:351). A number of factors contributed to this decline, including new innovations in street pavement technology -- specifically the shift from labor-intensive stone surfaces to capital-intensive asphalt pavements (cf. Brownlee 1988:272). The invention and mass production of the automobile revolutionized transportation throughout the United States. This transformation included the technology of road and street surfacing. Innovations in the petroleum industry led to the widespread use of asphalt as a less expensive material for street paving than stone and provided the smoother, quieter driving surface demanded by automobile drivers (Bradley 1916:351; cf. Andreano 1970:183). As the automobile industry rapidly expanded, the local paving stone quarrying industry declined.

Annadel State Park is located at the northern end of the Sonoma Mountains, in California's North Coast Ranges. The topography here is both flat and rolling within the central area, with steep slopes on all sides, descending to alluvial valleys bisected by perennial creeks. Elevations within the park range from 295 to 1800 feet above sea level.

The geology consists of rocks of the Miocene Sonoma Volcanics (Higgins 1983:235;

Wagner and Bortugno 1982). Many areas of the park have outcrops and exposures of volcanic rocks which range in composition from basaltic andesite to rhyolite, deposited as lava flows, ash falls, and ash flows (Higgins 1983:235). In the past, these rock deposits were the focus of most of the quarrying activities that occurred within the area that is now Annadel State Park. During pre-contact times, aboriginal people quarried large quantities of obsidian here as well as chalcedony and basalt. My focus in this paper, however, is upon the quarrying of andesite and basalt for paving stones which had begun as early as 1864 in the nearby town of Petaluma (Tenth U.S. Census Report, Vol. X, Pt. 3:97, 279). Stone quarries in the present-day state park were opened by 1888 and continued in operation through 1913 (Bradley 1916:359). The main product of these quarries was paving stones, known in the trade as "basalt blocks" (Crawford 1894:396). Millions of hand-cut basalt blocks were hauled from the quarries by animal-drawn wagons and funicular tram carts to nearby stations and sidings on the Santa Rosa & Carquinez Railway (eventually acquired by the Southern Pacific Railroad) for delivery to San Francisco and other Bay Area cities (Parmelee 1963:3). As the quarries gradually closed down after 1913, the land came to be used for ranching and the former quarry areas are now overgrown with shrubs and trees.

These quarrying activities modified many of the natural features within the present day park creating a cultural landscape, or more specifically, a rural historic vernacular landscape. *National Register Bulletin 30: Guidelines for Evaluating and Documenting Rural Historic Landscapes* defines a rural historic landscape as "a geographical area that historically has been used by people, or shaped or modified by human activity, occupancy, or intervention, and that possesses a significant concentration, linkage or continuity of areas of land use, vegetation, buildings and structures, roads and waterways, and natural features" (McClelland et al. n.d.).

While these quarries were active, the land was part of the Hutchinson and Wymore Ranches.

During this time in Sonoma County, it was customary for owners of land with deposits of basalt and andesite of suitable quality and proximity to the railroad to lease these portions of their land to quarry operators. The operators agreed to pay a royalty to the landowner, based on the number of paving blocks produced and sold from the quarry. According to Walter Bradley, geologist with the California Division of Mines who visited the quarries in 1913, the average royalty paid by operators who were leasing was \$3 per 1000 paving blocks. The operators hired stonecutters to work the quarries, paying them a piece rate of \$25 to \$35 per 1000, or about 3.5 cents per block. It has been reported that one blockmaker was capable of cutting 100 to 150 paving blocks per day, which at a rate of 3.5 cents each amounted to a daily wage of about \$5.25 (Bradley 1916:351; Olmsted 1991:24).

In 1871, Irish immigrant Samuel Hutchinson purchased nearly 3000 acres of the former Rancho Los Guilicos land grant. The name Annadel was derived from the name of the Hutchinson family house, "Annie's Dell", after the oldest daughter (Futini 1976:80). Henry Bølle, owner of neighboring lands, established a winery in 1880 and named it Annadel. When the Santa Rosa & Carquinez Railway began rail service through the Sonoma Valley to Santa Rosa in 1888, they adopted the name Annadel for the train station near the Hutchinson home.

The Hutchinson Ranch became a well-integrated and financially-successful agricultural enterprise under the husbandry of Samuel Hutchinson (Futini 1976:80). After his death, son Thomas took over management of the ranch. The younger Hutchinson hired tenants to farm the land and leased upland portions of the ranch to stone quarriers. Known collectively as the Hutchinson Ranch Quarries, this complex became the source of enormous quantities of quarried, hand-cut paving stones (Bradley 1916:356; Gregory 1911: 574-577). Among the Hutchinson Ranch Quarries were the Borg, Flynn & Treacy, and Annadel Quarries.

The Borg Quarry opened in 1893 and employed 18 to 50 men who produced 240,000 paving blocks that year (Crawford 1894:396). Finished stones were hauled by wagon one-half mile downhill to the Oleson Siding on the Santa Rosa & Carquinez Railroad line (Aubury 1906: 344; Bradley 1916:356).

By 1903, the City Construction Company based in San Francisco, had purchased 15 acres of land from the heirs of Sam Hutchinson (Deeds: 579; Official Records:421). Known as the Flynn & Treacy Quarry, employees of the company produced and shipped a total of 1,440,000 paving blocks in only two years (Aubury 1906:343). After 1906, having exhausted the accessible stone deposits on their land, they opened more quarries on Hutchinson land, where they cut and shipped over 250,000 blocks per year through 1913 (Bradley 1916:356). The destination for most of these paving blocks was San Francisco's South Beach Waterfront district (Olmsted 1991:36).

E. and J.B. Laurent (sons of Louis Laurent who operated the Wymore Quarry) opened the Annadel Quarry in 1904. Several million paving stones from this quarry were hauled one mile north to the Annadel Station on the railroad between 1904 and 1913 (Bradley 1916:356).

In 1882 Charles and Maria Wymore purchased 900 acres of land that had also been part of the Rancho Los Guilicos land grant, along the western boundary of the Hutchinson Ranch. They grazed cattle and planted a large apricot orchard, but their main source of income (after 1888) was from royalties paid by quarry operators leasing portions of the ranch with stone outcrops suitable for quarrying (Futini 1976:67).

The Wymore Quarry was opened in 1888 and operated for 15 years by Belgian-French immigrants Louis Laurent and his two sons. The Laurent lease agreement ended in 1904 when the two Wymore sons took over the quarry operation, continuing it through 1913 (Bradley 1916:359). During the 25 years the Wymore Quarry was operated, over 18,300,000 paving stones were cut

and shipped via the Melitta railroad station to Market Street as well as the South Beach Water-front areas of San Francisco (Bradley 1916:359; Futini 1976:67; Olmsted 1991:36).

Most of the quarrying at Annadel was a low-tech and labor-intensive process, featuring the side hill technique, where the quarry was opened up on the face of a hill or slope (cf. Du Pont et al. 1958:374). This technique was more cost effective than open pit quarrying since it involved less labor. With the side hill quarry technique the waste rock was disposed of simply by dumping it downslope. Although black blasting powder was used to initially open up the stone outcrops, the actual cutting, shaping, and loading was done by hand. Finished stone was hauled to the nearest railroad siding by horse-drawn wagons or funicular tram. Within the study area, all the quarry complexes were located uphill from their respective shipping points on the railroad. To minimize costs financially-successful quarries were located as near the shipping point as possible and at the same elevation or uphill (Aubury 1906:23).

The archaeological remains of this extractive industry include side hill quarried cavities located across several hundred acres of land interspersed with associated flows and piles of waste-rock, primary and secondary finishing stations, and loading stations (situated on benches and landings created by dumping large quantities of waste rock downhill). Systems of dirt access/haul roads linked the quarried areas with each other and with the nearest station on the railroad. Several caches of finished paving stones have been located, as well as structural remains, several domestic refuse dumps, and remains of a funicular tram system, including an earth berm and approximately 100 feet of steel rail.

The features and sites of these former quarry complexes, now overgrown with trees, vines, mosses, and lichen, form a cultural landscape: a geographical area used, shaped and modified over time by human activity. Within this landscape are recognizable concentrations, linkages, and, overall, a continuity of landscape features. More than an extensive site with numerous and separate individual elements, the historical processes of

quarrying have left a distinctive landscape. This vernacular landscape is an artifact in itself, which is more than the sum of its individual parts. As a vernacular cultural landscape, much of the activity and human use which has shaped modern-day Annadel State Park was that of ordinary working people. Thus, the history and archaeology of basalt paving stone quarrying within Annadel State Park reflect a local response to changing technology and available natural resources. It is anticipated that further study of this vernacular landscape will afford new insights into ordinary workplaces of the time and new insights into the day-to-day lives of blue-collar workers.

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