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The Abandonment of the Cerro Gordo Silver Mining Claim 1869--1879: Abstracted to the Exchange of Energies

Marley McLaughlin

The mountain air of November echoed the screeching of brake pads from one lone stagecoach as it bumped down the Inyo mountain range's Yellow Grade Road in 1879. The 8,000--foot descent down the wagon road sent that last sound careening from the mine of Cerro Gordo as if the land was celebrating its own emptiness. After the fall of the mine's heyday years, all but the physical body of the town proved evanescent. Pioneers loaded the last wagon with only a couple bars of lead and one 420--pound ingot of pure silver despite the town's promise of wealth.^[1] The metals, brick, and wood left scattered in the town were more enduring than men.

The failures of Cerro Gordo stemmed from several factors, all of which resulted from the rejection of a human labor network. The intricacies of Cerro Gordo's history of abandonment however, boil down to the warring relationship between man and the environment. To explain the probability of the environment impacting humanity, historian Richard White wrote that "wave, water, and wind," or movement of the environment, "-- and human labor-- can be represented in ways beyond the immediacy of actual experience. We can abstract them to a single entity: energy."^[2] In Cerro Gordo, energy was substantiated in two forms: human labor and the natural movement of the environment. What is striking is that despite the establishment of a functioning and intergraded labor network in Cerro Gordo, the environment won between the warring energies. If we begin the analysis further back in time, before Cerro Gordo's discovery, a close study of this one short--lived settlement can complicate our historical understanding of human energy, environmental energy and their unremitting simultaneous exchange on our planet.

Human history in Cerro Gordo runs parallel to older theories of what constitutes pioneers in the West and provides clues about the kind of men that settled Cerro Gordo.^[3] It is the image of an expendable labor force that best captures the actual experience of western pioneers than the age--old mantra of self--sufficient individuals charging into the frontier.^[4] Pioneers, conjectured John Walton, "in [their] original meaning, referred to one of a group of foot soldiers who march in advance of an army with spades and pickaxes to dig trenches, repair roads..." and to clear the way for the nation to follow.^[5] Andrew Isenberg proposed that pioneers preceded an industrial society; the urgency of their movement was "impelled by the full weight of such a societies demand for land and natural resources."^[6] These were not cowardly, wandering men that took up mining; they were however, broke, desperate, and innovative, taking even the most laborious measures to move onto western land. Pioneers, by this paper's definition, came to Cerro Gordo and installed freighting and milling, built water works, and established agriculture on the land.

The notion of the American 'frontier' acquired popularity in the 1800's with Frederick Jackson Turner's 1893 thesis, when he boldly quoted the U.S Census of 1890 and deemed the land of the Far West conquered and the frontier to be closed.^[7] "The *Frontier*," Turner asserted, "is a moving section... determined by the reactions between the wilderness and the edge of expanding settlement."^[8] In Turner's works the continued existence of a shared human and environmental history long after their initial "reaction" was not considered.^[9] Isenberg wrote that the frontier "became an exceptional rather than general explanation for western settlement. The transformation of the California environment ... through mining... and industry... is at odds" with the notion of conquering a frontier.^[10] White also wrote that it is "labor rather than 'conquering' nature [that] involves human being so thoroughly with the world that they can never be disentangled."^[11] Therefore, the crux of understanding American Western history through Turner's frontier thesis can be cast away.

It is *how* men moved into the western land that best explains the momentum of the American pioneer; human energy was made up of physical labor funneled into various tasks. Walt Whitman, who, in personifying the heroism

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of the American pioneer, extolled, "Come my tan--faced children." He inquired, "Have you your pistols? Have you your sharp--edged axes?" His poem reached its precipice, hopeful, and exclaimed, "Pioneers! O pioneers!" we must not "tarry here...[we are the] forests felling, rivers stemming, vexing and piercing mines within, surface broad surveying, virgin soil upheaving" men that all together constitute the true energy of pioneering of the American West.^[12] It was a single--minded work force of homogenous men. Despite their determination and grit, had only the 'spade' and the 'pick--ax,' and their own energy to settle Cerro Gordo.

Contrary to Whitman's imagery, the pioneers who arrived with the discovery of silver were unable to permanently settle the mountain that hosted Cerro Gordo. The Inyo Mountains were formed by a fault block range of the westernmost Great Basin Region and have been growing since the late Proterozoic and calibrin ages.^[13] Their energy is largely kinetic: the mountains are endlessly moving as its rocks and soils thrust and recoil. Unlike man, the mountain's energy was not defined by its ability to 'labor,' but was an obstacle due to its momentum from an unfathomably long history of movement.^[14] The signals of environmental energy were all those characteristics that to the pioneer appeared to be downfalls: dryness, heat, rock, altitude, and the sun--scorched white soil of the Inyo Mountains.^[15] It is easiest to recognize environmental energy by identifying the branches of the labor network that required the most human energy when Cerro Gordo was settled.

At Cerro Gordo's first discovery, a scramble for wealth distracted miners from respecting the preexisting interplay of environmental energy forces. In May of 1867 an edition of the *Virginia City Territorial* named Bernardo Arambula as the first man to venture into the Inyo Range 40 miles east of Camp Independence and below Buena Vista Peak; he brought back specimens of ore and silver bullion that amazed speculators across western states. The quality of ore samples collected was nearly 40-- 60 percent lead.^[16] On November 12th, 1867, the same press noted that a Pablo Flores and two other Mexicans marched into the Inyo to run silver and lead mines from crude adobe kilns. While Flores' partners disappeared on the trip down from Cerro Gordo, supposedly killed by Indians, the intrigue to explore the mountain had ignited. If the fear of ambush, disaster and even death did not discourage mining operations, indication of the mountains being inhospitable certainly would not. Pioneers were "impelled," in Isenburg's words, to settle all American land by any necessary measures. Pioneers did not caution strong environments but advanced onto with even greater force.

The French--Canadian Victory Beaudry, an entrepreneurial miner who had worked across the American West, saw the opportunity for wealth in monopolizing the mining enterprises. He was likely already accustomed to the transience of western movement and was familiar with mining labor after working the Comstock Lode, unlike Mexican laborers and Native American populations. In 1868, Mortimer Belshaw of San Francisco joined Beaudry's venture. Belshaw previously worked at silver mines in Sinaloa, Mexico, and familiarized himself with galena deposits and processes of extracting lead during smelting. In one instance during the pair's new partnership, Beaudry and Belshaw hiked across the saddle of Buena Vista Peak and encountered pockmarked mines and dumps of ore from Mexican *vaso* smelters.^[17] Only a pair of veteran silver miners would be able to come the conclusion that they did; acknowledging the successes of such crude smelting, Beaudry and Belshaw projected there was an untapped volume of silver and lead ore that could change the very face of Southern California mining. Belshaw bought into the new--founded Cerro Gordo Water and Mining Company and acquired one--third interest in what would become the richest deposit of galena lead ore.^[18]

Together Belshaw and Beaudry set out to both acquire the necessary infrastructure for mining and establish a class of laborers who would initiate operations at Cerro Gordo immediately. Laborers developed Cerro Gordo at 10,000 feet and around the Union mine shaft.^[19] They set the corresponding smelter with careful precision in the shadow of Buena Vista Peak and near the edge of the ridge, which was so narrow, eroded, and not 150 feet--wide, that one could stand and see the floors of Owens Valley and Death Valley clearly in opposing directions.^[20] R. W. Raymond, U.S Commissioner of Mining Statistics, noted that if it was the aim "to secure sufficient dumpings--ground for the slags," then Cerro Gordo succeeded, "for there is probably no smelting work in the world which stand so well provided for in this respect, with a slag--dump over 2,000 feet high on two sides."^[21] Slag is the common, vitreous residue from a metallic ore smelting process. While it can sometimes be used for its elemental metals, it is usually discarded. To work the mines, by late 1869, there were over 700 claims inside of one square mile of the town.^[22] Engineer W.S Watterson reported that 1000 men could be employed for ten years without digging deeper

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than the existing mine shafts. [23] While his estimates were far from accurate, they exemplify the precision with which mining operations were developed.

Aided by a team of lawyers, Belshaw monopolized silver mining operations and continued to operate them at a breakneck speed that drained the energy of miners. Over the years, his expanding empire and brutal business tactics earned Belshaw the nickname, the "Silver Bullion King." For example, when a third--party owner dug the San Filipe mineshaft in 1873, Belshaw went as far as to place armed guards at the disputed mine ground. Belshaw did not welcome competition in the silver business, and Judge Belden tried a lawsuit in Independence to solve the conflict. Belshaw's lawyer, a one--armed man named Pat Reddy, argued that a silver--quartz vein connected the Union and San Filipe mineshafts, and, as one, any deposits belonged to his monopoly. To get this claim in writing, Belshaw established the Cerro Gordo Water and Mining Company in 1873, holding the capital of \$2,000,000 and, at \$100 each, 20,000 shares were immediately made available for investment. [24] Further digging to investigate the disputed San Philippe mineshaft was conveniently halted for fear that horizontal exploration would collapse the shafts on miners. Despite the drawn out lawsuit, mine endeavors continued on the Union and San Philippe shafts to depths of 550 and 700 feet respectively. [25] Belshaw further demanded the smelter furnaces run 24 hours a day, turning the sky a thick grey color. [26] To attract laborers during this expansion, wages for a first--class miner were up to four dollars a day. [27]

In ten years, 1869 to 1879, nearly 30,000 dollars of silver bullion was exported from Cerro Gordo. The town operated at such speed that physical laboring used every energy that miners possessed. This left men dependent on the cooperation of the environment to provide water, wood, stable ground, and fertile soils for habitation. Miners were so focused on mining work that the town consisted of only a number of buildings, and was located without trees, shade, or resources besides silver ore. [28] The Yellow Grade Road bisected the town, which was less than 300 feet long with approximately 15 permanent structures. Advertisements in the June 1871 edition of the *Inyo Independent* recount that the opening of an American Hotel would come June 15th. Mr. and Mrs. John Simpson were "prepared to accommodate the public, and respectfully solicit its patronage." [29] In the hotel, however, dormitory style beds were rented in short 12--hour time blocks. Miners also built a bunkhouse on the opposing side of the road, yet the majority of Cerro Gordo's residents lived in shanties and squat tents surrounding the mineshafts. In this respect, all the precision with which mineshafts at Cerro Gordo was built was obsolete as miners lived at the mercy of the elements. [30]

Miners lived a precarious existence in Cerro Gordo because there were strong environmental energy forces acting against them. The forms of environmental energy are best evidenced by the work that demanded the most human labor to accomplish. White affirmed that the environment "demanded energy to match its [own] energy, and this shaped and revealed the organization of [man's] work." [31] Human labor was organized into a large network divided by like pursuits, where each branch of the network channeled the energy demanded of man against the environment. [32] Freight systems contended with the demands of altitude, milling against the environment's hostility to forests, agriculture against harsh soils, water works against dryness. Human muscle and sweat could not remain constantly at work; by 1879, each individual branch of the network failed because the constant, kinetic energy of the environment was stronger.

The first branch of the network that men built around Cerro Gordo to structure their labor was freighting. Simply reaching the town took an enormous effort. Without the cooperation of the environment, regular and manageable transportation in and out of Cerro Gordo permanent settlement would be impossible. Pioneers developed a system of freight around the area of Cerro Gordo directing and organizing the expenditures of human energy in transportation, and therefore alleviating some of the stress of fighting against the environment. The system employed the use of mules, wagons, steamboats, and extensive roads. Despite the organization of human labor, however, the environment did not provide enough natural resources in the town to dismiss the constant need to freight man, mule, and silver. Thus, freight became such strenuous labor that system fell apart.

A great amount of energy was required for a pioneer to climb to the 3,000--foot, rocky summit of the Inyo Mountain Range. This human energy stored in the form of calories. If, as White wrote on human--environment relationships, the environment "demands" energy to match its own, then the labor to climb the Inyo's was "demanded" of men to

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counter the force of gravity. Gravity may have seemed surmountable at the offset, but in the mountain region erosion, sliding, and steep geography placed strain directly on the human body. Muscles were overworked on the climb and lungs were tested as the air thinned at the altitude of 10,000 feet.^[33]

The general inconvenience to reach Cerro Gordo was first evidenced by the fact that in 1870, there were a total of 36,339 miners in California and yet none in the Inyo Mountain Range.^[34] Eventually, the Bonanza Era would extend past the Gold Rush hubs into lesser--explored lands of the West and the southern slope of California. Major wagon roads and trails began as north--south trending roads linking Los Angeles and the gold fields to the north.^[35] Even seasoned freighters of the late years of the 19th century found the geography of Cerro Gordo nearly impossible to climb and the town difficult to access.

The first road to enter the Owens Valley after trekking across the flat lands from Los Angeles was the Big Owens Lake Trail.^[36] The road system developed on the bases of earlier, indigenous links between coast and mountain valley, and extended north from the Tehachapi Pass area due to extensive prospecting and mining in the late 19th century. The Big Owens Lake Trail was "the earliest and most important road" between Los Angeles and the mining communities of Owens Valley as it was the only road on which wagons could be drawn to the Port of Los Angeles at San Pedro; from there, the large harbor facilitated the shipments of international goods to the area.^[37] While this road was mainly referred to as the Big Owens Lake Trail since its cartography in 1849 explorations, it was also called the Owens River Road, which was a name favored by the men who lived and worked in Cerro Gordo. From the Owens River Road, freight then connected wagons onto the Cerro Gordo Mines Road, which, built in 1867, provided access to the base of the Inyo Mountains. ^[38]

The only road to enter or exit the town of Cerro Gordo was completed in July of 1868 by the Union Mine owner, Mortimer W. Belshaw; the Belshaw Toll Road was so--called the "Yellow Grade Road" due to the yellowing earth along its many switchbacks.^[39] In a lawsuit contesting the toll on the Yellow Grade Road in 1872, Lawyer Reddy argued that "if it has not been for the owner of that trail practically there would have been no Cerro Gordo, or need of any road at all."^[40] Reddy won the case and the toll remained, as did the importance of the Yellow Grade Road for transportation.

Branching from the Cerro Gordo Mines Road, the Yellow Grade Road climbed nearly 3,000 feet from Owens Valley and traversed large rocks and relatively barren grounds without trees nor natural plant roots to halt erosion. The Yellow Grade had steep pitches, deep wagon ruts, and treacherous rocks, all of which challenged the skill of the mule drivers who operated freighting.^[41] In parts, the road was so steep that 'Iron Shoes' attached to the locked wheels of wagons on the descent to prevent excessive sliding.^[42] Both the difficulty of the road and the lack of safety for teamsters proved insurmountable obstacles in the freighting business.

Silver bullion was the cargo most transported, and the detail of its entire haul from Cerro Gordo to the Port at San Pedro was demonstrative of the freight of all goods and people along the same trek. It also demonstrated how difficult freight work was and the power of environmental energy. Eight teams of three wagons harnessed to sixteen to twenty mules at a time pulled the bullion, which created a long semi--flexible line that was difficult to maneuver.^[43] Teamster Remi Nadeau was commissioned for the freight. Even he, the best in the business, took two months with eight incremental stops to reach Los Angeles following the complex series of roads.^[44] The haul of silver bullion was also exemplarity as it was transported year--round, through drought, rain, and snow. In order to make a profit in silver sales it was crucial to work year--round. The *Los Angeles Herald* reported that Cerro Gordo "now produced about thirty tons of bullion per day," and "this [was the] yield of only one mine, and that not worked to its utmost capacity."^[45] Each ingot was 18 inches long and weighted about 85 pounds.^[46] Due to this yield, wagons were loaded to a dangerous capacity.

In winter, the haul was especially risky as the already rough terrain was spotted with snow and ice. The Inyo Mountains reached freezing temperatures, making outdoor labors dangerous due to excessive sliding, malfunctions during the manipulation of frozen wooden equipment, and the wear on the human body in extreme temperatures. As pictured in Figure 4, Owen Dearborn led one of the mule wheelers on a snowy ascent of the Yellow Grade at only seventeen years old.^[47] It was common to have a variety of unskilled men working as teamsters and not uncommon

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for injury, sickness, drunkenness and even death to accompany freight to Los Angeles. The safety of human life and labor was stretched thin both ascending and descending the mountain.

To further his monopoly and run competitors out of business, Belshaw discontinued repairs to the Yellow Grade Road sometime after 1871. This added to the difficulty of freight along the road; with increasing pitches and narrowing switchbacks on the road, bulkier, top-heavy wagons used in part by competitors could only be loaded to half capacity. John Simpson of the Owens Lake Company responded to Belshaw's underhanded operations by throwing such a fit as to upset Belshaw and then took the matter to trial. In August of 1871, Simpson descended the Yellow Grade, but at the tollhouse he paused only long enough to be recognized and then continued his descent. When he was arrested, he demanded trial to bring attention to the roads' disrepair in court. After a lengthy 2-day trial, although Belshaw dropped the charges against Simpson and reduced the toll rates, he made no improvements to the road's condition.^[48]

By the mid-1870's, extensions to the transportation system made the freight of bullion from Cerro Gordo efficient. The Cerro Gordo Mines Road extended further from the branch of the Yellow Grade along the south shore of Owens Lake to the nearby towns of Swansea and Keeler.^[49] In 1872, Swansea constructed a wharf through which it traded much of the area's lumber, bullion, and goods. The Owens Silver and Lead Company used slag from the smelter at Cerro Gordo to build a roadbed between Swansea and the lakeshore. Laborer's used slag as a construction material on the wharf. They laid tracks on the roadbed so that horses drew cars that rode the rails and the transfer of heavy bullion became a fairly simple operation. The Cerro Gordo Freighting Company later improved Keeler extensively as it held a second, larger port on Owens Lake.^[50] Once bullion reached the shores of Owens Lake at Keeler, floating bullion on the water was a likely alternative to freight saving 3--5 days travel time.

While the freight of silver and silver bullion made up most of the freighting in Inyo County, the freight demand for other cargo varied as the communities in Inyo County grew. When two charcoal kilns were built north of Cottonwood Creek and a short distance from the wharf on Owens Lake, freight extended to transport charcoal. Nadeu's same mule teams hauled the charcoal to the smelter at Lookout Camp and into Wildrose Canyon of the Pinamint Range. Mules also hauled water to Cerro Gordo daily. Other cargo included wood, tools, and construction equipment for permanent structures to support the hotels and stores popping up. As population increased, occupants of Owens Valley imported fresh produce, meats, salt, and a large amount of grain, since the technology for mills for processing grains was never brought to the small valley.

As the freight began to be used for the transport of so many goods, the system became overwhelmed and fell apart. Freight charges for general merchandise and farm machinery rose to \$60 per ton, and without the ability to wean themselves from freight--importation, farmers could not pay charges and were buried slowly under debt. Similarly, the freight of bullion was affected and, in 1878, silver bullion began to stack up at the wharf at Keeler; for months, several tons of silver went untouched. Eventually, all areas of trade would be dominated by Los Angeles because the city connected to the non-labor intensive Southern Pacific Railroad.^[51] The freight system broke down because the environment exhausted the freighters hauling silver, personal goods, and foods. Freight teams left Cerro Gordo with such frequency that the energy of gravity and erosion at every turn in the road aided to the abandonment of the town.

The second branch of the labor network organized the expenditure of human energy by creating water works. The Inyo Mountains received a precipitation level less than 12 inches annually, most of which fell as snow, and until the abandonment of Cerro Gordo a struggle for water dominated life in the town.^[52] For the first few years following 1869, there was no water running into the town, and without a water source provided by the environment it was hauled in as freight. Water has an obvious energy of its own; it flows and runs, and changes shape and form. It can perform work by condensing, precipitating, and carving the landscape. This elusive energy is hard to harness and even more difficult to conquer. Part of the reason Cerro Gordo was abandoned was due to man's inability to harness a water source despite water works.

Before the discovery of silver at Cerro Gordo, native plants were irrigated in the Inyo Valley to a limited extent.^[53] Evidence from early maps and surveys showed nearly ten different irrigation systems connected to creeks that ran from the high Sierras. Paiute Indian irrigation works covered almost 57 miles and were annually cleared and dammed. All water, however, was harnessed from the Sierra Mountain Range as opposed to the Inyo.

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The Inyo and the Sierra Mountains, although separated only by a small valley, had two widely different ecosystems. The Sierra Mountains wooded, watered, shaded and snowy in the winter, and the Inyo Mountains were rocky, relatively devoid of plant life or trees, sun facing, and 'white' with dust. In this climate it was difficult to harness large volumes of water.

Along a five--mile stretch from the Cerro Gordo three major springs were harnessed to bring water to the town.^[54] Between 1869 and 1872, the Belshaw Water Line supplied Cerro Gordo with water from Mexican Springs and Cerro Gordo Springs, both of which were along the crest spanning the Swansea Grade Road. The first, Mexican Springs, was two miles outside of the town.^[55] A set of metal pipes carried water into the town using the force of gravity for water flow. A quarter mile beyond, at a descent of about 30 feet, Cerro Gordo Springs was located. A small pump station, constructed of tin sidings and roof, was built at the bottom of the crest and sheltered two steam pumps powered by wood.^[56] The pipes to Cerro Gordo Springs and Mexican Springs, however, sprung leaks throughout the year, froze in winter, and had inconsistent water levels during summer. Six thousand additional gallons of water a day had to be hauled in by Remi Nadeua's freight trains. The rate at which silver was being processed in the mid--1870 overshadowed these small springs.^[57]

On April 1st, 1874, the *Los Angeles Herald* noted that residents in Cerro Gordo lamented, "There is [still] no water at the mines. [However, there] exists an abundant spring [, Miller Spring,] a few miles withstand which have been taken up by parties who mean business and the water will be placed on the ground in pipes within ninety days."^[58] They urged Victor Beaudry, as the interest in these water works, to work faster building a pipeline. The volume of water necessary for the 1500 residents demanded extensive planning and machinery.

The Cerro Gordo Water and Mining Company tapped Miller Springs with financial backing from banks in Los Angeles. Miller Springs was set ten miles north of Cerro Gordo and 1,860 feet below the ridge crest. The water therefore needed to be mechanically pumped 1800 odd feet. Three Hooker steam pumps, placed 3,500 feet apart, were installed to do the job. In May of 1874, at a cost of \$74,000, over 90,000 gallons began pumping water to Cerro Gordo every day.^[59]

This amount of water had never before been seen in the town. Aforementioned, the average wages for one day mining was four dollars; at this rate it had cost half a day's wages to take a bath before water prices dropped. The residents in Cerro Gordo were then charged a mere three cents per gallon. The *Inyo Independent* recorded the increased import of washtubs and soap to the town in 1874 after the installations of the Miller Springs pipeline. For the first time, men were bathing in Cerro Gordo. It is likely that clothes, windows, floors, shoes, and mules, were also washed for the first time with regularity. The excess water initially promised some hope that settlement would remain at Cerro Gordo. However, as smelting increased so did the amount of water needed for smelting, soon water again became a precious resource in the town.^[60]

Belshaw installed the first blast furnace in Cerro Gordo to smelt silver ore; this smelting process necessitated great volumes of water. Based on details in the State Mineralogist Report, the general function of a blast furnace placed crushed ore, which was an incorporation of silver ore, sand and limestone, into a charge door at the top of the furnace.^[61] There, charcoal would be heated to a maximum index and would be blown, or "blasted," into the ore chamber through three cast--iron tuyre nozzles. In order to generate the "blast," a 10 horsepower steam engine fed by water piping was installed. The slag would be dumped. Finally, molten lead and silver would be drawn from a tap hole as the bottom of the fourteen--foot high machine and made into silver bars.

The amounts of water needed in blast furnaces outweighed the volume of water available in Cerro Gordo. In twenty--four hours up to 22.7 tons of ore could be smelted in a blast furnace while some estimates claim that approx. Two--thousand three hundred gallons of water per ton of raw ore were needed in 19th century style blast furnaces.^[62] Based on quotes that the town's daily consumption of water was 35,000 gallons a day in 1874, and subtracting the water volume for the watering of men and mules (the U.S Census records that there were 1,500 men in Cerro Gordo at 1875, and mule--trains required forty mules), it can be concluded that the bulk of local water was used for the smelting processes.^[63] It is important to note, however, that the water consumption of the Belshaw Blast Furnace was not recorded and this number is the author's best estimate.

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Only worsening the rapid consumption of water, a "water jacket" was incorporated into the blast furnace to equalize heat and increase silver output. While some authors credit Belshaw with the invention of the "Belshaw Water--Jacket," the reference is to the revolution it made in Cerro Gordo, upping the furnace's yield by five tons per day. Some scholars note water--jackets being implemented in Norway as early as 1852. According to the *Inyo Independent*, a third smelter was eventually constructed at the shores of Owens Lake where water was more plentiful to cut the water usage at high elevations. However, paying the toll on roads for frequent huge loads of raw ore exasperated all advantage to smelting downhill. Over the next few years, miners used water at an ever--increasing rate in Cerro Gordo.

The settlement of Cerro Gordo was dependent on water, and eventually that resource would disappear. Miller Spring ran dry in August after being in service for only fifteen months and, once again, Beaudry was forced to temporarily close his furnace water while water was freighted in on mule train.^[64] The industrial collapse of Cerro Gordo was fast approaching. The environment was acting in every way to inhibit the growth of the small town. The independent energy of water proved too difficult to harness and the environment thus rejected all water works. Miners finally resolved that a permanent water source would never be located.

The human labor network extended once more as intensive agriculture was initiated in Owens Valley where, below Cerro Gordo by Owens Lake, the soil was fertile and necessitated the least amount of human energy to turn. Some stragglers to the silver boom at Cerro Gordo found themselves without prospecting work and took up their hoes and began farming. With blossoming populations in Cerro Gordo, the movement of peoples increasing across the valley, and the exhausting labors of mining in the early years of the 1870's, the demand for local and cheap produce and grains skyrocketed. While the economic market had room for agricultural systems in Owens Valley, the dry and irregular crop seasons made any pursuit in farming very labor intensive. Unable to contend with the energy of the environment, as the temperature, climate, and precipitation moved erratically throughout the year, men became dependent on the import of goods and grains. Without local and sustainable resources, Cerro Gordo was unable to retain profit and was abandoned.

Early in the 1870s, population growth in Inyo County supported an agricultural market and farming and ranching employed and increasing number of men. By 1880, the population of Inyo County was officially 2,928.^[65] The documentation of populations would likely not record a number of additional new arrivals, undocumented workers, and Indigenous or Native peoples working so the actual populations certainly may have been higher. The inhabitants of Inyo County were engaged in many pursuits. While in the U.S census of 1870 the largest occupational category was 'mining,' constituting a heavy 26.4% of the total 1,404 person working force, the actual duties of men in Inyo County were more diverse. Men also worked as smelters, millers, and ore carriers among other occupations. It is likely that the 'labor class' and 'trades' categories also included people engaged in various enterprises associated with supporting mining, under loose titles such as freighting, general labor for transporting the ore, and the building of smelters, blast furnaces, housing, and buildings.^[66] As the populations and trades grew there was an increasing need for produce and grains in Cerro Gordo. Many men in Inyo County saw economic opportunity to meet the market demand and invested in agricultural works throughout the valley.

In 1870, the percentage of men in the lower Inyo County engaged in occupational farming and ranching was 19.4%. There were 242 farms with 50,487 acres of farmland, 91% of them owner occupied.^[67] Obtaining land was fairly easy as under federal law settlers claimed 160 acres for a \$10 fee, \$8 commission, and payment of \$1.25 per acre after five years. ^[68] To procure land in Inyo County men purchased California State land, claimed a parcel of federal land under the Preemption Acts of the 1930's, or placed claim under the recently passed Homestead Act of 1862. The land around Owens Lake and Camp Independence was soon divided up, irrigated from the large lake and creeks of the Sierra Range, and the first crops were planted.

The desert climate of the Inyo, even adjacent to the large Owens Lake, was devoid of nutrients in the soils and was easily picked up in a dust storm. Earthquakes and early snow destroyed crop regularity. In addition, while the depressed valley had flat lands and water sources, it was also a wind tunnel between two dominating mountain ranges. High winds brought storms and drastic temperature ranges all year round limiting crop diversity. Farmers

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grew lettuces and vegetables as the technology for mills for processing grains or wheat necessitated large and expensive import machinery. The few trees that grew in the valley were not profitable. Cottonwood, the tallest standing tree, did not make good lumber for construction. Apple and pear trees could grow in the flat land of Owens Valley but their yield was small and they grew only with persistent hand watering which exhausted water sources.^[69]

With agricultural struggles beginning in Inyo County, the local farmers and businessmen of Los Angeles found a market niche for their surplus foods and grains on Nadeau's northbound caravans. The *Inyo Independent* published prices for goods, which showed that Los Angeles prices for oats, barley, corn, wheat, butter, eggs, poultry, and vegetables were all cheaper than Inyo County's.^[70] Nadeau regularly hauled flour, sugar, potatoes, nuts, "barrels of wine, crates of fruit, bales of hay-- every staple item from picks and shovel to live chickens" into Owens Valley.^[71] An entire yield of barley in the Los Angeles Valley was consumed just to feed the mules for transit. Two thousand five hundred tons of Barley and 3,000 tons of hay went to feed, constituting a respective 30 and 40 per cent of the Los Angeles crop. The low prices of Los Angeles goods suggested that local agriculture was futile due to high cost and competition.^[72]

As dependence on Los Angeles agriculture increased among Inyo County residents, so did the economic profits for Los Angelinos. Between Owens Valley and Los Angeles, over 700 tons in goods were transported monthly equating to a \$700,000 market.^[73] It is estimated that almost a thousand dollars a day were exchanged over the counter in Los Angeles food, drug, and supply stores. The *Inyo Independent* remarked that Nadeau gave more employment and purchased more produce and grains than any five men; the *Los Angeles News* went as far as to claim "what Los Angeles is, is mainly due to [Cerro Gordo]. It is the silver cord that binds our present existence."^[74] This claim was not a compliment to Cerro Gordo. The inability of the town to sustain itself was now common knowledge.

Los Angeles merchants took profits from agriculture and goods--trade away from Inyo County residents permanently. The economic benefits of a sustainable market in agriculture and textiles, such as the market in Los Angeles, proved more reliable than the unsustainable business of mining. The *Los Angeles News* continued, "Should it [the connection between the two communities] be uncomfortably severed, we [Los Angeles] would inevitably collapse."^[75] The accuracy of this statement aside, it is clear from such sentiments that nearly all the profits in mining were falling into the hands of the supplier. The monopoly on trade, goods, freight, and feed between Los Angeles and Cerro Gordo's Mortimer Belshaw left little wealth in the Inyo County.

The environmental energy which manipulated the climate and temperatures of Owens' valley made the physical acts of farming difficult; the strength of the environment, however, also discouraged farmers in Inyo County. It is true that a great amount of energy was needed to till, turn and keep the soil in Owens Valley. Verbal frustrations and outbursts of farmers about dwindling success were highly critical of economic failures as though labors were worthless. The *Inyo Independent* published an editorial questioning, "what have we here, right at the fountainhead of this wealth, to show in proof of existence? Two or three little villages, which have not derived benefits enough from the business of their own county."^[76] Sentiments of discontent would only increase until there was total social upheaval.

Maddened by the state of the agricultural market, men began wasting energy on vengeful affairs such as stealing and plotting. The *Inyo Independent* continued, "it is useless for the farmers... to lay back on their reserved rights and fowl at certain individuals because the latter do no go out of their way to pitch money ready coined into their pockets... the men of enterprise not the opportunities [are] lacking."^[77] Each man began to act "of enterprise" and took direct measures to make money. One man, Tiburcio Vasquez, was known for his "reign of terror" throughout Southern California especially along the bullion route to Los Angeles. He spent years disrupting the transport of agricultural goods and looted wagons. In one instance, after he robbed a stage in Coyote Wells, the residents in Cerro Gordo took to hiding all of their goods and valuables in four bins, baking powder cans and mattresses. Small children armed themselves with slingshots and rocks to warn off the thief.^[78]

Amid all the hurdles that the environment presented in Owens Valley, the simple phenomena of snow and wind tipped the scales against farmers permanently; crop irregularity spawned a dependence on import produce and grains, the strong market of Los Angeles beat out local competition, and aside from laboring on the land men had

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no energy left over to battle each other for profits. Economic depression followed 1875 in Inyo County, and the newspaper resolved that men were "often too optimistic about the economic prospects of the valley. Never since white people came to the country was business so dull and money so scarce."^[79] In 1880, the percentage of occupational farming was only 13.1%. Cash receipts of crops in 1890 were about equal to that in 1870, indicating that there was no take to agriculture in Owens Valley.^[80] As a result, a barter economy took over, and cash receipts and stock nearly vanished.

Another great strength of the environment was not a resource that environmental energy provided, but what its movement prevented: there were no tall standing trees in the Inyo. Environmental movement formed the Inyo Mountains as tectonic plates merged on the western fault block range; the rocks that formed the Inyo Mountains are uniquely limestone. Few plant communities can exist in limestone soils. At low altitudes, creosote and sagebrush grew, and higher, small bristlecone pines. Many of the plants were endemic, and therefore only existed in this unique ecosystem.^[81] The rarity of some of the flora in the Inyo range, however, was no advantage to human habitation. The endemic plants were not edible, nor did they provide a wood for construction or firewood. Within the first years of mining Cerro Gordo the sparse pinion and juniper forests of the Inyo Mountains were consumed as fuel for the smelter. If the smelters were to continue operating, it would only be a matter of time before a new source of fuel would have to be located and the labor spent to find lumber was exhausted.

The last pursuit of the labor network was milling; on the other side of the Owens Valley, and up into the opposing Sierra Mountain Range, a small woodland meadow provided tall pines.^[82] There was ample wood at the base of Horseshoe Meadow just before the Cottonwood Creek plummeted the steep and rocky tumble the thirteen miles into Owens Lake. Some trees reached heights of 30 and 40 feet, compared to the short squat and knotted junipers that grew a maximum of fifteen feet on the Inyo side.^[83] It was Colonel Sherman Stevens, an entrepreneurial spirit living in Inyo County, who found a way to harness the resources of the Sierra range for Cerro Gordo's benefit.^[84] He managed to secure a 25,000--loan from the Owens' Lake Company for the construction of a lumber mill in Horseshoe Meadow with the lofty ambition of transporting pinewood to Cerro Gordo.^[85]

Amid the multiple environmental challenges that the pioneers of Cerro Gordo had thus faced, there was an opportunity for innovative spirit to grow. The speed to which the men of Inyo Country battled the natural hurdles was impressive, and within a couple short months of June, 1873 complex technological systems were in place for milling. Steven's Mill was completed in June of 1873, and was powered by a steam turbine, and equipped by main saw, crosscut, and an edger.^[86] It seemed, for a second, that man had finally bested the environment.

Once the mill was complete, acquiring the actual wood was no longer a problem, leaving the transportation to be figured out. A trial haul up Cottonwood Canyon began shortly, traversing a 5,680--foot change in elevation with all supplies and machinery from the lumber mill. Lumber transport was possible but laborious.^[87] Teams of oxen hauled trees to the mill, where it would be shaped and readied, then freighted the same lumber down the 15--mile canyon, across Owens Lake, and up the opposing Inyo incline to Cerro Gordo. This was no simple task as the awkward and peaked geography of Inyo County made any transportation of material a challenge, especially large, heavy loads of wood. The dryness of the area both hindered the grow of trees, sent loggers on searches further and further from Cerro Gordo, and created the dangerous threat of dehydration.

A logging sluice was constructed for the transport of cut lumber from Horseshoe Meadow into the canyon of Cottonwood Creek to alleviate some need for transport by mules.^[88] Built like traditional sluices, Colonel Steven's took a "V" shape of two perpendicularly secured planks of wood. The sluice was rough with a capacity of only about two--feet in diameter and was supported by the same pine at three foot intervals. However, it would have fitted the transportation demand as it funneled mostly tall, thin, sturdy trees. The sluice extended down Cottonwood Creek traversing large river rocks and the changing elevations in the creek bed.^[89] Much of nineteenth century logging was a winter activity. In the off season, farmers would log and thereby a sluice might be slopped with water the evening of freezing nights so that the lumber would slide down the sluice with ease. Cerro Gordo's breakneck pace, however, did not wait for winter's cold temperatures to convenience logging and the sluice was used year--round.

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In November of 1873, Colonel Steven's sluice reached the shore of Owens Lake. Below in Owens Valley it was the abundance of water which stumped miners and loggers alike-- there would be no way to float wood in the water across the lake and then burn it in the next week. Once at the lakeshore, ox--drawn wagons hauled wood the last three miles into Cottonwood Landing, a wharf on the landing of Cottonwood Canyon.^[90] On the shores of Owens Lake, the patient pile of lumber then found transport on another machine. The Bessie Brady was a steamboat; small, buoyant, with one smoke stack and a powering 20--horsepower, 10X10 inch oscillating cylinder engine. It was built in San Francisco by the Pacific Foundry. It was owned by James Brady, who first came to Owens Valley to oversee the Owens Lake Silver--Lead Company at Swansea and after securing a freighting contract with Belshaw. ^[91] Named after his daughter, he christened the boat the Bessie Brady.^[92]

The steamboat would serve two purposes: it would both transport lumber from Cottonwood Landing to Keeler Landing, and bullion leaving Cerro Gordo from Swansea (1872--73) and later Keeler (1873--79) to the southern--most end of Owens Lake at Cartago.^[93] In 1872, Swansea had constructed a wharf through which much of the lumber, bullion, and goods were traded and was the resting point of all lumber and bullion in the comings and goings from Cerro Gordo.^[94] The previous May the last touches had been placed on the Bessie Brady, the hull completed, the boat moored at the landing and mounted with boiler and engine.^[95] Brady launched the Bessie Brady on Owens Lake on June 27th, 1872. Soon, the Bessie Brady was towing lumber across the lake on barges.

Operations continued at a squeaky but steady pace for the next three years. In April of 1876, Stevens expanded his operation under the incorporated company of the Inyo Lumber and Coal Company with J.B. Bond.^[96] Two charcoal kilns were built north of Cottonwood Creek and a short distance inland from the wharf on Owens Lake. The kilns took a distinct beehive shape and burnt wood, cut to specific lengths from the cottonwood mill, into charcoal. Charcoal was preferable as it would burn longer and hotter than wood.^[97] With the addition of the beehive kilns, Col. Sherman Stevens had \$500,000 in capitol stock in both the Inyo Lumber and Coal Company in full operations.^[98]

Stevens Mill at Cottonwood Creek was a great example of the entrepreneurial spirit that the miners at Cerro Gordo possessed as the haul of lumber was an exhausting endeavor; however, it is also evident that no matter the steps taken to counter act the inhospitality of the Inyo desert, that the network of trade here was so delicate that it would be undone without the cooperation of the environment. The milling system eventually halted when Cerro Gordo's mining operations slowed and there was no longer a need for lumber in Cerro Gordo. A pair of arsonists burned the mill to the ground. The energy that Colonel Sherman Stevens invested proved futile; he died in Lone Pine in 1887 an unsuccessful man. Even before the complete abandonment of Cerro Gordo it was clear that the environment had rejected all enterprises on the land despite how far men were willing to travel to harness them.

One by one, each branch of the labor network that encompassed the silver mining at Cerro Gordo broke down. Simple movements of the environment were the cause. Gravity, erosion, and steep geography frequently caused freight delay and harm to freighters and mules along the Yellow Grade. Quick evaporation rates and small indexes of precipitation made water works unsuccessful. The formation of limestone soils and inconsistent weather prevented extensive agriculture and stationed mills in distant forests. The totals of the environmental energy acting against the organized labor, and therefore humanity, lead to the abandonment of Cerro Gordo. The labors to maintain settlement were so demanding of miners that not even network organization alleviated stress.

The history of Stevens Mill is again exemplary as it provides a logical explanation of how the demand for physical labor in general created a social unrest that aided Cerro Gordo's abandonment. One such reference is the events of one June day in 1877, when Stevens Sawmill was damaged by a fire attributed to the "carelessness or malice" of two tramps.^[99] More than 64,000 feet of timber was burned before being put out. The same disaster would strike Colonel Steven's Mill again 1878. Arson was frequently the most efficient show of disapproval in the Cerro Gordo community as little proof of arson could be tracked and there frequently were not consequences.^[100]

1873, the year that Stevens Mill opened, therefore, was not a year of celebration or of fast money for the entrepreneurs of Inyo County. It is clear from the agitation the town experienced that the constant hauling of wood to the furnaces at Cerro Gordo was an unsustainable endeavor. It seemed that at every instance that one problem in the mining business was solved another arose. The environmental inconvenience of Cerro Gordo placed stress

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directly on the labors. People were restless, some out of work, drunk at points, and revolting. Social unrest paired with the natural obstacles made solutions unlikely. As evidenced by the arson at Steven's Mill, it can be inferred that before Cerro Gordo was mined out, the town underwent a social collapse that placed an expiration date on the settlement.

Just as environmental energy acted against each individual branch of the labor network, environmental energy also warred directly against the social energy of the town. On the topic of social constructions and the exchange of energy, White wrote that "human work was socially organized and given cultural meaning," and therefore energy could be shared and stored among men.^[101] Had the miners in Cerro Gordo been able to tie to one another and pool their energetic effort, they might have been able to successfully overcome environmental obstacles. In order to do so, a common ground or sense of paternity would have to be reached in the community. However, the environmental energy placed such stress on miners that a foundational sense of community was not built, leading to social collapse and the town's abandonment.

There are some indications that men attempted to bond together to foster a communal energy. In 1877, on July 4th, Chalfant & Parker Press posted notice of the *Fourth of July Celebration at Cerro Gordo* hinting that town tried to commune together for strength. 'The Programme' included a salute of 38 guns at sunrise, and raising of the colors, 12 noon, sundown, lowering of the colors, fireworks at 8 PM, and a dance in the town hall at 9:30 PM. The continuous noise, band, oration and prayer were calls for community celebration. The celebrations on the Fourth of July generated a sense of paternity among even the most temporary and mismatched settlement. Songs like "Hail America" and "Yankee Doodle" were sung before "The Star Spangled Banner", creating a culturally "American" community sentiment. Gathering to sing and celebrate with a communal sense of identity indicated that the settlers of Cerro Gordo were originally optimistic about their future as a community. At 2:30 PM races began including the slow donkey race, foot race, sack race, greasy pig race, wheelbarrow race (blindfolded) and the Giant Procession. Pleasant, shared activities banded the residents into a community. The jovial spirit of games, races, and simply activities of recreation and would show that there were separate relationships being developed outside of the economic and business spheres.^[102]

Despite such efforts, Cerro Gordo residents did not grow a strong, paternalistic, community body with the speed and firmness that would balance the chaos of pioneer communities. Lawlessness often is often associated with western settlement and pioneer life. Mark Twain, writing on such western mining claims, noted, that to be a saloon-keeper and kill a man was to be illustrious; more commonly, a lack of law and an incivility were more attractive to pioneers than community bonds. In reality, pioneer men were not much more than penniless laborers. Inexperienced people, a usual assortment of speculators, saloonkeepers, and merchants, drifters who accompanied the silver rush harvested silver from the ground. In Cerro Gordo lawlessness developed easily between such transient and broke men, never allowed for energy to be shared nor stored between them.^[103]

The first instances of social unrest appeared in the town of Cerro Gordo in the latter half of the 1870s. Like at Steven's Mill, acts of arson were among the first social out breaks in the town. The *Inyo Independent* reported that as the network of labor began to fail in Inyo County, among many setbacks was a reduction in miner's wages. In response, on August 17th, 1878 at 11:30 PM., vandals burned the mine building and works of Beaudry. In records of *Proven and Probable Incidents of Arson 1870--1909*, the victim, "Beaudry & Co.," was accordingly cited to have suffered "arson...[because of] labor troubles".^[104] However, with a lack proof no legal action was taken. The following month on the 7th, another fire of unknown origin burned the mine's hoisting works which was nearly a quarter mile uphill.^[105] The *Inyo Independent* wrote that, "an incendiary attempt was made [also] to burn about 50 tons of coal close to the lower furnace of the Union Company."^[106] The arson took place at night, around 10 or 11 PM when most men had retired to bunkhouses or the bar. It was "unquestionably the work of incendiaries", and the event was rumored to have also stemmed directly from a third and final cut in wages.^[107]

Social unrest had such a toll on the community of Cerro Gordo that the moral fiber of the town was weak at best. On the stretch of road, not 300 yards, that spanned the town, authors Robert Likes and Glenn Day noted, "bullets [frequently] flew thick and fast"; it was so because "many jackass prospectors found easy pick'ns for a group stake with rumor of rich strikes and new bonanzas circulating from every street corner."^[108] The men in the town had no

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sense of obligation for civility. Some men of the law, including judges and sheriffs, attempted to combat the lawlessness but to no avail. In March 1873, Judge A. Hannah of Inyo County declared war against "[the] lawless ruffians who with murder in their hearts and the implements of death trapped upon their person, congregate in public places ever ready to discharge their death dealing weapons upon the unoffending and unnamed citizen".^[109] He went on to suggest that judicious hanging and a strong jail was needed to correct the men. The editor of the *Inyo Independent* later referred to the town a "a prolific source of the man--for--breakfast order of items,"; where even small misunderstandings were likely to bring "down the hammer on forty grains of black powder."^[110] Law was never implemented with any drastic change to the lifestyle of miners.

It was of more use to protect oneself from combat by escape than by calling on the law. Mortimer Belshaw was the wealthiest and most resented man in the town. It was rumored there was a secret passageway out of the back of the Belshaw house in Cerro Gordo that connected to the opposite side of Buena Vista Peak. In one instance, infuriated by the toll tax on the Yellow Grade Road, an unnamed miner shot at Belshaw, who retreating into his house, escaped through the passageway. Bullet holes mark the front siding and the foyer of the home to this day.^[111]

Theft also became an increasingly common problem; while in 1873 Belshaw's fast mining pace pacified laborers with higher wages, in 1876 freight setbacks halted the sale of silver in Los Angeles and money was more scarce. The headline of the *Los Angeles Herald* on Saturday, January 29th, 1876, read that, a "Fifty Dollars Reward!" was set to counteract the persistent problem of thievery.^[112] Such a high bribe was demonstrative of the desperation to counteract crime. The Cerro Gordo Freighting Company's teamster, who signed off the newspaper add, *R. Nadeau, Superintendent*, wrote the newspaper ad himself. It promised reward to any man who would furnish "POSITIVE PROOF" to the C.G Freighting Co. of any who had tapped barrels of liquor, opened cases of liquor, or sold any wagon parts from that property belonging to the company.^[113] Theft was increasing in the town of Cerro Gordo and along freight route. To add to the problem, the use and abuse of liquor in Cerro Gordo was immense. Both theft and drunkenness upset the social community of Cerro Gordo.

The abuse of liquor would also prove to be deadly to the men in Cerro Gordo, worsening the strength of their community. An established community was needed to balance the energy of the environment. With men dying young there was no time to create the bonds of neither paternity nor communal strength. In one example, foolishness and horseplay caused fatalities. There was a gondola system installed at Cerro Gordo to pull material down the mountain for smelting, slag would be dumped and only the heavy ore would be fired for imbedded silver. Starting at the Union Mine shafts and traversing increments of nearly a hundred yards the gondola reached the bottom of the Yellow Grade Road.^[114] Large, metal buckets would attach to the gondola wires to carry the ore. The buckets would float down from the mountain with speed. Men would often sit inside the buckets for a ride into town after a day of working the mineshafts. The buckets, however, were not stable or constructed to hold the weight of a grown man and on several occasions men drunkenly fell from them to their deaths.^[115] Early death also followed accidents on freighting routes, mining cave--ins, dehydration, disease and infection, and, more commonly, shoot--outs.

The lack of women in Cerro Gordo also indicated the impossibility of permanent settlement, as it aided social unbalance. In 1870, of 474 people in Cerro Gordo, only 59 were women.^[116] The women in the town were predominantly prostitutes. Delores 'Lola' Travis was a Mexico--born mother and a shrewd businesswoman who moved to Lone Pine in 1867. With the help of a beau she established Fandango Hall brothel in Cerro Gordo. From Fandango Hall Lola became quite wealthy, she was even able to purchase the rights for the house for \$50 in gold.^[117] The ladies of Lola's brothel were the women that miners interacted with on a daily basis. While sexual reproduction was possible, there were no long--term attachments between men and women that might build community.

Fights over the women of Lola's establishment also created strife among men. Gunfights often broke out at the brothel; Dr. Hugh McClelland recalled one such incident when he and another man visited the dancing halls. McClelland attempted to explain an odd nickname of one Mexican dancer to his companion, when she, in rage, attacked the pair with a stiletto. She was fended off, but her boyfriend, an unnamed Mexican man, came to avenge

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her honor by plunging a knife in McClelland's chest. He was shot dead by a George Snow. The night turned to general open shooting until the lights were turned off. Such events were demonstrative of the delicate system of co-existence that the pioneers in Cerro Gordo developed.^[118]

In the end, the attempt to create settlement proved to be futile and the town was abandoned with the speed that spoke no lament. The direct energies of the environment placed stress on the laborers of Cerro Gordo so that social conflict and upheaval was constant. Without a sense of community, human energy could not be pooled nor shared by men. In addition, men could not contend with environmental forces on their own as networked labor had been rejected. The environment had elder, stronger energy forces and when mineral wealth was running thin, miners picked up and left with no second glances.

In the latter half of the 1870s, each mineshaft hit a fault line and miners could drill no further.^[119] Mining had commenced at the offset at such a pace that the mineshafts were coming up empty in silver deposits. The geography of the mountain around Cerro Gordo unevenly distributed silver ore. Ore is typically found deposited within limestone rock. A '*bonanza*,' Spanish for 'clear--skies,' is strike concentration of metals. These pockets of ore commonly called, 'ore chamber,' 'shoot,' or 'branch'. The Union, Coso, and San Philippe mineshafts were drilled into ore chambers vertically from the ground surface; when the mineshafts extended outside of ore chambers silver was no longer deposited in the rock.^[120] The surrounding rock in Buena Vista Peak was relatively barren of minerals. Desperate to increase yields without diverting from ore chambers, the mineshafts were dug to additional depths.^[121]

The deposits of silver ore started to dwindle at the bottom of both the Union and San Philippe mine shafts in 1877. A third, the Belshaw shaft, was then dug to a depth of 900 feet; at 700 feet a crosscut attempted to drill 1,000 feet into the Union shaft. At about a 900--foot depth, however, the mineshaft could be no further extended as an irregular fault line prevented crosscut the ore chamber and prevented mining from continuing.^[122] Amidst the human scramble for ownership of the mines, monopoly of profits, and despite the great labors of physically hauling silver ore deposits from multiple mine shafts the environment had erected its limit; fault line cut off each mine shaft making any further investigation in Cerro Gordo impossible.

In August of 1877, the Union works burned to the ground. The fire extended as far as the to the Belshaw mineshaft, where it ignited the timber that restrained the mineshaft walls and burned 200 feet into the ground. The damages were estimated at \$40,000 dollars to restore the Union works and repair the Belshaw shaft: this blow was dealt when the mine wealth was already decreasing, leaving Belshaw a reported \$110,000 in debt. During the repair time, the Bessie Brady made only an occasional trip across Owens Lake and in 1878 Brady moored her at Cottonwood Landing perpetually awaiting cargo.^[123]

In 1877, the mine was played out and within two years the town was abandoned. In 1880, the census records only 49 men remaining in Cerro Gordo.^[124] On October 1, 1888, State Mineralogist Goodyear reported that there were only a dwindling thirty men in the town "getting their living the best they could."^[125] In November of 1888, Beaudry, along with a handful of men, remained in the town only long enough to protect the Union's interest and gather the remaining ingots. Later that month, he shut off the smelting furnace for the last time and, with the final wagon, all men left the town. At the shore of Owens Lake, the Brady made the Bessie Brady's final voyage, beached her at Ferguson's Landing, and removed her machinery. By 1900, no census was conducted, as there were no residents.^[126]

In some debates, the history of the pioneer in Cerro Gordo could be studied as nothing but an example of a failed human settlement. The wealth that was wanted through mining was not reached and the town was abandoned. To infer that this settlement was a 'failure,' however, is to also draw the conclusion that records of the payment pioneers received and the years they successfully mined Cerro Gordo are placed on a linear path with the end goal being wealth and civilization. Additionally, this argument is only supported if the only goal of westward movement was to conquer the environment. Reiterating Richard White's words, it is "labor rather than 'conquering' nature [that] involves human beings so thoroughly" with the environment.^[127] Much of what makes the American spirit is the willingness to dive into the west and live not for the standards of wealth but for the want of the experience.

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In this way, Cerro Gordo was a great success measuring ingenuity and pioneering will. The establishment of a complex, organized labor network is a small success of the pioneers in Cerro Gordo even though it was in place for less than ten years. The two converging stories, of Cerro--Gordo--as--exchanges--of--energy and Cerro--Gordo--as--failure, come together to weave a complex identity. The history of a constant human energy and environmental energy exchange, however, does not place a historical trajectory on a black--and--white scale of success and failure. It is only by integrating the energy of human labor with the energy of the environment's movement can humanity remain on in a physical environment. Therefore, the academic conversation is changed to complicate how human and environmental histories coincide.

[1] Robert C. Likes and Glenn R. Day, *From This Mountain-- Cerro Gordo* (Bishop, California: Chalfant Press, Inc., 1975), p. 49.

[2] Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995), p. 6.

[3] Both the greater ratio of men to women and their occupations place men rather than women at the center of this paper. By 1870, there were 474 people documented as living in Cerro Gordo, 415 of who were men and 59 women. Most of the women were employed in prostitution. See U.S Census of Population, 1870--1880.

[4] John Walton, *Western Times and Water Wares: State, Culture, and Rebellion in California* (Berkeley: University of California Press, 1992), p. 63.

[5] Walton, *Western Times*, p. 63.

[6] Andrew C. Isenburg, *Mining California: An Ecological History* (New York: Hill and Wang, 2006), p. 15.

[7] Frederick Jackson Turner, *The Significance of the Frontier in American History*, in J.M. Faragher, ed., *Rereading Frederick Jackson Turner*, (New York: Henry Holt, 1994), p. 24.

[8] Frederick Jackson Turner, *Frontier and Section*, ed. R.A. Billington, (Englewood Cliffs, NJ: Prentice--Hall, 1961), 38.

[9] Rather than commenting on the possibilities of there existing a continuous relationship between human history and environmental history, Turner focuses on the conquering or defeat of the environment to bring forth a human democracy. The closure of the Frontier for the first time in history therefore marked a fundamental shift in American identity; men were no longer defined as pioneers. Again, quoting the U.S Census of 1890, Turner deemed the land of the far West to no longer be open space but to be "isolated bodies of settlement" strengthening his theory that American history begins in those conquered places of settlement. The first settled places were trading posts, military posts, along rivers, and at mines. See Turner, *The Significance of the Frontier in American History*, p. 24--30.

[10] Isenburg, *Mining California*, p. 15.

[11] White, *Organic Machine*, p. 7.

[12] Whitman continues, "We must march, my darlings, we must bear the brunt of danger/ We the youthful sinewy races, all the rest on us depend/ Pioneers! O pioneers!" Pioneers preceded settlement, while the rest of the country on them "depended" to clear the path. The march/ danger of such advances required a great amount of physical energy, which was delivered by "youthful" races. It was a majority of young, American, males who advanced as pioneers. See, Walt Whitman, *The Modern Library of the World's Best Books* (Virginia: Boni and Liveright and The University of Virginia, 1921) p. 197.

[13] Adolph Knopf, *A Geologic Reconnaissance of the Inyo Range and Eastern Slope of the Southern Sierra*, Professional Paper 110, 1918.

[14] White, *Organic Machine*, p. 7.

[15] Fieldwork Notes, conducted June-- November 2013, Marley McLaughlin, Chapman University Undergraduate Research Fellowship program.

[16] Likes and Day, *Mountain*, 13.

[17] Likes and Day, *Mountain*, p. 13.

[18] *Ibid.*, p.20.

[19] Fieldwork Notes, June-- November 2013.

- [20] *Ibid.*
- [21] Likes and Day, *Mountain*, p. 13.
- [22] U.S Census of Population and Agriculture, 1870--1880, Inyo County: Ninth and Tenth Census, Final Report, United States Census Bureau. <https://www.census.gov/#>.
- [23] *Ibid.*, p. 20.
- [24] Information courtesy of display case at the Eastern California Museum at Independence, Independence, CA; see also Fieldwork Notes, June-- November 2013.
- [25] *Inyo Independent*, 1873.
- [26] The characteristically smoky sky from the smelters operating at such a constant rate gave Cerro Gordo the nickname "Old Smokey." The sky would be clouded with smoke until the furnace for smelting was turned off for a final time in 1888. See *Inyo Independent*, 1873; see also, Likes and Day, *From This Mountain*, p.40.
- [27] *Ibid.*
- [28] Cerro Gordo photographed in 1879. The photo was taken adjacent to the mineshafts looking outwards at the Owens Valley. The American Hotel and Belshaw House are on the left of the Yellow Grade Road, center, while the General Store, blast furnace, and Bunkhouse are on the right. Shanty housing and squat tents were set up across the hills to the right and left. See Fig. 2; photographs of Cerro Gordo, Cerro Gordo: 1870--1880, Courtesy of Robert Demsarias, donated collection.
- [29] *Inyo Independent*, 1871.
- [30] Fieldwork Notes, June-- November 2013.
- [31] White, *Organic Machine*, p. 7.
- [32] See Walton, *Western Times*, p. 63; also, *Cultural Resources of the California Desert*, p. 33.
- [33] McLaughlin, Fieldwork.
- [34] Rodman Wilson Paul, *Mining Frontiers of the Far West: 1848--1880* (Holt, Rinehart and Winston, Inc.: 1963) p. 99.
- [35] Cultural Resources of the California Desert, 1176--1880: Historic Trails and Wagon Roads (U.S Department of Interior, Bureau of Land Management, Desert Planning Unit, Cultural Resources Publication: Anthropology--History. Riverside, CA: 1981) p. 33: B.
- [36] *Ibid*, p.30: 70
- [37] *Ibid.*
- [38] *Cultural Resources of the California Desert*, p. 33.
- [39] *Ibid.*
- [40] Likes and Day, *Mountain*, p. 40.
- [41] Fieldwork Notes, June-- November 2013.
- [42] Iron Shoes attached to the locked wheels of wagons on decent of the Yellow Grade Road to prevent sliding. See Fig. 1; Photographs of Cerro Gordo, Cerro Gordo: 1870--1880, Courtesy of Robert Demsarias, donated collection.
- [43] Remi Nadeau's 20--mule team. See Fig. 3; Photographs of Cerro Gordo, Cerro Gordo: 1870--1880, Courtesy of Robert Demsarias, donated collection.
- [44] Cultural Resources of the California Desert, p. 33.
- [45] *Los Angeles Daily Herald*, April 1, 1873, (Los Angeles: *Chronicling America: Historic American Newspapers*, Library of Congress, Accessed November 2013).
- [46] As recorded in the State Mineralogist Report see *Cultural Resources of the California Desert*, p. 33; see also *Inyo Independent*, 1873.
- [47] Owen Dearborn, riding on of the wheelers, ascends the Yellow Grade Road, 1880--1900. Although his trials were successful, many runs ended with toppled wagons, lost silver, and harm to freighters and mules. See Fig. 4; Photographs of Cerro Gordo, Cerro Gordo: 1870--1880, Courtesy of Robert Demsarias, donated collection.
- [48] Likes and Day, *From This Mountain*, 29.
- [49] Fieldwork Notes, June-- November 2013.
- [50] Cultural Resources of the California Desert, 33: B. 91. 92. 93.
- [51] *Ibid*, p. 33: B. 91. 92. 93, p.31.
- [52] *Ibid* p. 33: B. 91. 92. 93; see also Sonic Research Page, <http://www.sonic.net/bristlecone/WhiteMts.html>, accessed March 3rd, 2014.
- [53] W. A. Chalfant, *History of Inyo* (1922). Pp. 55, 67.

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- [54] Fieldwork Notes, June-- November 2013.
- [55] *Ibid.*
- [56] Fieldwork Notes, June-- November 2013.
- [57] *Ibid.*
- [58] *Los Angeles Daily Herald*, 1873.
- [59] Fieldwork Notes, June-- November 2013. See also, Likes and Day, *From This Mountain*, p. 29.
- [60] *Inyo Independent*.
- [61] *Cultural Resources of the California Desert*, p. 33: B. 91. 92. 93
- [62] *Ibid.*
- [63] U.S Census of Population and Agriculture, 1870--1880.
- [64] Fieldwork Notes, June-- November 2013.
- [65] U.S Census of Population and Agriculture, 1870--1880.
- [66] *Ibid.*
- [67] *Ibid.*
- [68] Robert A. Sauder, *The Lost Frontier: Water Diversion in the Growth and Destruction of Owens Valley Agriculture* (Arizona: University of Arizona Press, 1994), p. 55.
- [69] Fieldwork Notes, June-- November 2013.
- [70] *Inyo Independent*.
- [71] *Ibid.*
- [72] *Ibid.*
- [73] *Ibid.*
- [74] *Los Angeles Daily Herald*, 1873.
- [75] *Ibid.*
- [76] *Ibid.*
- [77] *Ibid.*
- [78] *Inyo Independent*, 1873; see also Likes and Day, *From This Mountain*, p.40.
- [79] *Inyo Independent*, 1873.
- [80] John Walton, *Western Times and Water Wares: State, Culture, and Rebellion in California* (Berkeley: University of California Press, Berkeley, 1992), p.83.
- [81] Adolph Knopf, *A Geologic Reconnaissance of the Inyo Range and Eastern Slope of the Southern Sierra*, Professional Paper 110, 1918.
- [82] Fieldwork Notes, June-- November 2013.
- [83] *Ibid.*
- [84] Likes and Day, *From This Mountain*, p.40.
- [85] *Ibid.*
- [86] *Ibid.*, p.39.
- [87] Fieldwork Notes, June-- November 2013.
- [88] *Ibid.*
- [89] *Ibid.*
- [90] Likes and Day, *From This Mountain*, p.39.
- [91] The Bessie Brady had an 85--foot keel, was supported by 16--foot beam, and had a depth of hold at 6 feet. The propeller was 52--inches in diameter and moved at approximately 7--9 miles per hours. Reposted building cost was 10,000 dollars. The Bessie Brady's maiden voyage carried 700 bars (30 tons) of silver bullion and W.R Low piloted the steamboat to the southern landing at Carthago. The Bessie Brady was in use until 1888, when its machinery was taken out and sold. Another steamboat, the Molly Stevens was built in 1887 but sank on her maiden voyage and was pulled from the lake by the Bessie Brady. See, Likes and Day, *From This Mountain*, p.35.
- [92] *Ibid.*
- [93] Courtesy of the Eastern California Museum at Independence, 2013.
- [94] Likes and Day, *From This Mountain*, p.35.
- [95] Courtesy of the Eastern California Museum at Independence, 2013.
- [96] Likes and Day, *From This Mountain*, p.45.
- [97] Robert Demsarias, interviewed by Marley McLaughlin, Documenting Cerro Gordo, Cerro Gordo, CA, November 2013.

- [98] Likes and Day, *From This Mountain*, p.45.
- [99] Walton, *Western Times*, p. 63.
- [100] *Ibid.*
- [101] White, *Organic Machine*, p. 30.
- [102] Chalfant & Parker Press, Courtesy of the Eastern California Museum at Independence, Independence, CA, 2013.
- [103] Robert Demsarias, November 2013.
- [104] From table compiled by John Walton; see Walton, *Western Times*, p. 63. Table 4.
- [105] *Ibid.* p. 110.
- [106] *Inyo Independent*, 1874.
- [107] Walton, *Western Times*, p. 110.
- [108] Likes and Day, *From This Mountain*, p. 19.
- [109] *Inyo Independent*, 1874.
- [110] *Inyo Independent*, 1874. See also, Likes and Day, *From This Mountain*, p. 25.
- [111] Fieldwork Notes, June-- November 2013.
- [112] The Los Angeles Daily Herald, 1874.
- [113] *Ibid.*
- [114] Fieldwork Notes, June-- November 2013.
- [115] Robert Demsarias, November 2013.
- [116] U.S Census of Population, 1870--1880.
- [117] Eastern California Museum, Independence, CA.
- [118] Likes and Day, *From This Mountain*, p. 19; see also Eastern California Museum, Independence, CA.
- [119] *Ibid.*
- [120] Adolph Knopf, *A Geologic Reconnaissance of the Inyo Range*, 1918.
- [121] Paul, *Mining Frontiers*, pp. 62--64.
- [122] Likes and Day, *From This Mountain*, p. 39.
- [123] *Ibid.*, p. 49.
- [124] U.S Census of Population, 1870--1880.
- [125] *Inyo Independent*, 1874.
- [126] Likes and Day, *From This Mountain*, p. 50.
- [127] White, *Organic Machine*, p. 7.