PROBLEMS

The Appropriation of the Triano-Somorrostro Mines: 1800-1880 *

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> [In that part of the Cantabrian coast which is washed by the Ocean, there rises a high and steep mountain, which marvelous to relate, is composed entirely of iron].
>
> PLINY, *Natural History*

Ever since Roman times, geologists and naturalists praised the richness of the iron deposits of Vizcaya. Pliny's description probably refers to Mount Triano in the heart of the Vizcayan mining district. The Roman geographer was wrong: the mountain was not entirely made of iron. However, the approximately 93 million tons of ore extracted in the last quarter of the nineteenth century came close, at least metaphorically, to being a veritable mountain of iron. Several historians have analyzed the mechanisms and consequences of the intensive exploitation of the Vizcayan deposits. [1] Yet a key aspect of this process — the appropriation of the mines — remains a poorly known subject. Through the use of several until — now — untapped sources, this paper tries to shed some light on this issue. The focus on this theme is not merely an erudite concern. The evolution of the property system and mining regulations help us to understand how the Vizcayans avoided such pitfalls as foreign control of mineral deposits or extremely small units of exploitation that hindered industrial development in

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[1] For instance, M. Gonzalez Portilla, *La formacin de la sociedad capitalista en el Pais Vasco (1876- 1913),* (San Sebastian, 1981), M. Montero, «La mineria de Vizcaya durante el siglo XIX,» *Ekonomiaz*, no. 9/10, (Winter/Spring 1988); and M.W. Flinn, «British Steel and Spanish Ore: 1871-1914,» *Economic History Review,* 2nd. ser. IX (1955-56).

other Spanish regions rich in natural resources.[2] In contrast, the Vizcayan mines set the stage for a sustained period of economic growth, making the Basque province the main centre for heavy manufacturing within the country.

1. Customary Rights and Early Exploitation of the Vizcayan Mines.

Despite their many centuries of exploitation, little is known about the property system and the methods of extraction used in the Bilbao mines prior to the late eighteenth century. This lack of knowledge seems to be a direct result of the scarcity of sources available. The few extant documents do not deal primarily with the issues of property and methods of exploitation. Written laws, which usually provide basic information on these matters, were not enacted in the Vizcayan case until the early nineteenth century. Before that, customs ruled the mines. Yet, like the ore extracted from the mines, those unwritten rules left traces after they were uprooted. It is through these traces that the early history of the mines must be recreated.

A factor that singled out the Vizcayan mines from other Spanish mineral deposits was that they did not belong to the Crown. In other provinces, where Castilian laws were fully enforced, mines could only be exploited by private individuals through royal concessions. In Vizcaya, however, the preservation of local provincial laws known as *Fueros* reserved the right to exploit the region's minerals exclusively to its inhabitants, without the need of royal permits. This situation persisted until 1841, when, due to the weakening of the *foral* system after the first Carlist war, the mines came under the jurisdiction of the national Spanish laws.[3]

The earliest indication of mine ownership seems to date back to the fifteenth century. At that time, a family of feudal chieftains. the Salazars, apparently derived their control of the *Triano-Somorrostro* mines from their ownership of vast extents of land in that region.[4] It is unclear how the mines were exploited during this period, but by the sixteenth century, a lawsuit against

[2] For example, Southern Spain was endowed with rich mercury and copper mines which were exploited by foreign companies, and small units of exploitation plagued its lead deposits. In these cases the natural resources did not lead towards the industrialization of the region. See J. Nadal, *El fracaso de la revolución industrial en España,* (Barcelona, 1977), pp 87-116.

[3] M. Gonzalez Portilla mentions that the central government issued a decree ordering the application of the national mining legislation to Vizcaya in 1830. It is doubtful, however, that this decree was enforced. See *La formacion de la sociedad capitalista en el Pais Vasco,* (L. Haranburu, San Sebastian, 1981) p. 24.

[4] See J.A. Garcia de Cortazar, *Vizcaya en el siglo XV. Aspectos económicos y sociales,* (Ed. Caja de Ahorros Vizcaina, Bilbao, 1966), p. 143; Julio Caro Baroja, *Los Vascos,* (Madrid, 1984) p. 185; and Lucas Aldana, «*Descripcion* de la mina de hierro de Triano,» *Revista minera, metalúrgica y de ingenieria,* 1851, p. 307.

the Salazars demonstrates the direct involvement of other persons in the extraction and transport of ore.[5]

It is not known exactly when the Salazars lost control of their mines, but according to local traditions, they sold the mountains of Triano to the municipalities of the Three and Four Councils of Somorrostro for 14,000 ducados.[6] Whether the tradition is wholly accurate or not, the municipal governments did preserve the ownership of those lands until at least the early nineteenth century. Despite what was probably a long period of communal ownership of those lands, the councils do not seem to have obtained any direct benefits from the mines. They apparently did not collect any taxes or rents derived from the extraction of ore. Nevertheless, through the ownership of the land, they reserved access to the mines exclusively to the neighbours of the Somorrostro Valley.[7]

The communal ownership of the surface land did not imply a collective exploitation of the mines. Local customs granted the discoverer of a mine the exclusive right to exploit it for an indefinite period of time. However, the person could forfeit his rights if the mine remained idle. According to local customs in Northern Navarre, it was enough to work a mine one day per year to preserve the rights to it. Yet, since this led to abuses, by the middle of the eighteenth century, the minimum period of work was extended to a month per year.[8] Similar practices were enforced in Vizcaya, as Wilhelm Humboldt remarked at the beginning of the nineteenth century.[9]

A more detailed discussion of the customary practices regulating exploitation rights was given by Fausto Elhuyar, a professor of mineralogy who visited the Somorrostro mines in 1782. Elhuyar was struck by the facility with which any neighbour of the Somorrostro Valley could obtain rights to the local mines. He stressed the fact that only the native population of the Valley could enjoy use of the mines, «without any distinction among them, all being free to extract the

[5] Garcia de Cortazar, p. 426.

[6] Aldana, p. 307.

[7] Igancio Goenaga, «El hierro de Vizcaya», *Revista minera,* 1883, p. 297. Also Aldana, p. 307; and Fausto Elhuyar, «Estado de las minas de Somorrostro», first published in 1783 and reprinted in *Revista de trabajo,* no. 21 (1968), p. 101. The restriction must have been informally enforced (i.e., no written edict or municipal law backed it), since it contradicked the disposition of the *Fuero* guaranteeing the right to exploit the mines to all Vizcayans.

[8] Julio Caro Baroja, p. 186.

[9] Wilhem Humboldt, the German scientist and indefatigable voyáger, visited the mines in 1801. See *Guillermo Humboldt y el Pais Vasco,* (Imprenta de la Diputacion de Guipuzcoa, S. Sebastian, 1925), p. 249.

ore wherever and however they pleased...» [10] Although such comment seems to deny the existence of any sort of private rights to exploit the mines, Elhuyar went on to distinguish three kinds of exploitations: one in which the proprietors themselves worked the mine they owned; another in which owners and day-labourers worked side by side; and a third in which the mine was partly or totally rented out by its owners. [11] Clearly, there was some form of private appropriation of the subsoil, and the rights involved in such appropriation were broad enough to permit the rental of a mine. However, since it is not known how the mines were demarcated, it is difficult to determine how the owners' rights were enforced. According to Ignacio Goenaga, custom regulated that the entrance to any new mine should be dug at least five *brazas* (8.36 metres) away from the adjoining ones. Since it was not clear what procedures were followed to measure that distance, Goenaga speculated that each mine must have formed a circle with an 8.36 metres radius and a surface of approximately 220 square metres. The borders of the mine, however, were not projected vertically toward the interior of the mountain. Curiously, the miners had the right to continue their galleries in any direction and even beyond the surface boundaries. [12] If during the course of the excavations two mines happened to meet, the miners had to backtrack 17 metres and renew their diggings in a perpendicular direction to the old gallery. Similarly, if the gallery of one mine was dug on top of another mine, the owner of the top one had to back away and continue his work in another direction. [13] According to Humboldt, these customary rules created uncertainty over mining rights, preventing investment in this activity. [14]

In the 1780s, there were approximately 120 active mines in the Somorrostro district. Elhuyar did not mention which of the three kinds of exploitation was the most common. However, since he emphasized the easiness with which the local population could obtain a mine, it is hard to imagine that the number of day-labourers or renters was significant. Four or five persons worked in each mine. [15] In general, these miners were peasants who complemented the meagre resources of their fields by extracting ore in the agricultural off-season. Mining was usually carried on during the spring and summer, but even then, it was not a full-time occupation. In fact, one of Elhuyar's suggestions to improve what he considered a slack mining production was to double the working hours. Yet, the problem of the Vizcayan mines at that time was not the short work-day, but the weak demand for ore.

Only the purest kind of ore, the *vena,* was extracted to supply the *ferrerías* of Vizcaya and the neighbouring provinces. [16] In order to protect the local

[10] Elhuyar, p. 101.
[11] Ibid., p. 102.
[12] I. Goenaga, p. 298.
[13] Ibid., p. 298; and Humboldt, p. 249.
[14] Humboldt, p. 249.
[15] Elhuyar, pp. 101-102.

industry, the *Fueros* strictly forbade the export of ore to foreign countries. According to historians Emiliano Fernandez de Pinedo and Luis Ma. Bilbao, in the 1780s, the Vizcayan *ferrerias* produced annually up to 7,000 tons of iron. The ratio of ore needed to produce a ton of metal was approximately 3:1. Hence the annual needs of the Vizcayan iron producers may be estimated as 21,000 tons of ore. In addition, the neighbouring provinces required approximately another 20,000 tons for their *ferrerias.*[17] Consequently, the total demand for ore hovered around 41,000 tons.

Since four or five persons worked each of the 120 active mines of Somorrostro, the total work force ranged between 480 and 600 men. According to Elhuyar, the daily production of each of those miners averaged 15 *quintales machos* (1 quintal = approximately 46 kilos).[18] Thus the total daily production oscillated between 331 and 414 tons. Since the mines were worked only from mid-May to the end of September, they could only have been opened for a maximum of 135 days. Assuming that only 110 of those 135 days were work-days, the miners produced somewhere between 36,400 and 45,500 tons per year.

Therefore, even working short hours, the miners could produce enough to satisfy the demand of their only client.[19] It cannot be argued that if the *ferrerias* had had more ore at their disposal, they could have produced more iron. In fact, during the 1780s the output of the *ferrerias* reached a peak never again achieved until the mid-nineteenth century. Indeed, the production levels achieved during the 1780s were almost halved during the first third of the nineteenth century.[20]

Nevertheless, even if the pull of the demand for ore had been stronger, there existed important barriers against major increases in mining production. For instance, transportation was a serious bottleneck. Not only did the roads become useless in winter due to the heavy rainfalls, but also the limited agricultural resources of the region were not enough to feed a large number of draft animals needed to convey the ore from the mines to the piers and the *ferrerias.* Furthermore, until the early nineteenth century, the local officials, believing that mining subtracted human and animal resources from agriculture,

[16] *Ferreria* was the name given to the Spanish iron-works where the ore was smelted and then forged. See E. Fernandez de Pinedo, «From the Bloomery to the Blast-Furnace: Technical Change in Spanish Iron-Making (1650-1822)», *Journal of European Economic History*, vol. 17, (Spring 1988).

[17] E. Fernandez de Pinedo and Luis Ma. Bilbao, «Auge y crisis de la siderometalurgia tradicional en el Pais Vasco (1700-1850)», *La economia española del Antiguo Regimen. II. Manufacturas*, Pedro Tedde (ed.), (Alianza editorial, 1982), pp. 170; 216, and 224.

[18] Elhuyar, p. 102.

[19] Moreover, the above calculation does not take into consideration the production of other mining districts within Vizcaya. Yet, it is likely that other areas also supplied ore to the *ferrerias*.

[20] Pinedo and Bilbao, p. 224.

limited the number of animals that each miner could have, and restricted their use in the mines to the spring and summer months.[21]

In addition, all observers agreed that the mines were exploited in a chaotic way. Humboldt's remarks in this sense were devastating: «Nowhere is mining practised with less skill than here. Peasants, who do not have the slightest clue of this activity,... and who cannot be called miners ... dig holes haphazardly, strike the mineral at hand with their picks, and after they have worked a certain time and the hole has an uncomfortable depth, or water has become a problem, they abandon the site, and dig a new hole, as haphazardly as before».[22] Ironically, the failure to undertake a methodical exploitation was in part due to the richness of the Vizcayan deposits, which almost guaranteed that no matter where the miners dug, they would strike iron. As a result of the poor extracting methods, the face of the Triano region turned into something akin to a battlefield, criss-crossed by trenches and dotted with craters.

Although mining had always been one of the most important economic activities of Vizcaya, its profit margins prior to the export boom were meagre. Elhuyar remarked that «there is little or no distinction at all between the mine-owners and the day-labourers as far as the earnings that they obtain from these works...» (Elhugar, p. 102). Indeed, the Bilbao merchants involved in the iron trade reaped the highest profits of this activity. Their predominance was based on their control of all the markets available for the Vizcayan ore. According to historian Manuel Gonzalez Portilla, during the early eighteenth century, the merchants dominated the production of the *ferrerias* through the putting-out system.[23] Actually, Portilla's description does not correspond to the classical putting-out system in which merchants directed manufacturing processes by buying raw materials and farming them out to artisans who produced goods for the merchants at a fixed rate. In Vizcaya, the merchants gained control of production by acting as bankers to the *ferrerias*. According to the *Fuero*, the merchants could not buy ore and re-sell it to the *ferrerias*, a provision that had been included in the provincial code precisely to avoid the iron producers' dependence on intermediaries or speculators.[24] Nevertheless, the merchants escaped the prohibition by giving the manufacturers credit to buy the ore themselves, and instead of being repaid in cash, they were given iron goods to cover the loans. A handful of merchants came to dominate these

[21] Rafael Uriarte Ayo, «El tráfico maritimo del mineral de hierro vizcaino (1700-1850), «*Historia de la economìa maritima del País Vasco*, (several authors, Editorial Txertoa, S. Sebastian, 1983), pp. 154-58.

[22] Humboldt, pp. 249-50.

[23] M. Gonzalez Portilla, «La industria siderúrgica en el País Vasco: del verlangssystem (sic) al capitalismo industrial», in *Crisis del antiguo regimen e industrialización en la España del siglo XIX*, M. Tuñón de Lara, A. Gil Novales, David Ruiz, et al. (eds.), (Editorial Cuadernos para el dialogo, Madrid, 1977), pp. 117-181.

[24] Aldana, p. 508.

practices, so there was little competition to lower the interest rate of the loans. In addition to their tight control of the internal market, the merchants practically monopolized the export of ore to other provinces, since Vizcayan authorities imposed restrictions on outside traders. [25] Thus the merchants' command of the iron trade did not require direct investment in either the mines or the *ferrerias*. Only when mine-property rights were tightened through legislation and restrictions on the export of ore to foreign countries were lifted, did the mines become a more attractive investment for the merchants.

II. The First Steps toward the Regulation of the Mining Industry

The first Vizcayan mining law dates back to 1818. It tried to formalize some of the customary practices that had regulated the sector for centuries. Its primary concern was to introduce some order into the chaotic situation of the mines. Yet, its strong reliance on tradition apparently defeated that purpose. [26]

The 1818 law continued to grant Vizcayans the exclusive right to exploit the mines. It increased the size of each mine from the traditional limits cited by Goenaga. Still, the law was not explicit about the demarcation of the boundaries of a mine, but again one may speculate that they formed a circle with a centre at the entrance of the gallery, and with a radius of 33.5 metres. The right to dig in any direction beyond the superficial boundaries of the mine was maintained. Provisions to separate galleries from adjoining mines also seemed to have been based on customary usage, since they resembled the ones described above. To avoid accidents, the law allowed local officials to survey the exploitations, giving them the power to close down those mines where safety was endangered. Also for security reasons, the new legislation banned night work and forbade the extraction of ore during the winter months, establishing a mining season that went from mid-May until the end of September. An important innovation of the law was the prohibition of holding more than two mines at a time. Finally, the rights to a mine were guaranteed as long as it was worked at least two months every year. [27]

The 1818 law was ambiguous on two key points. First, it was unclear whether

[25] Uriarte, «El tráfico marítimo...», p. 137.

[26] A copy of the law in the *Actas de las Juntas Generales del Señorío de Vizcaya,* 1818, pp. 17-23, in the Historical Archive of the Diputacion (henceforth: A.H.D.V.).

[27] Given these restrictions and the law's reliance on tradition, it is impossible to agree with historian R. Uriarte Ayo who claimed that «... the law favoured an early process of concentration of the exploitations, and above all it offered minimum legal guarantees for those who tried to establish new labour arrangements...» See his «La minería vizcaina del hierro en las primeras etapas de la industrialización», *La industrialización del norte de España,* (Barcelona, 1988), E. Fernandez Pinedo y J.L. Hernandez Marco (eds.), p. 163.

it applied to proprietors whose exploitations preceded the enactment of the law.[28] The issue of retroactivity seemed to have been particularly significant in relation to the maximum limit of two mines per owner. Second, there was no indication of how one had to proceed to obtain the concession of a mine. Nor was there any mention of a property register. Consequently, the enforcement of property rights and the two-mine rule must have been plagued with difficulties.

The two-mine rule was especially controversial. The reason for its inclusion in the legislation was straightforward: to spread ownership among a large number of people. Immediately after its enactment, the official in charge of the supervision of the mines launched a two-pronged attack on the rule. First, he argued that the cap would jeopardize prospecting activities, since it would create complacency among two-mine owners who, satisfied with their lot, would be unwilling to run the risk of opening a new mine that might not be as good as the ones they already possessed. Second, there was no need for the limitation because historically the mines had never been concentrated in the hands of a small group of owners.[29]

Although the complacency argument had a strong logic behind it, the historical reason was rather weak. The fact that the provision was included in the law may indicate that the traditional situation regarding mine-ownership was changing. In the long run, had the provision been effectively and continuously enforced, it would have prevented the concentration of ownership that did take place during the 1840s and 1850s. In the 1820s, however, such concerns seemed premature, since the slump in the Vizcayan iron industry and export restrictions discouraged, perhaps more effectively than the law itself, investment in the mining sector.

The 1818 law was an important first step in trying to regulate the mining sector. Yet, it was immediately apparent that the legislation had many shortcomings. Realizing this, the provincial authorities abrogated the law shortly after its approval, and appointed a commission in 1824 to draft a new version. As the commission started its proceedings the Spanish Crown enacted a mining code in 1825. The royal code reaffirmed the principle of the Crown's ownership of the country's mineral resources. Since this principle was contrary to the *Fuero*, the Vizcayan government vetoed its application within the province. Despite the veto, the new Vizcayan mining law of 1827 drew heavily upon the royal legislation, adopting most of its provisions, except the principle of royal ownership.[30]

[28] See the 1825 complaint of Jose Chavarri, a mine-owner, in the Archive of the House of the Juntas at Guernica (henceforth A.C.J.G.), higher section, Mines, Reg. 3, Leg. 4, n. 2.

[29] A.C.J.G., Higher Section, Mines, Reg. 3, Leg. 4, n. 1.

[30] Manuel Montero, p. 146. Also Uriarte, «La mineria vizcaina...,» p. 164. The latter justifiably criticized Gonzalez Portilla who unexplicably claimed that the provincial code was inimical to private enterprise and thus contrasted with the national law which

The 1827 law was more precise than its 1818 predecesor. It included detailed instructions on how to obtain the rights to a mine. Claims had to be registered before the secretary of the Vizcayan provincial government. After officials surveyed the field and the claim was approved, the registration served as a property title. The law established that each mine would form a rectangular figure of 20,000 square varas (approximately 14,000 square metres). Contrary to the 1818 law, all the excavations had to be carried on within that rectangle which received the name of *pertenencia.* The old mines maintained their size as long as they did not exceed 20,000 square varas, but had to be demarcated anew to establish their boundaries. The two-mine rule was preserved; however, some significant exceptions were allowed, the most important being that no limit was applied to the number of mines that could be acquired through purchase, donation, or inheritance.

The mining concessions were granted for an indefinite amount of time, so long as the owners fulfilled the obligations established by the law. The main obligation was to keep the mine active every year. If the mine was left idle for four continuous months or for a total period of eight non-consecutive months during one year, then the owner would lose his rights to it. Contrary to the old legislation, the 1827 law permitted the exploitation of the mines during the whole year without interruption. Finally, several provisions to protect the local iron industry were included. For instance, the ban on the export of ore to foreign countries was preserved, and the *ferrerías* were granted the right to be a preferential buyer (i.e., they had priority over other purchasers to any shipment of ore).[31]

Probably, the most important innovations of the 1827 legislation were the creation of something akin to a register, which should have permitted an easier enforcement of property rights, and the idea of bounded mines, whose limits could not be trespassed through underground diggings. These regulations set the legal framework for more orderly mining practices. Yet, century-old customs die hard; consequently, it is not surprising that although the law was enacted, it took a long time before it could be enforced.

By the time the new law was enacted, the situation of the mines remained similar to the conditions described by Elhuyar fifty years earlier. According to a report prepared by Gregorio Gonzalez Azaola for the Vizcayan government, neither the number of workers (400 men) nor the annual production (approximately 40,000 tons) had changed by 1827.[32]

encouraged «a capitalist exploitation of the subsoil». For Portilla's comments on the laws see his op. cit., vol. 1, p. 23.

[31] The text of the law is in A.H.D.V., *Actas de las Juntas Generales del Señorío de Vizcaya,* 1827, pp. 28-47.

[32] The report entitled «Memoria sobre las minas de hierro de Somorrostro propias del M.N. Señorío de Vizcaya», and dated 3/19/1827 is in A.C.J.G., Higher Section, Mines, Reg. 1.

Despite the stagnant production levels, a subtle change was taking place during those fifty years. Azaola recorded the more direct involvement of the iron merchants in the exploitation of the mines. Singling out the names of Ibarra, Mier, Chavarri, and Llano as those of the biggest ore traders, Azaola mentioned them too as the owners of the only systematic exploitations in Somorrostro that deserved to be called mines. Curiously, a few months after the report was written, those four traders formed a partnership under the name Ibarra Mier and Co.[33] The creation of this company constituted a landmark in the history of Vizcayan mining. During its early years, its domination of the ore trade was so overwhelming that it came close to being a monopoly.[34] From the late 1820s to the 1840s, Ibarra Mier and Co. functioned primarily as a commercial company, specialized in the trade of ore and iron manufactures. An 1849 balance sheet listed assets for a total of 10,330,000 *reales,* but of that figure, only 37,300 were invested in mines and tools for the extraction of ore.[35] Nevertheless, the last sum is deceptive, reflecting not their true worth but the still low valuation of the mines. Table 1 shows that the company already owned several mines in the Somorrostro Triano region in 1849.

Most of the mines seem to have been recently acquired. In 1840, Ibarra Mier and Co. stated to the Vizcayan government that it possessed just three mines, only one of which, the Orconera (acquired by Mier in 1813), was in the 1849 list. The company also declared to the provincial government its ownership of shares in two other mines in Berdoza, in the Triano district.[36] In 1840, such a statement showed that the firm complied with the property regulations in the Vizcayan law. By 1849, the number of mines that the company owned had increased by a factor of three. Very few of those mines were bought; the majority were discovered and registered directly by the company. Ibarra Mier and Co. had perhaps under-reported its holdings in 1840 to comply with the law. On the other hand, many of the mines could have been registered during the 1840s, as the national Spanish government took over the jurisdiction of the Vizcayan mines. Most likely, a combination of both possibilities took place.

[33] The partnership contract was found in the Historical Provincial Archive of Vizcaya (henceforth cited as A.H.P.V.), among the protocols of the notary Josef Joaquin Barandica, L. 3266, 11/22/1827. By the 1840s, after the departure of Chavarri and Llano, the company became a two-family affair involving the Ibarras and Mier and his relative Jose Gorostiza. See A.H.P V., Valentin Uribarri, L. 3719.

[34] Between 1829 and 1842, Ibarra Mier Co. accounted for almost 75 per cent of all the ore exports from Bilbao's harbor. See R. Uriarte, «El tráfico marítimo...,» table 9, p. 179.

[35] The balance sheet figures are taken from Gabriel Maria Ibarra's unpublished paper on Jose Antonio Ibarra's estate. Ibarra family archive.

[36] A.C.J.G., Higher Section, Mines, Reg. 3, L. 1, no. 6-3.

Table 1
Mines Owned by Ibarra Mier & Co in 1849

Mine's site	*Valuation* (in reales)
Orconera	1,500
Cayuela in la Cerrada	12,000
Plazuela	1,000
Barga	6,000'
Bomba Vieia	1,500
Bomba del Cadegal	1,500
Primavera y Otono in Tarresuela	1,000
San Benito in Los Castanos	1,500
Blanca	1,200
Pasadiza	750
	27,950

In addition, they owned shares in several other mines:

25% of a mine in La Cerrada	1,000
50% of a mine in La Cerrada	600
33% of a mine in La Plazuela	1,700
40% of a mine in La Bomba	1,500
37,5% of a mine in Fuente Fria	2,000
20% of a mine in Los Cobachos	1,500
50% of a mine in El Cadegal	400
	8,700

Source: Ibarra family archive. Gabriel Maria Ibarra's unpublished paper on Jose Antonio Ibarra's estate.

Contemporary observers commented that the national authorities applied the mining legislation more zealously than the provincial officials.[37] Theoretically, the most important innovation implied in the change of jurisdiction was that the Vizcayans could not continue to enforce their monopoly on ownership. Yet, in practice, this privilege was not seriously challenged during the 1840s and 1850s; and the mines remained under the control of local owners.

Despite the national officials' interest in demarcating the mining space according to the 20,000 square *varas* prescribed by the law this enclosure

[37] L. Aldana, p. 309.

process was slow. The mines were so close to each other that to divide the space in neat rectangular boxes was an impossible task without merging and redistributing exploitation rights. To complicate matters even further, at least during its early years, the change of jurisdiction itself created new problems and confusions. Some individuals claimed property rights over mines to the national authorities, even though those mines had been previously registered with the Vizcayan government. Such was the case of Jose Ignacio Ustara and Ramon Maruri. The former had registered the San Agustin mine with the provincial authorities, while the latter, years later, did the same with the Spanish central government.[38]

Due perhaps to these uncertain conditions and the protracted decay of the *ferrerias*, the production of the mines never remotely approached its peak at the end of the eighteenth century, when it had reached the one million quintals level. The anaemic state of the trade is clearly shown in Table 2. Under these circumstances, and despite the efforts of the provincial and national governments to promote a more rational exploitation of the deposits, large areas of the Triano district still remained unclaimed.

Table 2
Vizcayan Ore Production, 1840-1848

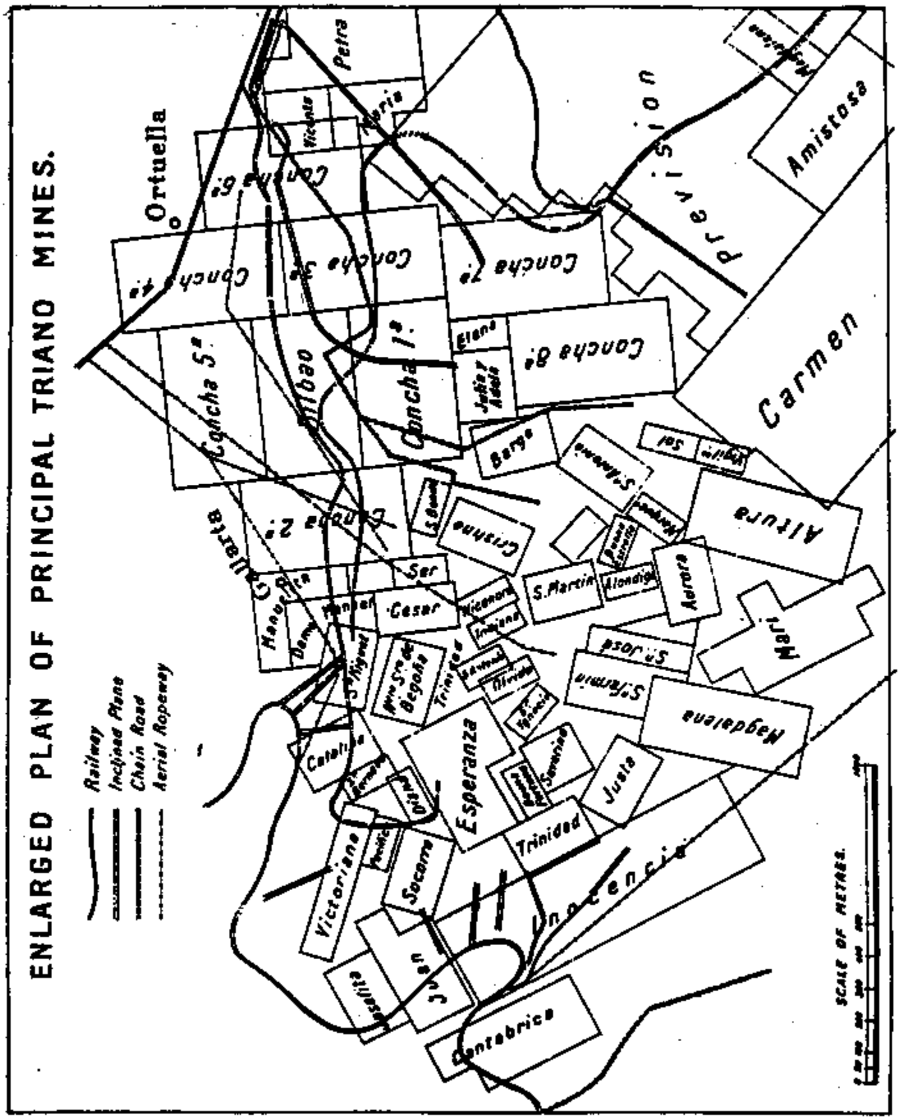
Year	*Production* (in quintales)
1840	484,256
1841	470,410
1842	540,369
1843	540,134
1844	528,454
1845	523,682
1846	535,558
1847	531,986
1848	524.974

Source: Lucas Aldana, «Descripción de la mina de hierro de Triano», *Revista minera*, 1851, pp. 365-68.

III. The Concentration of Mine Ownership in the Triano-Somorrostro Region

In 1849, two legal developments shook the Vizcayan mines out of their lethargy. First, a new mining code was enacted, permitting larger units of exploitation. Second, the prohibition on the export of ore was abolished.

[38] A.C.J.G., Higher section, Mines, Reg. 2, L. 2, no. 2.



Source: William Gill, "The Present Position of the Iron Ore Industries of Biscay and Santander," *Journal of Iron and Steel Instituts,* no. 2, 50, (1896) The new mining legislation and the zealous enforcement of its regulations created the most important changes in the property structure of the mining region. In the 1850s, a large section of the Somorrostro-Triano district was demarcated according to the new laws and ended up in the hands of a few individuals. Such development was not devoid of difficulties. Law-suits and complaints were part and parcel of a process that was akin to the enclosure of lands in England in the eighteenth century. In many cases, mines came to resemble Chinese boxes in which earlier claims came to be included in later ones.[39] Although it dates from a period when most of the suits had been settled, the map on the next page still shows the proximity of the mines to each other, the pell-mell orientation of the *pertenencias*, and the difficulty involved in demarcating them.

Among the complaints that survived in the Vizcayan archives, two by some residents of the Somorrostro Valley show the other side of the process of ownership concentration: the proletarianisation of the peasant-miner. Dated 30 April, 1850, one of the complaints stated: «During other not so distant times the neighbours of the Seven Councils were less unhappy because they obtained a livelihood from the mines in Mount Triano, but today the majority is deprived of this livelihood because a few mines, registered according to the special royal mining legislation, have occupied the whole mountain». The document ended with a petition to the Vizcayan authorities to annul the registration of those mines. The second complaint, dated July 1859, sheds some light on the means used to gain control of the mines: «...under the shadow of stipulations that regulated the exploitation of the mines, monopoly was developed and nurtured, since a few with knowledge of the bureaucratic processes, which for the people in general are incomprehensible, took over the very best of the immense iron wealth hidden in the Triano Mountains, Somorrostro, etc.»[40]

In addition to the mining laws which figured as the main reason for the woes of the peasant-miners in both complaints, the renewed interest in the mines during the 1850s was due to the liberalization of the iron trade in 1849. The opening of new markets must have created a rush to acquire mines and take advantage of an expected export boom. By 1850, approximately thirty per cent of Ibarra Mier and Co. shipments of ore went to French ports.[41] In fact, France

[39] For instance, the Ibarras came to an agreement with Francisca de los Heros over the Concha mine which included within its perimeter Heros' Rosita mine. A.H.P.V., Felix Uribarri, 1883, no. 73, pp. 312327. Another example is the law-suit that Juan Duranona pressed against Jose Gorostiza and Francisca de los Heros over the Cesar mine. Durañona claimed that the registration of this mine had overlooked his rights to the Castaños mine. A.C.J.G., Higher Section, Mines, Reg. 2, L. 3, no. 5.

[40] Both complaints in A.C.J.G., Higher Section, Mines, Reg. 3, L—. 2, no. 6; and Reg. 2, L. 6, no. 9.

[41] The percentage was calculated from a set of receipts for shipments during that year in the Ibarra family archive.

became the major foreign customer of Vizcayan ore during the 1850s. Unfortunately, the only statistics available for the period do not indicate volume, but only the value of this trade. Although it is perilous to infer production increases from statistics that record value, it is likely that the abrogation of the ban on exports boosted the Vizcayan mining industry. However, as the figures in Table 3 show, the exports quickly reached a plateau.

Table 3
Value of the Vizcayan Ore Export Trade

Year	*Value* (in francs)	*% of Total Bilbao Exports*
1849	110,000	1.1
1850	205,000	1.8
1851	360,000	2.7
1852	322,000	1.6
1853	340,000	1.5
1854	410,000	1.7
1855	368,000	1.0
1858	285;000	1.2
1859	353,000	1.4
1860	385,000	1.4

Source: French Consular Reports from Bilbao, Archive du Ministere des affaires etrangères, Correpondance commerciale consulaire, 1851-1860, tome 7.

Even at its peak in 1854, the ore trade only represented a tiny fraction of the total exports from Bilbao harbour. In fact, during the mid-1850s, the prosperity of the port was primarily based on the export of flour and grains, which notably increased due the Crimean War, and bad harvests in other European countries. Although the situation was improving for the mine owners, the years of real abundance would not come until the 1870s when the international demand for the Vizcayan ore achieved unprecedented proportions. [42]

[42] In 1861, the mines produced 55,000 tons; in 1871, production reached 400,000 tons; in 1881, it increased to 2.6 million tons; in 1891: it continued to grow to 3.8 million tons; and in 1899, an all-time peak of almost 6.5 million tons were extracted. The figure for 1861 was taken from A. Pourcel, «Mines de fer de Bilbao», *Le Genie Civil,*

In the meantime, the concentration of ownership in the Triano-Somorrostro district continued relentlessly. An 1861 list revealed that there were seventy active mines in the region, owned by 45 different companies or persons.[43] Actually, the number of owners was smaller, but this fact was masked by the use of front-men in the registration titles. In many cases, it was merely an employee of the real owner(s) who appeared in the title; in others, only the name of one of several owners was used in the registration. A more accurate picture of the distribution of mining concessions emerges after studying notarial documents. Eventually, to clarify property rights the person who had registered a mine for others would say so in a written statement before a notary

Why was the use of front-men necessary? The mining laws of 1849 and 1859 still set limits on the area that one company could register within a given mineral deposit. Only the liberal law of 1868 did away with those limits. Yet, before this law was enacted the large mine proprietors could easily circumvent the spirit of the law by using front men. For example, although Ibarra-Mier and Co. only appeared to possessed four mines in the 1861 list, the company actually owned twenty (slightly more than 28 per cent of the total). Their other mines were listed under the following names: Ibarra Hermanos, Jose Gorostiza, Sebastian San Martin, Ramon Castano, Leonardo Zuazo, Matias Salcedo, and Francisco Recalde.[44] Not all of those twenty mines were fully owned; some were shared with other proprietors. Eventually, Ibarra-Mier and Co. acquired a larger number of mines in the district through purchases and boundary deals with owners of adjoining mines. By 1880 Ibarra Mier and Co. had property rights over the mines listed in Table 4.

Fifteen of the 32 mines listed in Table 4 were registered or claimed before 1860.[45] Interestingly, only three appeared to have been registered prior to 1849. It has been shown, however, that the company did own many mines before that date. Yet, since their official demarcation probably did not occur until the late 1840s and 1850s, their dates of registration reflected this fact. As the successive laws permitted the ownership of larger mines, Ibarra Mier and Co. expanded many of their holdings. Thus a mine like the Orconera which the

6/4/1887, p. 73. The other figures in V. Garcia Merino, *La formación de una ciudad industrial. El despegue urbano de Bilbao*, (Bilbao, 1987), p. 504.

[43] The list is reproduced in an appendix at the end of the paper.

[44] The documents that support this were registered by the notary Serapio de Urquijo in L. 6256, no. 429; L. 6243, no. 216-217; L. 6240, no. 4; L. 6239, no. 352 and 379; L. 6238, no. 197; by the notary Miguel Castañiza in L. 6041, no. 100; by the notary Calixto Ansuategui, L. 6291, no. 66; and by the notary Felix Uribarri in his book of protocols for the year 1885. no. 389-390, pp. 1764-1869.

[45] The number is actually greater if one considers that the Buena Fortuna, Catalina, Esperanza, Indiana, Perseguida, San Miguel and Trinidad were all included in the 1861 list cited before.

Table 4
Mines Owned by Ibarra Mier & Co.ca. 1880

Mines	Date Registered	% Owned	Area (m^2)
Altura	1864	100.00	130,095.00
Alhondiga	1849	100.00	13,974.00
Barga	1849	100.00	41,924.00
Bilbao	1869	50.00	150,000.00
Buena Fortuna	(?)	30.00	13,974.00
Carmen	1864	100.00	1,200,000.00
Catalina	(?)	12.50	41,924.00
Cesar	1860	50.00	37,312.00
Concha	1848	100.00	1,200,000.00
Cristina	1853	50.00	41,924.00
Despreciada	1848	100.00	18,591.00
Esperanza	(?)	40.00	159,784.00
Indiana	(?)	36.00	13,974.00
Magdalena	1852	100.00	53,317.00
Mingolea	1872	100.00	60,000.00
N. Sra. Begoña	1860	50.00	58,049.00
Olvido	1865	100.00	13,974.00
Orconera	1849	100.00	1,050,000.00
Perseguida	(?)	100.00	(?)
Presentacion	1871	50.00	(?)
Prevision	1864	100.00	2,290,000.00
Rubia	1864	100.00	300,000.00
San Antonio	1845	50.00	40,456,00
San Benito	1848	100.00	13,974.00
San Bernabe	1849	100.00	13,974.00
San Ignacio	1849	50.00	40,799.00
San Martin	1854	100.00	34,516.00
San Miguel	(?)	16.66	51,924.00
Ser	1847	50.00	33,732.00
Socorro	1852	10.00	41,924.00
Trinidad	(?)	20.86	27,652.00

Source: A.H.P.V., s. Urquijo L. 6256, no. 425; and F. Uribarri, protocols for 1885, no. 389 and 390.
Ibarra Family Archive, reports prepared by Pedro Celis in 1895 and 1898.

Note 1: The time between the claim and the registration of a mine was sometimes long. When available, the claim date was used in the column to indicate the earliest date of control of the mine.

Note 2: In Celis' report, the Ibarras appeared as owners of the Parcocha and Union mines. Their share of the Parcocha appears to have been contested, and it is doubtful that they obtained any gains from this mine. As for the Union, no other source consulted listed their ownership of this mine; it is strangely absent, for instance, from the inventory of the estate of Juan Maria Ibarra, which listed all the other mines.

company owned practically from the beginning of the nineteenth century came to occupy an area of more than one million square metres. [46]

In addition to Ibarra Mier and Co., by far the largest mine-owner of the region, the 1861 list included other proprietors who had been also active in the iron trade since the early nineteenth century: Juan Durañona, Pedro de la Bodega, Jose Arana, Jose Chavarri, and Jose Antonio Ustara. [47] It is hard to determine exactly how many mines these five persons actually owned in 1861. Once again, the registration procedures clouded this issue. For instance, the mine Julia, listed only under Bodega's name, was actually co-owned since 1855 with Jose Arana. [48] Similarly, Jose Chavarri, who only had two mines listed under his name, also owned half of the mine Justa, a third of the Josefita, and a fourth of the Diana. [49] Nevertheless, the mines listed under the name of those five owners and the twenty mines that belonged to Ibarra-Mier accounted for half of the active exploitations in 1861.

Next to those large proprietors, the 1861 list still featured a fair number of small owners, who had managed to maintain their rights to mines which they probably exploited themselves. This group, however, dwindled until it almost disappeared by the 1870s. Unfortunately, since many of these small owners sold their mines prior to the export boom, they missed the opportunity to obtain higher prices for their property. The appreciation in the value of the mines between the 1860s and 1880s can be illustrated with the example of the mine San Fermin. Sold in 1861 to Alejandro de la Sota for 2,666 *reales,* it was purchased in 1867 by Cirilo Ma. Ustara for 8,000 *reales.* In 1880, Ustara leased the mine to a British company for a lump sum of 6,750 pounds (around 675,000 reales) and a royalty of 3.5 *reales* per ton of ore extracted. [50]

Not just the small owners sold their mines prior to the export boom. For instance, Jose Chavarri bought all of Pedro de la Bodega's concessions during the 1860s. [51] All these sales concentrated mine ownership even further. Table 5 shows the distribution of property rights circa 1880 of some of the most important mines in the Triano-Somorrostro area.

[46] Size is therefore an imprecise variable to figure out the period of registration of a mine. Not only were mines like the Orconera and Concha expanded several times, but others, like the Olvido, had areas smaller than the maximum allowed by the law at their time of registration. As a result, Manuel Montero's analysis of the chronology for the ownership of the mines is clever, but somewhat flawed. See his «La mineria de Vizcaya en el siglo XIX,» pp. 148-151.

[47] These same names appeared as ore traders during the early nineteenth century in a list published by Rafael Uriarte in «El tráfico marítimo...,» pp. 179-181.

[48] A.H.P.V., Miguel Castaniza, L. 6076, no. 181. Arana and Bodega had bought the mine in 1855 for 2,000 reales from Jose Villota.

[49] A.H.P.V., Ricardo Vildosola, L. 6661, no. 6-7; L. 6662. no. 44.

[50] A.H.P.V., Pedro Goicoechea, L. 5986, no. 21; and Julian Ansuategui, L. 5976, no. 380.

[51] A.H.P.V., Miguel Castañiza. L. 6076, no. 181.

Table 5:
Distribution of Property Rights
of Most Important Mines in Triano-Somorrostro Area.
(Figures indicate percentages)

Mines	Ibarra	Chavarri	Ustara	Arana	Amezaga	Bellido	Allende	Total
Adela		50.00						50.00
Altura	100.00							100.00
Alhondiga	100.00							100.00
Asuncion	50.00							50.00
Aurora		100.00						100.00
Barga	100.00							100.00
Bilbao	50.00							50.00
Buena Estrella		100.00						100.00
Buena Fortuna	30.00	8.30	15.00	10.00				
Carmen	100.00							100.00
Catalina		12.50		35.50	27.00			75.00
Cesar	50.00					50.00		100.00
Concha	100.00							100.00
Cristina	50.00		50.00					100.00
Despreciada	100.00							100.00
Diana		40.00						40.00
Esperanza	40.00		33.00	15.00			10.00	98.00
Indiana	36.00	32.00		32.00				100.00
Julia		50.00			50.00			100.00
Josefita		33.30						33.30
Justa	50.00						50.00	100.00
Magdalena	100.00							100.00
Mingolea	100.00							100.00
Nicanora			25.00				50.00	75.00
N. Sra. Begona	32.00	32.00		27.00				91.00
Olvido	100.00							100.00
Orconera	100.00							100.00
Pacifica		70.00		30.00				100.00
Rubia	100.00							100.00
San Antonio	50.00		25.00		25.00			100.00
San Benito	100.00							100.00
San Bernabe	100.00							100.00
San Ignacio	50.00	25.00						75.00
San Fermin			100.00					100.00
San Severino			25.00			50.00		75.00
San Miguel	16.60	32.00		8.30	24.60			81.50
Ser	50.00							50.00
Socorro	10.00	10.00		10.00			2.80	32.80
Sol			25.00		12.50	62.50		100.00
San Felipe		32.00						32.00
Trinidad	20.80							20.80
Victoriana		18.40						18.40

Source: A.H.P.V.

Table 6:
Percentage of Total Vizcayan Ore Production of the Mines in Table 5.

Year	No. of Active Mines	% of Totale Prod.
1880	29	79.%
1885	36	78.5
1890	37	65
1895	34	45
1898	36	43.5

Source: Trimestral reports published in the Official Bulletin of Vizcaya (B.O.V.)

Between 1880 and 1900, the mines that were actually exploited among those listed above represented close to seventy per cent of all the active concessions in the Triano-Somorrostro district. In addition, as Table 6 shows they accounted for an extremely high percentage of the Vizcayan total production. During the 1880s this group of mines represented about half of the total number of active concessions in the province, but their percentage in the total production was close to eighty per cent. Their decline in the share of the total Vizcayan production during the 1890s was due to two factors: their gradual depletion, and the increased production of the other Vizcayan districts. In fact, the 36 active exploitations in 1898 only represented 25 per cent of all the active mines in Vizcaya.[52]

Unlike the proprietors listed in Table 5, not all the owners of the Triano-Somorrostro district during the period 1870-1900 had been involved in the Vizcayan iron trade since the early nineteenth century. Yet, the predominance of the group with the long presence in the district forced «late-comers,» during the 1870s, to register or purchase mines in the periphery of the region, which was not as productive as its heart.[53] There were, however, some exceptions. A British company, the Somorrostro Iron Ore Co., bought in 1871 two of the best mines, the Union and Amistosa, whose output almost rivalled those of the Ibarras.[54] In 1881,

[52] All these production figures were extracted from the trimestral reports that appeared in the Official Bulletin of Vizcaya (henceforth: B.O.V.) between 1877 and 1900.

[53] For instance, a British firm, the Luchana Mining Co., registered 24 mines during the early 1870s, stretching along the outer limits of the Triano-Somorrostro district. Unfortunately for this company, the mines were not among the most productive in the region. See A.H.P.V., Miguel Castañiza, L. 6065, no. 139; L. 7081, no. 387; L. 6081, no. 634; and Calixto Ansuategui L. 6330, no. 221.

[54] In 1872, the price for 7/10ths of the Union was 210,000 *reales.* It is not clear how much was paid for the Amistosa, but it was mortgaged to insure a payment of 6,237 British pounds (604,989 reales). See A.H.P.V., S. Urquijo, L. 6237, no. 155; L. 6238, no. 271, L. 6239, no. 369 and no. 389. If the output of these two mines is added to that of those in table 5, their percentage of the total Vizcayan production reached 85 per cent in 1880; 90 in 1885; 78 in 1890; 62 in 1895; and 56 in 1898.

Mathew and Richard Curtis, from Manchester, purchased some very productive mines in the Triano area that belonged to the Arana family.[55] Yet, despite the previous examples, sales in this district were rare; and although the owners could command high prices for their mining properties, they preferred to either exploit them themselves or lease them.[56] In either case, even when foreign companies played a significant role in the extraction of the mineral, property rights permitted the mine-owners to pocket a large share of the profits generated through the export of ore. According to Gonzalez Portilla, the Vizcayans' portion of those profits amounted to 54 per cent during the period 1876-1900.[57] Yet, more recent studies seem to indicate that the percentage may have been even higher.[58]

To conclude, a small group of Vizcayan merchants took advantage of their early acquaintance with the iron trade, controlling the most productive mines. Their control preceded the export boom, and was never actually relinquished. First they were helped by the Vizcayan legislation which prevented outside investors from acquiring mines. When the national legislation ended this privilege, they still had an insider's advantage, and a long tradition of managing the iron trade of the region. In a province with limited resources, this group of owners must have easily understood the key position held by the mines in the local economy, even before the international demand for ore exploded during the 1870s as a result of technological advances. Thanks to their foresight, these local businessmen achieved the alchemists' dream of transmuting iron into gold, since the export of ore brought them vast wealth. Awash with cash, important Vizcayan mine-owners like the Ibarras or Chavarris boosted the local economy by investing in new factories, railroads, and financial institutions. To be sure, the roots of Vizcayan industrialization cannot be exclusively attributed to the mining boom. Yet, the boom instilled confidence in the local business community; and this confidence together with the capital generated through the mines caused a quantum leap in the Vizcayan economy during the 1880s.

[55] The two British businessmen paid 30,000 pounds (around 3 million *reales*) for a 26.8 per cent share of the Catalina and Nuestra Sra. de Begoña, and 2,000 pounds for a 24.6 per cent share of the San Miguel. A.H.P.V., Felix Uribarri. L. 6393, no. 48-49.

[56] The Ibarra, for instance, leased their largest mines to two multinational companies, the Orconera Iron Ore Co. and the Cie. Franco-Belge des Mines de Somorrostro. Yet, the Ibarras also participated in both companies since they owned 25 per cent of the Orconera and 10 per cent of the Franco-Belge.

[57] Gonzalez Portilla, «El desarrollo industrial de Vizcaya y la acumulación de capital,» *Anales de Economía,* 24 (1974), p. 72.

[58] M. Montero estimates that during the 1890s (a decade that accounted for 57 per cent of the total exports for the period 1870-1900), the Vizcayans retained 70 per cent of the total profits. See «Modernización económica y desarrollo empresarial en Vizcaya 1890-1905,» *Ekonomiaz,* no. 9-10, (1988), p. 241. According to my own calculations, the Vizcayans retained between 56 and 74 per cent of the total profits during the period 1877-1899. See Eduardo S. Gias, *The Formation of Bilbao's Modern Business Elite* (Unpub. PhD dissertation, Cólumbia University, 1993).

APPENDIX I

A) List of Mine-owners in Triano-Somorrostro in 1861.

Name of Owner	Name of Mine	Site
Ibarra Mier Co.	Barga	Barga
Ibarra Mier Co.	Orconera	Orconera
Ibarra Mier Co.	Primavera	Jarrazuela
Ibarra Mier Co.	No name	Bomba Vieja
Ibarra Hnos.	No name	Bomba
Ibarra Hnos.	No name	Cadegal
Ibarra Hnos.	Sotera	Zarzal
Jose Gorostiza	San Martin	La Blanca
Jose Gorostiza	San Benito	Los Castaños
Jose Gorostiza	Ceitegui	Ceitigui
Jose Gorostiza	Sta. Barbara	Cadegal
Jose Gorostiza	San Beranbe	Bodovalle
Jose Gorostiza	Magdalena	Espinal
Jose Gorostiza	Ntra. Sra. de Begoña	Bodovalle
Sebastian San Martin	Concha	Cayuela
Ramon Castaño	Cesar	Javilla
Matias Salcedo	Cristina	Los Castaños
Francisco Recalde	Buena Fortuna	Cabrito
Francisco Recalde	Trinidad	Costa Buena
Juan Murrieta	Perseguida	Blanca
Juan Murrieta	Despreciada	Benerillas
Leonardo Zuazo	Alhondiga	Blanca
Rafael Betanro	Otono	Jarrazuela
Juan Durañona	San Antonio	Fuente Fria
Juan Durañona	Manuela	Urdinales
Juan Durañona	Infeliz	Yerosa
Juan Durañona	Seiguira	Papelera
Pedro Bodega	Adela	Bomba
Pedro Bodega	Socorro	Campillo
Pedro Bodega	Indiana	Cobachos
Pedro Bodega	Rosario	Blanca
Carlos Sierra	Marquesa	Fuente Fria
Jose Arana	Julia	Bomba
Jose Chavarri	San Miguel	Bodovalle
Jose Chavarri	Aurora	Cobalon
Jose Antonio Ustara	Rita	Cobachos
Jose Antonio Ustara	unknown	Chacarro

Gregorio Olaso	unknown	Cadegal
Gregario Olaso	unknown	Jata
Gregorio Olaso	unknown	Matamoros
Vicente Bellido	El Sol	Papelera
Santos Zunzunegui	Rosita	Montijo
Clemente Unzaga	unknown	Caida
Ambrosio Uribe	unknown	Caida
Cosme Allende	Justa	Costa Buena
Cosme Allende	Juanita	Jarralta
Miguel Loinaz	unknown	Fuente Fria
Miguel Humaran	San Jose	Blanca
Felipe Vizcaya	San Fermin	Blanca
Jose Murua	San Ceferino	Cabrito
Santos Valle	San Ignacio	Cobachos
Clemente Palacio	Sta. Cecilia	Matamoros
Manuel Moya	Parcocha	Parcocha
Ramon Causo	San Ramon	Urdimales
Jose San Martin	Elevacion	Urdimales
Manuel Escobal	Nicanora	Cobachos
Miguel Allende	unknown	Sarlojo
Romualdo Moya	Furia	Laguna
Ramon Uribe	unknown	Laguna
Francisco Liona	Milagrosa	Zapato
Francisco Lascue	Litiganta	Urdimales
Jose Salcedo	No name	Cadegal
Ramon Gamboa	Ilena (Elena?)	Cadegal
Cecilia de la Hera	Suceso	Zarzal
Manuel Valparda	Salve	Cebillas
Raimundo Butron	Estrella	Harinera
Lorenzo Ibanez	Catalina	Bodovalle
Jose Larrazabal	Diana	Campillo
Francisco Ureta	San Felipe	Cobachos
Cecilio Llano	Pacifica	Campillo

Source: Portugalete Municipal Archive, L. 98, no. 97.