

MINING THE DATA: WHAT CAN A QUANTITATIVE APPROACH TELL US ABOUT THE MICRO-GEOGRAPHY OF NINETEENTH CENTURY CORNISH MINING?

Bernard Deacon

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For many people the relics of Cornwall's mining heritage – the abandoned engine house, the capped shaft, the re-vegetated burrow – are symbols of Cornwall itself. They remind us of an industry that dominated eighteenth and nineteenth century Cornwall and that still clings on stubbornly to the margins of a modern suburbanised Cornwall. The remains of this once thriving industry became the raw material for the successful World Heritage Site bid of 2006. Although the prime purpose of the Cornish Mining World Heritage Site team is to promote the mining landscapes of Cornwall and west Devon and the Cornish mining 'brand', the WHS website also recognises the importance of the industrial and cultural landscapes created by Cornish mining in its modern historical phase from 1700 to 1914.¹ Ten discrete areas are inscribed as world heritage sites, stretching from the St Just mining district in the far west and spilling over the border into the Tamar Valley and Tavistock in the far east. However, despite the use of innovative geographic information system mapping techniques, visitors to the WHS website will struggle to gain a sense of the relative importance of these mining districts in the history of the industry.

Despite a rich bibliography associated with the history of Cornish mining the historical geography of the industry is outlined only indirectly.² The favoured historiographical approach has been to adopt a qualitative narrative of the relentless cycle of boom and bust in nineteenth century Cornwall. A 'flood of new ventures' were swiftly and inevitably succeeded by a 'melancholy spate of abandoned mines'.³ There are many accounts of the colourful history of individual mines or even specific mining districts but relatively few attempts to overview the entire industry.⁴ As Denys Bradford Barton wrote in his classic account of Cornish tin mining, 'it is more difficult to write the comprehensive history of an industry than it is to treat, piecemeal, a multitude of its constituent parts'.⁵ Moreover, even the handful of

comprehensive histories eschew the task of providing a quantitative account of the comparative importance of the various mining districts of Cornwall over time.

In this contribution therefore, I want to provide an initial assessment of the historical geography of Cornish mining for the period in which we have relatively robust data, that is between 1845 and 1913. This assessment is important for two reasons. First, it can provide an overdue empirical framework for the history of nineteenth century mining, of use to both mining historians and local historians seeking a context for their research into particular mines or mining districts. Second, it meets the challenge that I threw down in 2000. Cornish Studies, I argued then, had legitimised work on the history of Cornwall as a region within the UK. But this necessary task was to an extent at the expense of a more nuanced comparative investigation of ‘Cornwalls’ as opposed to Cornwall, overlooking differences within Cornwall at the meso-level above the merely local.⁶ Comparative work on intra-Cornish difference has since then been slow to emerge.⁷ Yet basic questions remain even about nineteenth century Cornwall, where sparseness of source material is hardly an issue. For example, in addition to the micro-geography of mining there remains a dearth of published work on comparative demographic change, intra-Cornish migration patterns, the origins of emigrants from Cornwall, local differences in religious affiliation, sporting preferences or occupational structures, although valuable data lie locked away in relatively inaccessible dissertations.⁸

In what follows I first establish a narrative of Cornish mining gleaned from the qualitative accounts and identify the spatial aspects of that story. The possibility of adding greater precision to this account is then explored. The official Mining Statistics are then used to build a fine-meshed framework for the value of ore production from the bottom up, based on individual mines data. In order to encompass the history of mining in both its peak phase and its decline some gaps in the data had to be filled, and this mechanism is explained. Having obtained parish level data I then move on to assess the changes at a district level. Yet other data exist. The picture provided by the statistics of output is therefore contrasted with the results of a detailed parish level analysis of census enumerators’ books (CEBs). The latter data to an extent qualify the concentration of production on the Camborne-Illogan district confirmed as the most important internal change. Instead, they suggest that mines

retained considerable local impact at least to the 1890s. Moreover, even after the crash of the middle of that decade Cornish mining had recovered by 1910 to overall output and even male employment levels comparable to those of a generation previously, although the spatial concentration continued apace.

THE STORY OF NINETEENTH CENTURY MINING

The narrative of Cornish mining from 1750 to 1913 is well known. Barton divides the period into two phases.⁹ During the first tin was subsidiary to copper; in the second copper declined. We might extend this by dividing this history into three rather than two phases. The first, to the 1840s, was dominated by the rise of copper. The second, from the 1840s to the early 1870s, was the highwater mark of Cornish mining. In this generation copper production peaked in the 1850s and then fell away, gradually before 1866, precipitately thereafter. ‘By 1850 ... the day of the western copper mines was beginning to draw to a close’,¹⁰ but to an extent decline in the west was masked by the expansion of copper mining in the east. In this phase too the production of lead rose, peaked and then fell. The third phase, from the early 1870s to 1913, marked the demise of copper production, short lived turns to the exploitation of other minerals such as zinc, arsenic, manganese and tungsten and a drawn-out decline of tin production. Sudden contractions in output were separated by slow recoveries but the cycles occurred around a constant downward trend.

The geography of this narrative may also be sketched in broad terms from the existing literature. During the eighteenth century the rise of copper production concentrated mining growth in a relatively small area west of Truro. John Rowe pointed out how by the end of the eighteenth century just one parish – Gwennap – was producing around a third of all Cornish copper output. Furthermore, virtually all the copper mined in Cornwall was being extracted from under the ground of just seven parishes – from Kenwyn in the east, through Gwennap, Redruth, Illogan, Camborne and Crowan to Gwinear in the west. ‘Practically the entire copper mining region was within eight miles of the summit of Carn Brea’.¹¹ As the production of copper ore became the most lucrative aspect of Cornish mining an intense focus emerged, where the industry coloured all aspects of everyday life. In that geographically restricted zone operations steadily grew in scale as the jumble of surface works, dressing floors, smoking engine

houses and burrows of waste rock encroached on the small fields and open downs of the landscape.

Tin production on the other hand had always been more dispersed, scattered through a number of districts, although the medieval streaming activities of the eastern moors gave way early to the dominance of Penwith and Kerrier in the west. Barton claims that by the 1700s St Just was ‘probably ... one of the most productive tin districts’.¹² In the early decades of the nineteenth century St Just remained as one of six main centres of tin production, the others being Wendron, Breage, St Ives and St Agnes in the west, together with St Austell in mid-Cornwall and smaller scattered production areas in east Cornwall near Caradon Hill and east of Kit Hill.¹³ In the 1820s Breage came to the fore due to the rise of the fabulously rich Wheal Vor which accounted for about a quarter of tin production in the decade from 1823 to 1833. Wheal Vor experienced increasing difficulties until its temporary closure in 1846. By the time it had reopened and returned to full production in the late 1850s the great copper mines of the Camborne and Illogan district, led by Dolcoath, were turning to tin at depth. The geography of tin production from that point onwards is the story of the gradual contraction of tin production from its marginal areas and its concentration on the two parishes of Camborne and Illogan, ‘the last citadel of Cornish tin’. By 1897 in the former mining districts of Breage, Wendron, St Ives and Lelant, St Blazey and Caradon there was not one working mine. Outside the ‘central mining district’ of Camborne and Illogan, mining only limped on in St Just and St Agnes.¹⁴

This picture of copper rising in the west, shifting to the east and then collapsing, while tin production was spread more widely, before becoming concentrated on the Camborne-Redruth district, is overlain by the more transient rise and fall of lead production from the 1830s to the 1870s. Lead was focused on two areas, a string of mines in Newlyn East and Perranzabuloe in the west and a later production area to the south east of Liskeard at Menheniot. Buckley estimates that two thirds of lead output from 1845 to 1913 was accounted for by just five mines in these two districts.¹⁵

MEASURING THE LOCAL IMPACT OF MINING

Qualitative accounts of Cornish mining allow us to recompose this narrative and identify the broad contours of its historical geography. This can be summed up as

eighteenth century concentration, mid-nineteenth century dispersion and late nineteenth century re-concentration. But can we complete the picture by filling in some quantitative detail, at least for the later period when data begin to be ‘sufficiently full and trustworthy for a closer geographical analysis’?¹⁶ However, before attempting this task one hitherto dominant approach must be jettisoned. The tendency in mining historiography, following the path-breaking work of the Bartons in the 1960s, has been to treat the different minerals separately, with the implication that copper, tin and lead mining were somehow industries sealed off from each other.

Nothing could be further from the truth. In the introduction to his detailed study of the mines of Cornwall’s central mining district in the period 1810-1895 T.A.Morrison wrote that he found it ‘impossible to view separately two metals which were hoisted through the same shafts’.¹⁷ Over their working lives many mines, especially in the Camborne-Redruth district, were worked for more than one mineral, the emphasis shifting as the mines deepened. Morrison was not the first to note this. In 1838 Sir Charles Lemon observed that ‘as tin and copper are often wrought out of the same mine, I have not been able to distinguish the number of persons employed in each separately’.¹⁸ A tendency to over-compartmentalise the history of Cornish mining owes more to twentieth century accounts than to the fluid realities of mining practice. For instance, A.K.Hamilton Jenkin’s categorisation of tributers and tutworkers as different classes of workmen is now viewed as a myth.¹⁹ ‘Examination of scores of mine cost books show that as miners moved from mine to mine they also moved from tutwork contracts to tribute contracts and back again’.²⁰ It is more difficult to prove, but nonetheless equally likely, that miners transferred from seeking one type of metallic ore to another just as easily. This is certainly implied by the origins of those moving eastwards in the 1840s to the newly opened lead mines around Menheniot and copper mines in St Cleer. A considerable number of these arrived directly from Breage and St Hilary, predominantly tin mining parishes.

We need therefore to assess the influence of Cornish mining by including all types of mine, whether tin, copper, lead or hybrid. Burt et al come closest to providing such an account in their introduction to the details of the Mineral Statistics of the United Kingdom. Although their narrative adopts the traditional mineral by mineral approach their Appendix A lists mines by total value of output of all minerals from 1845 to

1913 (although this does not include lead before 1873 or tin before the mid-1850s).²¹ From their appendix it can be calculated that six of the largest ten mines were located in Camborne and Illogan, these parishes also accounting for 25 of the 102 mines with outputs greater than £100,000 in value over this period. As Redruth and Gwennap supplied another 15 of the top producers these data imply the centrality of the aptly named central mining district in the history of nineteenth century mining. However, they do not inform us of changes over time and the absence of data for lead (or for tin for the first decade) is a critical gap. Nevertheless, this introduces one major source for assessing the detailed micro-geography of mining over time – the Mineral Statistics.

Annual statistics for the output of British mines began to be collected under the auspices of the Geological Survey in the mid-1840s, being entitled Mineral Statistics from 1855 onwards. These provide a secure foundation for the reconstruction of the production of individual mines in this period and have been conveniently republished on a county basis by the University of Exeter in association with the Northern Mine Research Society.²² This source provides continuous data for the output and value of copper from 1845. Value of production at the mine would seem to be the most appropriate surrogate for the income generated for local communities. However, such statistics for tin do not commence until a decade later, in 1855. The value of copper production in Cornwall (and Devon) was around twice that of tin in the early period and given this pre-eminence it was decided to estimate the value of tin production for the first decade. This exercise can be undertaken fairly easily as the annual production of black tin is available back to 1845 and the price of black tin at the mine can be deduced, with an acceptable margin of error, from the price of metallic tin.²³ Having calculated the annual overall value of tin production this was then divided between registration sub-districts, based pro-rata on the distribution of tin ore value in 1855 but revised in the light of the qualitative account of the history of various mines and mining districts supplied by Barton.²⁴ It might well be possible to refine the tin value statistics thus estimated for 1845-55 further by detailed reference to the *Mining Journal* and *West Briton* in this period, but I am confident that the sub-district allocation will not be more than 10 per cent out. Even assuming this level of discrepancy would make only a small difference to the overall mineral value, dominated as it is by the more robust copper statistics.²⁵

Lead values present a different problem. In this case production figures by mine are available from 1846 but no value is provided at this level until 1873, by which time lead production was rapidly receding. However, decadal values for Cornwall are available for 1850 onwards and a price series exists for the price of pig lead with continuous data stretching back to the early eighteenth century.²⁶ Using these two sets of data in combination an annual value for lead and silver production can be estimated. This was then distributed amongst the individual producing mines according to their lead ore production. As no method could be devised to allow for differential production of silver there is likely to be some measure of inaccuracy at the level of individual mines, those that obtained a greater amount of silver than the norm being undervalued. However, at a sub-district level, especially given that lead/silver production was highly geographically concentrated, this is unlikely to be a major factor. The value of lead/silver production even at its relative peak in the 1860s (in absolute terms it was higher in the 1850s) was just over 10 per cent of the total value of mineral production in Cornwall, less when the Devon mines are included.

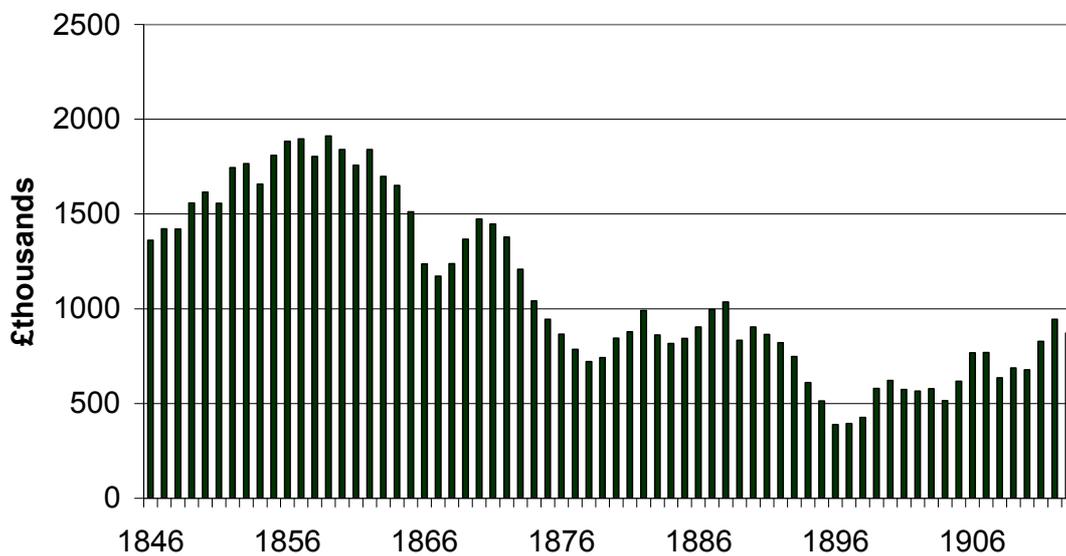
One final manipulation of the raw data for the value of production is required, to convert the annual money totals into real values to allow for price changes. As the value of ore production is being adopted as a rough and ready guide to the funds flowing into local communities it was felt that a consumer goods price index was relevant to the exercise. Bowley's cost of living index suggests that in this period prices at their lowest - in the mid 1890s – were 30 per cent below the peak of 1857.²⁷ This means that every £ created by Cornish mines in the depressed years of the 1890s could buy almost a third more than in the boom years of the 1850s. Converting money to real values therefore has the effect of smoothing out the peaks and troughs in mine production

THE LOCAL VALUE OF MINING OUTPUT

Using this method a spreadsheet of mineral ore production value by registration sub-district could be drawn up. This allows us to examine the overall value of the mining industry of Cornwall (and Devon) (see Figure 1). Peaking in 1859 at £1.9 million, there was a steep slide in value to 1867, a recovery during the tin boom of 1870 and 1871 but then a steady falling away to a low in 1878, at which time the real value of

Cornish mining stood at just 38 per cent of its 1857 level. However, things picked up again in the 1880s and production stabilised at levels between £0.8 and £1.0 million. Values began to slide in 1890 and reached their nadir in the catastrophic year of 1896

Value of mining production, 1846-1913

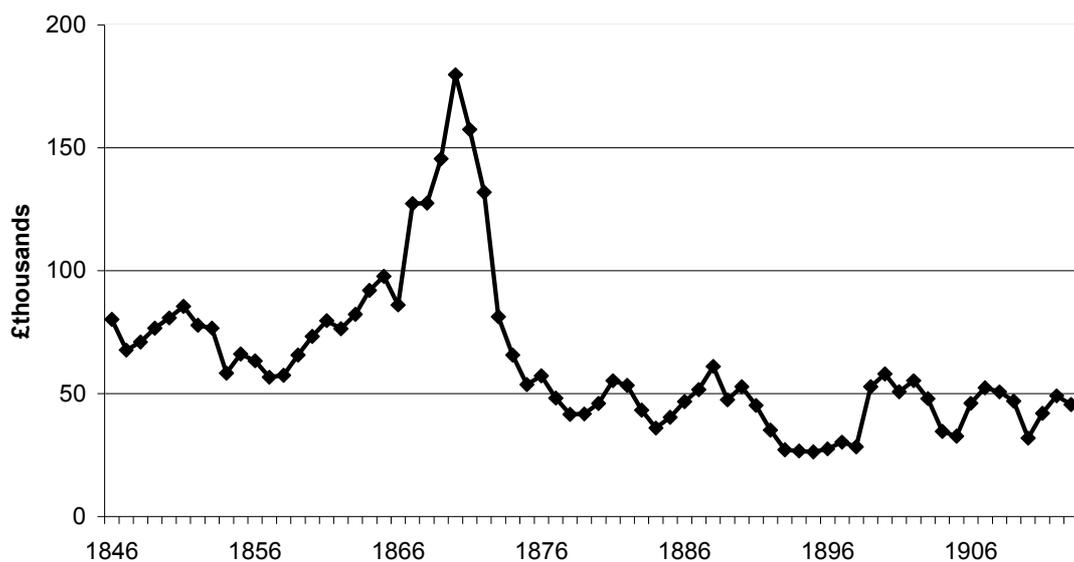


when total production amounted to less than £0.4 million. Nonetheless, despite some contemporary fears this did not signal the death of metal mining in Cornwall. Far from it. That sad day was postponed for at least a century as production recovered strongly in the Edwardian era to reach production values in 1912 and 1913 reminiscent of the 1880s. These data serve as a warning that accounts that end their story of Cornish mining in the crisis years of the 1870s or 1890s miss this promising early twentieth century recovery. They also remind us to be wary of those over-apocalyptic descriptions of Cornwall sometimes encountered in the literature. An example is Maxine Berg’s description of a Cornwall where ‘in the middle of the nineteenth century mining suddenly declined and the region was rapidly transformed into a holiday resort’.²⁸ This owes more to late twentieth century representations (or

stereotypes) of Cornwall than the details of its late nineteenth and early twentieth century economic history.

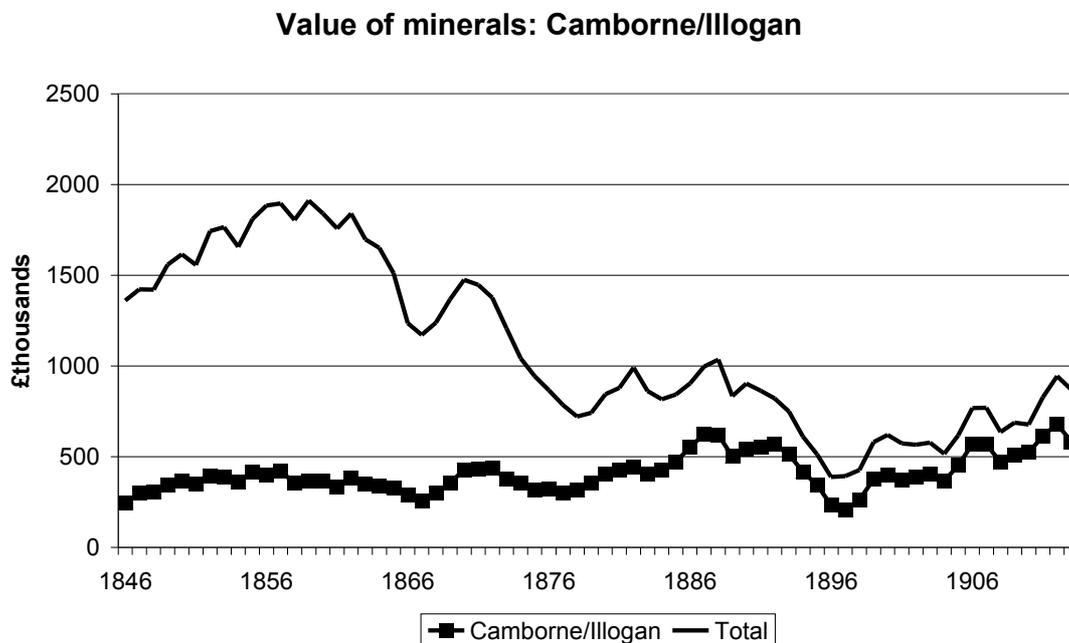
But major geographical changes took place within this overall picture. Eleven sub-districts experienced periods when their value of mineral production exceeded £100,000. Across the Tamar in Tavistock production exceeded £100,000 for two decades from 1846 to 1867, as the fabulously rich copper reserves at Devon Great Consols were exploited. In east Cornwall a similar copper boom resulted in Calstock/Callington (for a brief period in the early 1860s) and Liskeard (over a longer period from 1849 to 1869) joining the ranks of the major producing sub-districts. Moving westwards, Fowey experienced three short bursts of £100,000+ production – in 1848-53, 1855-57 and 1859-60, based on production from Fowey Consols and other copper mines in the Par/St Blazey area. Newlyn East enjoyed three years of high production in the late 1840s before the gradual exhaustion of its main lead mine – East Wheal Rose. Production in the St Agnes district peaked spectacularly rather later in the five years from 1867-72 on the back of soaring but short-lived production from the Chiverton lead mines in Perranzabuloe.

Value of minerals: St Agnes, 1846-1913



The four sub-districts in the neighbouring central mining district all saw periods of high value. Gwennap was consistently above £100,000 before 1860 but its mines failed to make the conversion en masse from copper to tin and the district declined

steadily thereafter. Redruth saw a brief five-year period of high production values from 1857. However, the bright stars in the mining firmament in the later nineteenth century were clearly Illogan and Camborne. Here, the value of production exceeded £100,000 in every year from 1846 to 1913 apart from two years during the depths of the 1890s depression at Illogan and one year (1855) in Camborne during the period



when its mines were turning from copper to tin. The final sub-district, St Just, enjoyed a period of high value from 1853 to 1872, punctuated by four years of lower value from 1865 to 1868. The value of ore from the St Just mines fell in the later nineteenth century as it did in other mining districts. But unlike those districts, here there was a very strong recovery in the Edwardian years. Indeed, in 1913 St Just rejoined Camborne and Illogan as a district with over £100,000 of mineral production.

Table 1 combines pairs of sub-districts into mining districts and charts the growing dominance of the Camborne/Illogan district in terms of value of output. That dominance may also be observed in Figure 3, which displays the very different pattern

of production in Camborne/Illogan when compared with the total. Most of the other districts saw production peak in the 1850s or 1860s but then fall away. The exceptions were St Just, which shared in the general decline in the 1870s but then mounted a recovery, and St Agnes, where production peaked slightly later as a result of the Chiverton lead mines but where the massive decline of the 1870s then stabilised around a much lower level.

Table 1. Value of mineral production by selected mining districts in census years
(£000s), 1851-1911

<i>District</i>	<i>1851</i>	<i>1861</i>	<i>1871</i>	<i>1881</i>	<i>1891</i>	<i>1901</i>	<i>1911</i>
St Just	85	114	118	56	73	66	82
St Ives/Lelant	84	93	76	44	2	0	14
Marazion/Breage	25	81	59	7	14	5	14
Wendron/Crowan	78	108	62	3	6	0	10
Camborne/Illogan	352	334	430	428	555	372	614
Redruth/Gwennap	176	197	78	43	18	6	4
Kenwyn/Kea	10	58	26	7	16	4	13
St Agnes/Newlyn	175	96	168	57	45	51	42
Fowey/St Austell	145	134	65	33	16	2	5
East Cornwall	184	257	188	109	62	7	10
Tavistock	142	144	68	55	44	34	7
Total	1,556	1,758	1,448	878	864	574	828

Source: Mineral Statistics from Roger Burt, Peter Waite and Ray Burnley, *Cornish Mines: metalliferous and associated minerals 1845-1913*, Exeter, 1987 and Roger Burt, Peter Waite, Ray Burnley. *Devon and Somerset mines: metalliferous and associated minerals 1845-1913*, Exeter, 1984. The full dataset can be found at http://www.exeter.ac.uk/cornwall/academic_departments/huss/ics/knowledgetransfer.shtml

The fall in production from mines beyond the industry's heartland at Camborne and Illogan is starkly illustrated by mapping the value of ore production in the peak years of the 1850s and comparing this with the immediate pre-war period (Figures 4 and 5). In fact the value of ore produced in the two parishes of Camborne and Illogan peaked in 1912 at £680,000, slightly higher than the previous peak in 1887-88. The history of Cornish mining in this period therefore is the history of production growth (and a simultaneous concentration in fewer mines) in the Camborne district with a concomitant and disastrous decline elsewhere. In 1851 mines in Camborne-Illogan contributed 22.6 per cent of the total value of Cornish (and Devon) production. By 1891 this proportion had expanded to 64.2 per cent and continued to rise to 75.3 per cent by 1911.

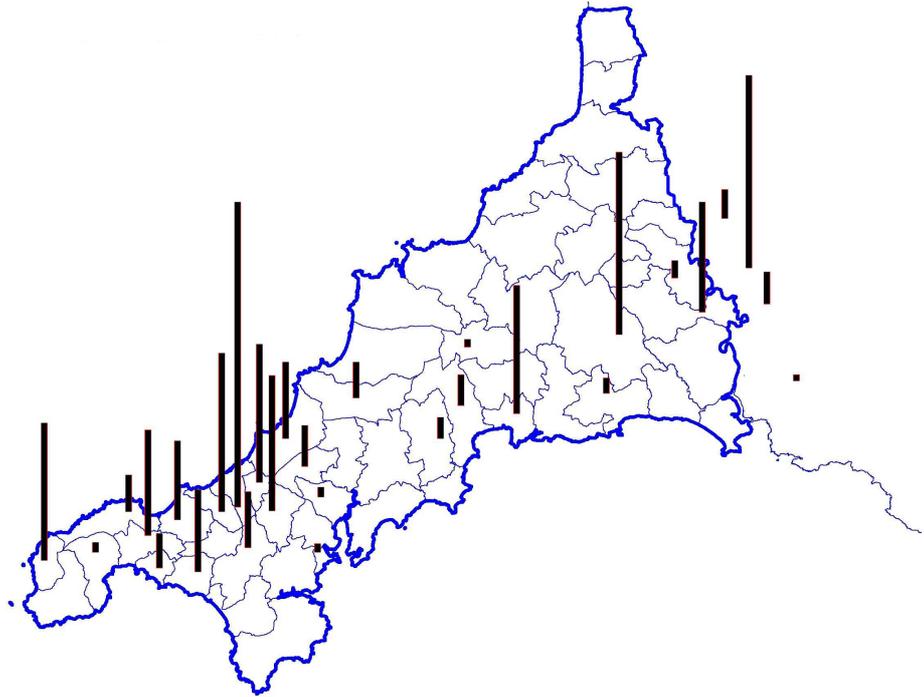


Figure 4: Value of mineral production by registration sub-district, 1856-60

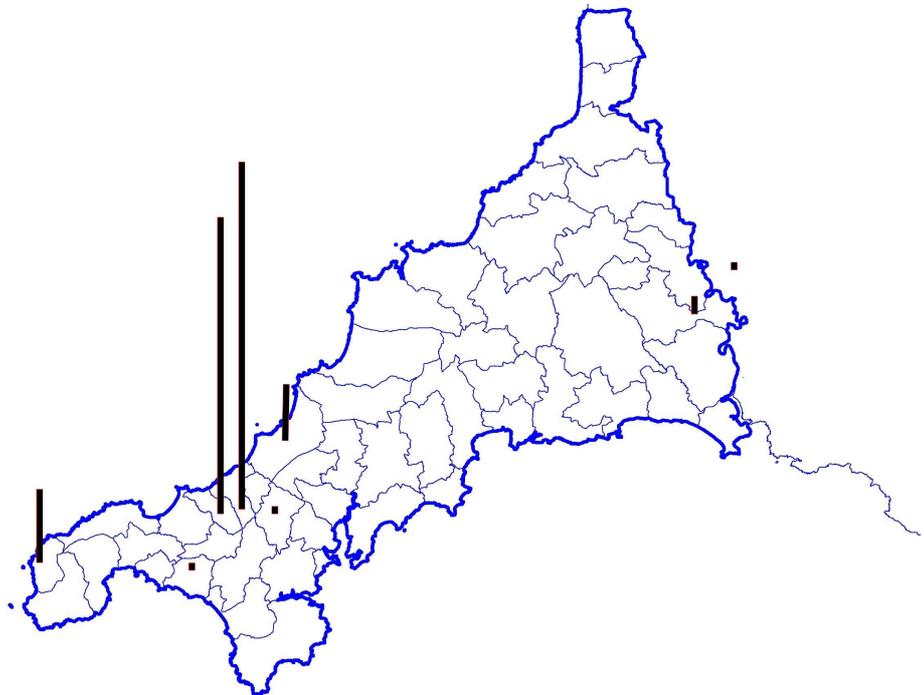


Figure 5: Value of mineral production by registration sub-district, 1911-13

THE SPATIAL DISTRIBUTION OF THE MINES LABOUR FORCE

However, there is another possible measure of the local importance of mining. In the daily round, mines contributed to the economic health of communities in two ways. One was by providing wages and payments (for materials, carriage, financial services and the like), although this financial output cannot be measured directly. But mines were also more generally providers of jobs and employment can be measured from census data. The published census reports provided data for those working in mining and quarrying at a Cornwall-wide level and, before 1881, at Registration District level within Cornwall. However, the relevant table for 1871 includes those ‘working and dealing with minerals’, while the earlier 1851 and 1861 censuses differentiate miners from those working in quarries and clay works. In 1881 the tabular presentation was altered to present details for urban sanitary districts of more than 50,000 only. As Cornwall had none of these the most spatially refined data are thus only available for the 1851 and 1861 censuses. The broad distribution of adult male mineworkers at mid-century is as follows.

Table 2. Male miners aged over 20, 1851 and 1861 (%)

<i>Registration District</i>	<i>1851</i>	<i>1861</i>
Penzance	25.7	29.8
Redruth	53.8	52.3
Helston	31.4	25.3
Falmouth	3.2	3.1
Truro	25.7	26.3
St Columb	12.8	8.1
St Austell	27.5	27.5
Bodmin	8.7	7.9
Liskeard	26.2	27.1
St Germans	1.8	1.7
Camelford	2.3	2.4
Launceston	n.a.	9.0
Stratton	1.2	2.3

Source: Census of Great Britain, 1851. British Parliamentary Papers 1852-53, LXXXVIII Pt.II.1; Accounts and papers: forty-eight volumes (25. Part II.) Population (England and Wales). British Parliamentary Papers 1863 [3221], LIII Pt.I.265, LIII Pt.II.1

However, these data provide an insufficient temporal coverage and the cut-off age of 20 seems arbitrary, with boys often beginning surface work by the ages of 10 or 11 at mid-century and even beginning to go underground from this young age. Yet

possibilities for generating a more refined spatial picture are available in the census enumerators' books of 1841 to 1901. The problem with this source lies in the time required to add up the number of mine-workers. But this time is reduced dramatically by making use of the digitised database of CEB data transcribed by the Cornwall Family History Society and interrogating it through the use of Microsoft Office Access queries. A pilot exercise on those lines threw up a number of inaccuracies in the database, with a proportion of women being entered as male, together with misspellings. However, while slowing down the exercise somewhat, these could be identified and removed from the query. The results allow us to build up a picture from the bottom up, aggregating parish level CEB data. A more detailed geography of mining (or any other) employment can thus be constructed at the level of Cornwall's 214 parishes, 53 Registration Sub-Districts or 13 Registration Districts. This has been completed for the census years 1851, according to the published census the peak census year for mining employment,²⁹ and 1891, following two decades of contraction and collapse.

Table 3 lists those sub-districts where mining accounted for more than 25 per cent of occupied males over 14 years old in 1851. In twelve districts in 1851 mining employed more than half the adult male labour force. This included a block of districts around the central mining district, although the greatest impact of mining, in terms of its role in the occupational structure, was felt in the outlying districts of St Agnes and St Just in Penwith. In each of these more than 70 per cent of men were employed in and around mines at least some of the time, either underground, on the surface or in other ways.

Table 3. Mining male labour force aged 14 and above, 1851 and 1891 (%)

<i>Registration sub-district</i>	<i>1851</i>	<i>1891</i>
St Just in Penwith	73.0	53.6
Marazion	46.6	24.8
St Ives	35.9	5.6
Ludgvan	51.1	12.6
Phillack	31.3	7.2
Camborne	69.3	55.1
Illogan	67.9	59.5
Redruth	55.4	31.7
Gwennap	66.2	37.7
Crowan	63.8	41.5
Breage	60.4	35.2
Wendron	50.7	24.1
Kea	38.3	11.7
Kenwyn	30.4	10.4
St Agnes	70.7	37.2
St Austell	32.2	4.3
Fowey	50.6	5.6
Newlyn East	36.5	3.8
Liskeard	38.0	10.7
Callington	43.0	27.7
Calstock	51.2	34.0
N	27,836	11,122

Source: Census enumerators' books, Cornwall 1851 and 1891

By 1891 the CEBs reveal considerable change had occurred. In the 40 years between these dates Cornish mining had suffered a series of shocks from the global mining market, price drops that triggered the closure of many mines and necessitated a restructuring of the industry. As a result, by 1891 there were only 11,122 men enumerated in the census claiming a connection with metal mining (ignoring those described as gold and coal miners), a massive drop of 60 per cent on the mid-century labour force. By the later date there were only three sub-districts where more than half the labour force were miners – Illogan, Camborne and St Just in Penwith. The biggest falls in the intervening period were in mid-Cornwall and the St Ives mining district. As a result the Cornish mines labour force had become increasingly concentrated on the two sub-districts (also parishes) of Camborne and Illogan. In 1851 these accounted for around one in seven of male miners in Cornwall. By 1891 this proportion had more than doubled to nearly a third.

Table 4. Value of output and employment by mining district (Cornwall only), 1851 and 1891 (proportions of total)

<i>District</i>	<i>1851</i>		<i>1891</i>	
	<i>Value</i>	<i>Employment</i>	<i>Value</i>	<i>Employment</i>
St Just	6.3	7.4	9.0	8.7
St Ives/Lelant	6.2	6.7	0.2	2.7
Marazion/Breage	1.8	5.1	1.8	4.5
Wendron/Crowan	5.8	8.9	0.7	7.9
Camborne/Illogan	26.2	15.1	68.4	32.6
Redruth/Gwennap	13.0	13.7	2.2	14.5
Kenwyn/Kea	0.7	4.9	2.0	3.1
St Agnes/Newlyn	13.0	8.8	5.6	6.2
Fowey/St Austell	10.8	8.4	1.9	2.4
East Cornwall	13.7	12.3	7.7	14.4

Source: As Table 1 and Table 3.

The geography of mining employment thus echoes the geography of output in becoming more concentrated over the course of the second half of the nineteenth century. But when the two geographies are compared an intriguing difference emerges. Employment in both the census years of 1851 and 1891 is more widely distributed than output. This effect is most marked in the later year but is present even in 1851, with districts such as Breage/Marazion and Kenwyn/Kea home to considerably higher numbers of miners than a concentration on the value of their output might imply. The converse of this is that Camborne and Illogan's dominance was less marked in terms of the labour force, implying that mines in other parts were operating at lower productivity or in a part-time fashion. Moreover, the employment data serve to suggest that the concentration of productive (and profitable) mines in the central mining district may lead us to underestimate the continuing presence of mining elsewhere in Cornwall, even several decades after its halcyon mid-century boom years. Employment data suggest there is a lag in terms of labour adapting to the decline in mining production. Mining continued to make up an important sector of the local economy in sub-districts such as Calstock, Breage and Gwennap well into the 1890s even though the trajectory was downwards and small recoveries in terms of production value in the 1900s were unable to restore these districts to their former glory.

CONCLUSIONS

The more fine-grained geography of Cornish mining revealed by the CEBs and the Mining Statistics therefore hint at two conclusions relating to the historical geography of Cornish mining. First, the major geographical shift that concentrated production on the Camborne-Illogan district suggests that the history of mining in that area, successfully coping with the pressures of global competition of this period, differs significantly from the industry's experience in the rest of Cornwall. There, mining output generally declined to very low levels by the 1900s, with only St Agnes and St Just to some extent bucking a general downward trend and retaining a considerable level of activity. This is a narrative familiar from the qualitative sources although the data here allow for the application of a greater level of comparative precision.

The second conclusion is less familiar. This is that mining retained an enduring influence in local economies rather later than the production figures might suggest. What is required now are detailed local studies of the age structure of mines labour forces in different localities.³⁰ I suspect these will show an ageing labour force outside the more productive districts. This in turn implies that mining was increasingly likely to be a part-time occupation or part of an economy of makeshifts for older men. Younger miners had left Cornwall to follow their calling overseas in the goldfields of South Africa or the mines of North America and South Australia.³¹ From there they contributed to the family economy, at least for a time, through their remittances.³² This worldwide extension of the geographical reach of Cornish mining communities is itself, moreover, a reminder that the echo of the unremitting rhythm of global mining trade cycles was being heard in Cornwall right down to the time the guns opened up in western Europe in 1914.

NOTES AND REFERENCES

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