
Literacy at South African Mission Stations

JOHAN FOURIE, ROBERT ROSS AND RUSSEL VILJOEN

Stellenbosch Economic Working Papers: 06/13
March 2013

KEYWORDS: HUMAN CAPITAL, SOUTH AFRICA, MISSIONARY, LITERACY, AGE-
HEAPING
JEL: N37

JOHAN FOURIE
DEPARTMENT OF ECONOMICS
UNIVERSITY OF STELLENBOSCH
PRIVATE BAG X1, 7602
MATIELAND, SOUTH AFRICA
E-MAIL: JOHANF@SUN.AC.ZA

ROBERT ROSS
DEPARTMENT OF HISTORY,
LEIDEN UNIVERSITY AND
UNIVERSITY OF SOUTH AFRICA
E-MAIL:
R.J.ROSS@HUM.LEIDENUNIV.NL

RUSSEL VILJOEN
DEPARTMENT OF HISTORY,
UNIVERSITY OF SOUTH AFRICA
E-MAIL:
VILJORS@UNISA.AC.ZA



UNIVERSITEIT
STELLENBOSCH
UNIVERSITY



A WORKING PAPER OF THE DEPARTMENT OF ECONOMICS AND THE
BUREAU FOR ECONOMIC RESEARCH AT THE UNIVERSITY OF STELLENBOSCH

Literacy at South African Mission Stations*

JOHAN FOURIE[†], ROBERT ROSS[‡] AND RUSSEL VILJOEN[§]

ABSTRACT

Measures of education quality – primarily, years of schooling or literacy rates – are widely used to ascertain the contribution of human capital formation to long-run economic growth and development. This paper, using a census of 4,678 mission station residents, documents for the first time literacy and numeracy rates of non-white citizens in nineteenth-century South Africa. The 1849 census allows for an investigation into how the mission stations influenced the growth of literacy in the Cape Colony. We find that age, gender, duration of residence, whether the individual arrived at the station after the emancipation of slaves or was born there and, importantly, which missionary society was operating the station, matter for literacy performance. The results offer new insights into the comparative performance of missionary societies in South Africa and contribute to the debate about the role of missionary societies in the development of a colonial society.

Keywords: human capital, South Africa, missionary, literacy, age-heaping
JEL codes: N37

* We thank Joerg Baten, three anonymous referees of this journal and participants at the World Economic History Congress 2012 in Stellenbosch for valuable comments and suggestions on an earlier version of this paper. Excellent research assistance was provided by Laura Rossouw and Jeanne Cilliers. We acknowledge the financial assistance of Economic Research Southern Africa, who published a preliminary version as ERSA Working Paper 284.

[†] Department of Economics, Stellenbosch University. Corresponding author: johanf@sun.ac.za

[‡] Department of History, Leiden University and Department of History, University of South Africa.

[§] Department of History, University of South Africa.

INTRODUCTION

A major change over the last two centuries in southern Africa has been the widespread acquisition of at least basic literacy by a high proportion of the population and the creation of an elite who distinguish themselves from the mass of the population on the basis of their advanced education. It is thus of substantial importance to investigate how literacy has developed and what it means in the sub-continent. There are two ways of doing this. The first, and most obvious, is to look at how reading and writing have changed the consciousness of those who have taken them on board.¹ This is an essentially qualitative way of looking at literacy. The other is more quantitative, investigating in statistical terms who became literate and who did not. The patterns which emerge may not describe the cultural shifts, but they do provide important sociological data on how this most essential of skills was disseminated through the population. In this paper we follow the latter track, investigating the extent to which the inhabitants of mission stations in the Cape Colony in South Africa had become literate by the middle of the nineteenth century. Most of these were 'coloureds', though some, by no means necessarily the least advanced, were isiXhosa speakers in the far east of the colony.

This study relates to two major areas of economic history research. The first has to do with matters of 'human capital'. It is, or should be, evident that literacy and numeracy are among the essential qualities required to function in the modern world. Indeed, literacy is generally used by economic historians as the best indication of human capital, or in other words of the economic 'quality' of any given population. Further, literacy can be considered one of the prime movers of what is conventionally described as economic progress.² The second has to do with the apparent influence on human capital acquisition, and thus literacy, of religious conversion. Ever since Weber there have been attempts to link economic development, however defined, to religious affiliation.³ The most recent econometric arguments suggest

¹ I. Hofmeyr, *We Spend Our Years as a Tale That Is Told': Oral Historical Narrative in a South African Chiefdom* (Johannesburg, Witwatersrand UP, 1993); K. Barber (ed.), *Africa's Hidden Histories : Everyday Literacy and Making the Self* (Bloomington IN, Indiana UP, 2006).

² G. Mankiw, D. Romer and D. Weil. 'A Contribution to the Empirics of Economic Growth', *The Quarterly Journal of Economics*, 107, 2 (May, 1992), pp. 407-437.

³ M. Weber, *The Protestant Ethic and the Spirit of Capitalism* (New York, Scribner, 1930).

that it was the heavy emphasis on literacy in Protestant communities that contributed, at least in part, to the greater economic prosperity of primarily Protestant countries.⁴

With this in mind, economic historians have begun to investigate the role of missionaries in relation to economic development. In much of Africa, and particularly in South Africa, the initial drive to establish a literate population came from the missions. Indeed, Frankema shows that variation in school enrolment rates across African colonies before World War II is almost entirely attributable to missionary activity, and not state-sponsored investment in education.⁵ Protestant missionaries left the biggest legacy. At a continental level, areas with a Protestant missionary past have higher levels of schooling today than areas where Catholic missionaries settled. However, this may be a simplistic assessment. Gallego and Woodberry argue that Catholic missionaries left a similar legacy to the Protestants in those places where competition was allowed between two orders.⁶ Nunn has recently shown convincingly that both Catholic and Protestant mission stations in Africa had positive, long-run impacts on educational attainment, but that Protestant missionaries had most effect on females and Catholics on males.⁷ It is also the case, as we show, that the various Protestant missionary traditions might lead to differing degrees of literacy.

At a less exalted level of generalisation, it is clear that the first generation of the Westernised elite in South Africa came out of the missions. This is true not only for the amaXhosa, the Batswana, the Basotho, the amaZulu and the many groups in the northern provinces;⁸ it is

⁴ See S. Becker and L. Woessmann, 'A Human Capital Theory of Protestant Economic History', *Quarterly Journal of Economics*, 124, 2 (2009), pp. 531-596., but cf. C. Schaltegger and B. Torgler, *Was Weber Wrong? A Human Capital Theory of Protestant Economic History: A Comment on Becker and Woessman* (unpublished paper, Queensland University of Technology, 2009).

⁵ E. Frankema, 'The Origins of Formal Education in Sub-Saharan Africa: Was British Rule More Benign?', *European Review of Economic History*, 16, 4 (November 2012), pp. 335-355.

⁶ F. Gallego and R. Woodberry, 'Christian Missionaries and Education in Former African Colonies: How Competition Mattered', *Journal of African Economies*, 19, 3 (June 2010), pp. 294-329.

⁷ N. Nunn, 'Religious Conversion in Colonial Africa', *American Economic Review*, 100, 2 (May 2010), pp. 147-152; N. Nunn, *Gender and Missionary Influence in Colonial Africa* (Harvard University, Mimeo, 2011).

⁸ J. Comaroff and J. Comaroff, *Of Revelation and Revolution: Volume I, Christianity, Colonialism and Consciousness in South Africa; Volume II, The Dialectics of Modernity on a South African Frontier* (Chicago, University of Chicago Press, 1991, 1997); N. Erlank, 'Gender and Christianity among Africans Attached to Scottish Mission Stations in Xhosaland in the Nineteenth Century' (PhD thesis, Cambridge University, 1998); N.A. Etherington, *Preachers, Peasants and Politics in Southeast Africa, 1835-1880: African Christian Communities in Natal, Pondoland and Zululand* (London, Royal Historical Society, 1978); P. Delius, 'Witches and Missionaries in Nineteenth Century Transvaal', *Journal of Southern African Studies*, 27, 3, (September 2001), pp. 429-443; A. Kirkaldy, *Capturing the Soul: The Vhavenda and the Missionaries* (Pretoria, Protea Book House, 2005); P.S. Landau, *The Realm of the Word: Language, Gender, and*

also the case for the 'coloureds' of the Cape provinces.⁹ A distinction can be made in that for the former 'Westernisation' and the creation of an elite went hand in hand, whereas for the latter, to a large extent, some degree of Westernisation preceded entry to elite status. Nevertheless, in both cases a substantial cultural transformation took place, driven in the first instance by the power of mission Christianity. It was through the missions that the first generation of coloured and black literates in South Africa acquired their skills, with effects which are still noticeable.¹⁰

A central part of the mission process entailed the acquisition of literacy. Missionaries, and especially their wives and daughters, spent much of their time teaching their adherents to read and write. But, beyond the spiritual benefits which may have accrued, reading and writing were necessary accomplishments to allow successful participation in the colonial economy. Literacy benefited not only the individuals concerned but also, though this was often not recognised, the economy as a whole.

This is not to say that those responsible for education failed to appreciate its value. In 1873, Langham Dale, Superintendent of Education in the Cape, complained about the 'children of Dutch-speaking, European parentage growing up with less care bestowed upon them than upon the beasts of the field; – without the ability to read or write even their mother tongue'.¹¹ F.W. Reitz, a farmer in the Swellendam region, 'bemoaned the fact that few children progressed beyond a basic grasp of literacy and numeracy'.¹²

Still, the emphasis of the colonial authorities was on white education. As Duff notes: 'The purpose of childhood was, then, to prepare children to become the kinds of adults the colonial

Christianity in a Southern African Kingdom (Portsmouth, New Hampshire, Heinemann, 1994); D. Williams, 'The missionaries on the Eastern Frontier of the Cape Colony, 1799–1853' (PhD thesis, University of the Witwatersrand, 1959).

⁹ E. Elbourne, *Blood Ground: Colonialism, Missions, and the Contest for Christianity in the Cape Colony and Britain, 1799–1853* (Montreal, McGill University Press, 2002); P.S. Landau, 'Transformations in consciousness', in C.A. Hamilton, B.K. Mbenga and R. Ross (eds), *The Cambridge History of South Africa Vol. 1: From Early Times to 1885* (Cambridge, Cambridge University Press, 2010); P. Scully, *Liberating the Family: Gender and British Slave Emancipation in the Rural Western Cape, South Africa, 1823–1853* (Portsmouth, New Hampshire, Heinemann, 1997).

¹⁰ C. Swanepoel and J. Fourie, *The Persistent Effects of Missionary Education in South Africa*, (unpublished paper, Stellenbosch University, 2013).

¹¹ 'Our Agricultural Population (1),' *Cape Monthly Magazine*, March 1873, p. 159.

¹² Quoted from S. Duff, *What will this Child be? Children, Childhood, and the Dutch Reformed Church in the Cape Colony, 1860–1894* (PhD thesis, University of London, 2010), p. 188; F.W. Reitz, 'The Rural Population,' *Cape Monthly Magazine*, September 1870, p. 130.

state desired: coloured and African children were to be fitted to be employees and labourers, white children were to be educated to employ and to lead.¹³ But, as our results show, the mission stations did not usually adhere to this colonial education blueprint.

MISSION STATIONS AT THE CAPE AND THE 1849 CENSUS

This analysis is based on the 1849 census of mission stations at the Cape, printed (in full) in *Master and Servant: Addenda to the Documents on the Working of the Order in Council of the 21st July 1846, including Memorials &c and reports by the resident magistrates on the missionary institutions, with a summary of the whole*, published in Cape Town in 1849 by order of the Legislative Council. The data which it contains have been digitised by the College of Human Sciences of the University of South Africa (UNISA) and will in due course be made fully available electronically. The circumstances under which the census was conducted have been detailed by Ross and Viljoen and do not need to be repeated here.¹⁴ Suffice it to say that it was a time of considerable tension in the Cape Colony. On the Eastern frontier, 1849 was the (short) interbellum between the War of the Axe and Mlanjeni's War. Elsewhere, the arguments on the possible constitutional changes in the Colony, the level of the franchise, and the plans to introduce British convicts into the Cape were hotting up. Furthermore, the white farming community was having difficulty in coming to terms with the effects of the emancipation of slaves, 11 years earlier, and with the consequences of the ending of civil disabilities for the Khoekhoe by Ordinance 50 of 1828. Largely as a result of such tension the decision was made to survey the mission stations which were seen as withholding labour from the farmers. In consequence each district magistrate was required to visit every mission station in his district for the purpose of collecting the information which the government thought it required. This was done with the exception of Wupperthal and the Namaqualand stations, which were too distant for the Clanwilliam magistrate to reach.¹⁵ The location of the stations visited can be seen in Figure 1. It will be noted that the reach included the newly annexed district of Victoria, with its headquarters at Alice in the Eastern Cape, but excluded what was then British Kaffraria.

¹³ Duff, *Children*, p. 295.

¹⁴ R. Ross and R.S. Viljoen, 'The 1849 Census of Missions in the Cape Colony', *South African Historical Journal*, 61, 2, (2009), 389-406.

¹⁵ There are also data on the settlement of 'Hottentots and other natives' at the farm at Scott's Bottom in the Bathurst district, but as this was not a mission station they are excluded from this analysis.

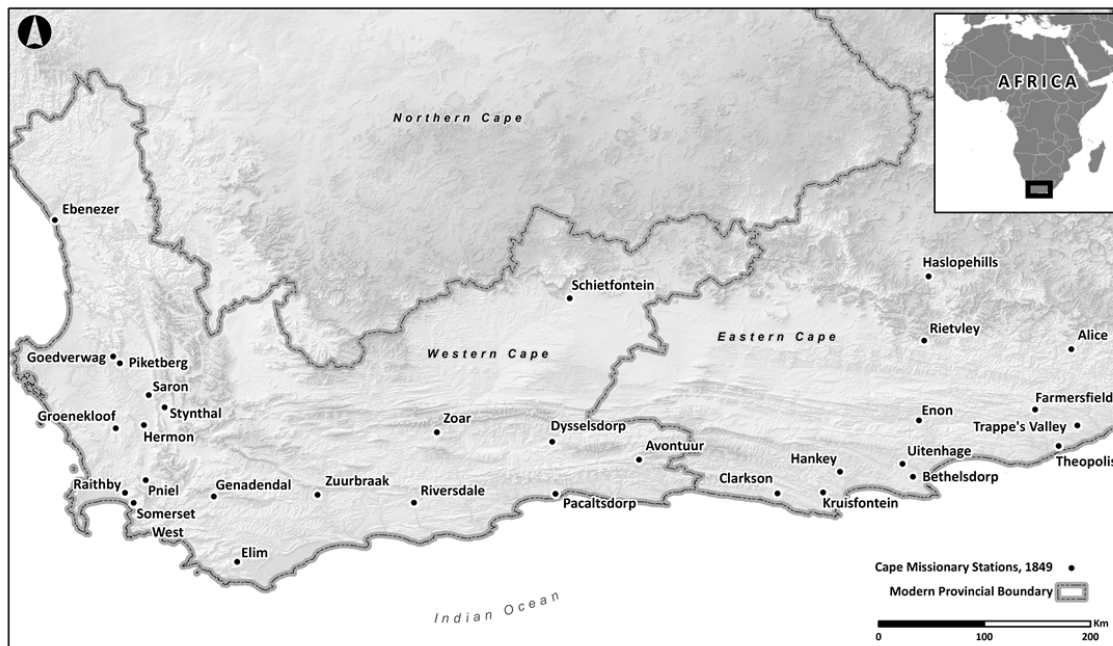


FIGURE 1: Map of Cape mission stations included in 1849 census with present-day provincial borders

The data the magistrate was required to collect included, naturally enough, the name, age, sex, occupation and possessions of each station resident, and also how long he or she had been living on the mission. Special attention was paid to the work performed outside the stations by the adolescents, as it was believed that the stations were responsible for the shortage of labour for the farmers. In addition, the magistrate was required to note for each resident if 'he' could read or write. At a few stations, indeed, the literacy of women was not ascertained. The test was simple, and direct. 'This you will ascertain from personal examination, for which purpose it will be advisable that you should take with you a copy of the Bible in Dutch, from which you will require those who are represented as able to do so to read a few verses'.¹⁶ Except perhaps in the missions among the amaXhosa, at Lovedale and Gwali above all, this would not have been a problem, as Dutch was the language used on all the missions, even those run by the British societies. One man, Gele, a 'Mantatee' living in Riet Vlei near Somerset East, is described as able to read in isiXhosa. Presumably an analogous

¹⁶ *Master and Servant: Addenda to the Documents on the Working of the Order in Council of the 21st July 1846, Including Memorials and Reports by the Resident Magistrates on the Missionary Institutions, with a Summary of the Whole* (Cape Town, 1849), pp. 27.

test was used to check whether those who claimed to be literate were able to write as well as read. The census thus gives very direct evidence of the mission station residents' literacy.

Their numeracy is another matter. This has to be inferred from their reported ages, using the information from age-heaping, a well-established technique.¹⁷ Figure 2 shows the reported age distribution of all Cape mission station residents: the graph clearly shows that rounded numbers (30, 35, 40, for example) are more popular than exact ages (such as 33, 37, etc). Through a statistical technique known as the Whipple Index, these misreported numbers can be converted into a measure of numeracy. The Whipple Index represents the extent to which age data reveal heaping at certain ages, notably those ending in 0 or 5. Equations 1 and 2 in the Appendix show how to convert this to a standardised measure between zero and 100.

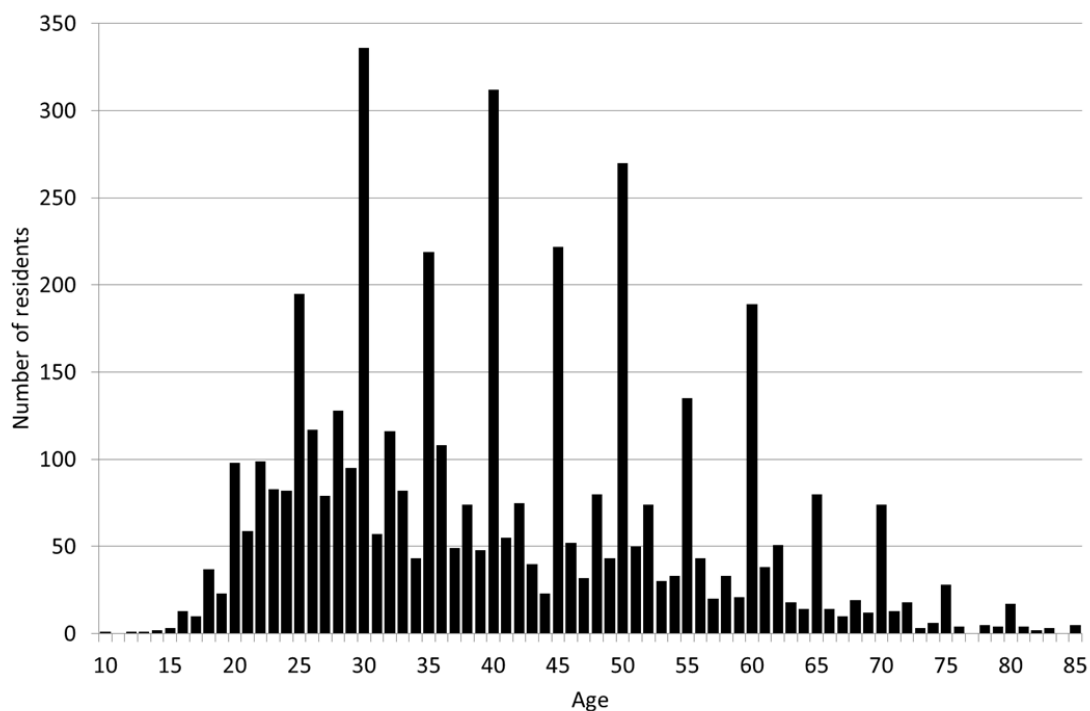


FIGURE 2: Age distribution of mission station census, 1849

Unfortunately, the magistrates were not consistent in their questioning practices. In all cases, information was collected from all adult males. However, the information on women varies

¹⁷ B. A'Hearn, J. Baten, D. Crayen. 'Quantifying Quantitative Literacy: Age Heaping and the History of Human Capital', *Journal of Economic History* 69 (2009), 783-808.

considerably. In some cases, precisely the same information was given for the women as for the men. Elsewhere, data on literacy were provided but not the supplementary information on age or length of residence. For seven stations the information was available for those living independently, mostly widows but also some unmarried women, and for eight stations nothing other than the woman's name was recorded. We have no reason to suppose that the literacy rates for the women on the stations where these data were recorded differed greatly from those where they were not, at least on average, though it may be that the inclusion of widows (but not married women), for instance at Bethelsdorp, would have decreased average female literacy rates.¹⁸

In three cases, Genadendal, Elim and Bethelsdorp, information on children's literacy is provided. The data from Bethelsdorp are not particularly useful, as there is no indication of the children's ages, so that it is not possible, for instance, to exclude infants from the statistics, but for the other two places, which together contained 25% of the stations' children, more meaningful statements can be made.

Table 1 provides the descriptive statistics of the 1849 mission census. In total, 4,678 individuals are included in our analysis. Genadendal was the largest mission station, with 1,099 residents surveyed (close to 24% of all residents surveyed at these stations), followed by Elim with 373. Hermon, with only 11 residents surveyed, was the smallest station.

[Table 1]

The average age of the adult male household heads varied somewhat between stations, from a mean age of 32.9 years at Lovedale to 44.5 years at Ebenezer. Table 1 also shows large variations in the average residency period on the stations: at Saron, founded in 1846, only three years before the census,¹⁹ the mean residency period is only 1.1 years while that of Bethelsdorp is 25.6 years. Two other measures, reported in tables 1 and 2 under the headings 'Eman' and 'Born', were created to record whether a given individual (and by extension what proportion of the population) had arrived at the station since the emancipation of slaves

¹⁸ As we demonstrate below, age was highly (and negatively) related to the likelihood of being able to read.

¹⁹ E. Strassberger, *The Rhenish Mission Society in South Africa, 1830-1950* (Cape Town, Struik, 1969), p. 28.

(effectively in 1838) or had been born at the station, respectively. There is considerable variation in the emancipation dummy: while all the residents of six of the stations had arrived after 1838, only 14% of residents at Schietfontein had done so. As regards the other measure, 15 stations reported no adult residents who were born there, while Enon reported 30% born there. Further, the difference in coverage of the stations' women would create biases if cross-station comparisons were made without controlling for these demographic differences. Marital status, too, varied across stations: while only 18.2% of individuals at Hermon were married, all at Raithby and Clarkson indicated that they were.

[Table 2]

Table 2 provides the same descriptive statistics as Table 1, but grouped by missionary society. More than half of all individuals in our sample resided at stations operated by the Moravian Society, while nearly a quarter of the remaining individuals resided at stations operated by the London Missionary Society. Only 4.9% of individuals resided at stations operated by the Free Church of Scotland and 5.7% at those operated by the Rhenish Missionary Society.

HUMAN CAPITAL PERFORMANCE AT CAPE MISSION STATIONS, 1849

Table 3 reports literacy and numeracy rates by age cohorts. Both variables reveal a decline in performance as we move up the age cohorts, suggesting that both the literacy and the numeracy skills of older individuals tended to be weaker. Given the accuracy of the literacy measure, the sharp decline suggests that age is an important determinant of an individual's ability to read and write. While close to half of all 13 to 22 year olds could read, less than 10% of those older than 63 could.

[Table 3]

Table 4 shows literacy and numeracy rates by station. The large variation of both measures across the sample is already indicative of differences in education practices between stations: while the 388 individuals at Zoar only attained a literacy rate of 4.9% and none of the 12 residents of Raithby could read, the 191 residents of Enon had a 48.7% literacy rate.

[Table 4]

Comparisons with other regions and towns in the Cape are, unfortunately, not readily available. Duff offers only anecdotal evidence of low literacy rates of the white, coloured and black communities of the 1870s and does not provide any quantitative estimates to substantiate these claims.²⁰ The Blue Books of the mid-nineteenth century also offer few statistical comparisons. Literacy rates of the Cape Colony can, however, be calculated from the figures recorded in the census of 1865: of the 314,789 coloured and African inhabitants of the Cape Colony, only 30,394 (or 9.7%) could read.²¹ Note that these numbers would include those residing on mission stations, and were compiled a decade and a half later, in a period when literacy rates, at least on the mission stations, were increasing. This figure can be divided into a literacy rate of 16.9% for the Western districts and only 4.5% for the Eastern districts. By comparison, the residents of even the worst performing mission stations in the Eastern districts were significantly more literate than their counterparts outside the missions. Mission station residents lagged behind in comparison to whites, however: 65.7% of whites in the Western districts of the Cape Colony were literate, and 63.9% in the Eastern districts.

Another quantitative comparison comes from Baten and Fourie, who use the Court of Justice records in the Cape Archive and the Whipple index to construct a measure of slave numeracy for the late eighteenth and early nineteenth centuries.²² Using the origins of the slaves that are provided in these records, they calculate a numeracy estimate for each region that the Cape slaves originated from. Unsurprisingly, Cape slaves are less numerate than the later residents of Cape mission stations: slaves born at the Cape after 1790, for example, have a numeracy score below 50 compared with the 65 average for all the Cape mission stations.²³ Slaves born outside the Cape Colony after 1790 – in Mozambique and elsewhere – are even less numerate. But these comparisons remain unsatisfactory. The digitisation of nineteenth century statistical records and the wider use of statistical techniques like the Whipple index

²⁰ Duff, *Children*.

²¹ Census of the Colony of the Cape of Good Hope 1865 (Cape Town, Saul Solomon & Co., 1866), pp.55-63.

²² J. Baten and J. Fourie, *Slave Numeracy in the Cape Colony and Comparative Development in the Eighteenth Century* (ERSA Working Paper 270, Cape Town, 2012).

²³ Baten and Fourie, *Slave Numeracy*, p. 21.

could shed further light on the educational differences between residents of mission stations and those outside the missions.

Literacy and numeracy quantification also allows comparisons with other countries that shared a slave heritage. Given their shares of ex-slaves, the mid-nineteenth-century Americas and the Caribbean, as shown in Table 5, offer a legitimate benchmark against which to assess the educational attainment of the Cape coloured population.²⁴ The Cape mission stations' average literacy rate of 23% is significantly lower than that of most of the cities in the sample, except for San Juan and Havana, where literacy rates of the coloured populations were recorded. However, compared to the regional averages – the more acceptable comparison, given that none of the Cape mission stations were located in cities – Cape mission stations achieve higher literacy rates than the nineteenth-century populations of Chile, Puerto Rico, Jamaica and Brazil, and similar rates to those of Argentina and Cuba.

[Table 5]

Literacy rates varied not only across stations but also across missionary societies. The geographical locations of stations under the control of a single society were diverse – the Moravians, for example, ran stations over a vast area, ranging from Piketberg and Caledon to Uitenhage and Alice. Table 6 illustrates differences in mission educational attainment within the Protestant tradition.

[Table 6]

The South African Missionary Society (with 500 residents) clearly paid little attention to education, their converts attaining a literacy rate of only 9.54%. In contrast, the Free Church of Scotland (with 175 residents) attained a high 38.53%, while the Wesleyan Methodist and London Missionary Society had rates of above 30%. Of course, the higher literacy of the Wesleyan Methodist Society may be explained in part by the different characteristics of the residents; perhaps the Wesleyan Methodist Society attracted younger residents, which would

²⁴ S. Engerman and K. Sokoloff, *Economic Development in the Americas since 1500: Endowments and Institutions* (Cambridge, Cambridge University Press, 2011), p. 135.

then explain its higher literacy rate. The next section investigates the determinants of these disparate literacy rates.

DETERMINANTS OF LITERACY

This section uses regression analysis to control for observed characteristics, like age, gender, and the duration of residency, correlations of which are reported in Table 7.

[Table 7]

We use two estimations to identify the determinants of literacy. First, we regress the average station characteristics on the mean station literacy score.²⁵ While the results reported in Table 8 do provide some tentative conclusions, their robustness is weak, as would be expected given the small sample size of only 29 stations. In addition to the literacy and numeracy variables, we create four new controls: our measure for residents who arrived at the stations after emancipation ('Eman'), those who were born at the stations ('Born') and male and married dummies.

Most notably, the length of residence is positively and significantly related to literacy scores: the longer individuals resided at mission stations, the higher their literacy score. The results reported in Table 8 suggest that residents at stations run by the London Missionary Society and the Wesleyan Methodists, controlling for age, residency and the two new variables, achieved significantly higher literacy rates than those at the stations run by the Rhenish, Moravian and South African missionary societies. It apparently helped to be taught by the British, rather than by Germans or the Cape Dutch.

[Table 8]

²⁵ To do this we estimate: $Y_i = \alpha + \beta Soc_i + \gamma Age_i + \delta Res_i + \theta Ageheap_i + \varepsilon$ where Y is the average literacy score by station i , α is a constant, Age_i , Res_i and $Ageheap_i$ are explanatory variables, Soc_i is our variable of interest with β_i denoting the coefficient for each of the missionary societies, and ε is a randomly distributed error term.

Second, to gain robustness in our findings, we use a regression analysis at the individual level. A linear probability model (LPM)²⁶ is employed where the dependent variable is binary; in this case, where the individual is either literate (1) or non-literate (0). The sample size now increases to between 4,051 and 4,120 depending on the number of explanatory variables used.²⁷ In addition, we also include Age-squared ('Age2') and Residency-squared ('Res2') variables to account for any non-linearity. While controls are included to account for possible spatial bias, none of these are significant in the final outcome and are therefore removed from the analysis.

Table 9 reports the results.²⁸ As before, age is found to be negatively related to literacy rates: *ceteris paribus*, older individuals tend to have lower literacy rates. The length of residency on the mission stations seems to be less important at the individual level: once we control for 'Eman' and 'Born', its effect becomes smaller, although it is still positive and significant.

In all six specifications, the 'Eman'-variable is large and statistically significant, even when controlling for age, residency and 'Born'. This reflects the difference between those who resided at mission stations before the abolition of slavery and those who arrived at the stations only after 1838. The size of the coefficient suggests that, controlling for all the other variables, a person who arrived at a station after 1838 would have a 15.2% lower probability of being literate in 1849. Similarly, a person who was born at a mission station would have a 27% higher likelihood of being literate, *ceteris paribus*. This result is surprisingly consistent across all the specifications, and probably points to the importance of education programmes for the young at the stations vis-à-vis the educational options of those residents who had not spent their formative years at mission stations.

²⁶ One of the problematic features of the LPM is that heteroscedasticity – a collection of random variables is heteroscedastic if the sub-populations vary substantially – is nearly always present. Robust standard errors are computed to control for this.

²⁷ These numbers, although large, are only about a third of the number of residents on mission stations as reported in Ross and Viljoen. The reason for this marked reduction in sample size is because only individuals that were tested for literacy were included in the current analysis and because of missing data in several of the other key variables. While this could create a sample bias if, for example, the literacy tests were not administered randomly, the share of residents per mission station remains relatively constant in our and the original sample, which suggests that differences across stations will not be the result of sampling bias.

²⁸ $y_j = \alpha + \beta Soc_j + \gamma \Phi_j + \varepsilon$ where y is a binary variable of literacy for each individual j , α is a constant, Soc_j is again our variable of interest with coefficient β , Φ is a vector of explanatory variables and ε is a randomly distributed error term.

What information there is on children's literacy rates would seem to confirm this. In Bethelsdorp, out of 274 children (of all ages) 81 (29.56%) could read and 29 (10.58%) could write. The figures for Genadendal and Elim are given in Table 9. They demonstrate, firstly, that the proportion of children over 12 who could read was very much higher than that of the adults (both men and women in these two cases). At Genadendal 66.60% of teenagers could read and at Elim 66.99%, as against 23.75% and 15.55% of the adults at these two stations. Secondly, they demonstrate that girls were more likely to be able to read than boys. Out of 405 boys over 12 at the two stations, 239 (59.01%) could read, while 225 of the 283 (79.51%) of the girls could read.²⁹ Of the 1,199 under 12, 733 (61.13%) could read or at the very least were in school learning to spell. This must have been virtually all those of the relevant age.

(Table 9)

We can distinguish a clear rank order in the level of literacy achieved by the various missionary societies. The South African Missionary Society did worst and the Wesleyan Methodists did best: residing at a Wesleyan Methodist station rather than a South African Missionary Society station increases the probability of being literate by 31%, *ceteris paribus*. The London Missionary Society, the Rhenish Missionary Society and the Free Church of Scotland also perform well relative to the South African Missionary Society. The small coefficient of the Free Church of Scotland dummy is mostly explained by the large negative coefficient for a single Free Church station, Gwali in the Eastern Cape, in itself perhaps a consequence of the isiXhosa-speaking character of this particular station.³⁰ Given certain assumptions, the Moravian society appears to have done slightly better than the South African Missionary Society, but in the final analysis probably did not.

Males consistently perform worse than females on literacy scores. One caveat should be noted here, though: not all females answered the question pertaining to literacy. The extent to which women did not answer because they were illiterate will determine the sampling bias. There is little evidence of this happening, though, as most of the non-response is

²⁹ The difference in numbers between the two sexes presumably derives from a gendered distinction in the age of transition from childhood to young adulthood.

³⁰ The magistrate who conducted the literacy test at Gwali, H.C. Calderwood, was an ex-missionary and perhaps sympathetic to the Gwali residents, but if, as is likely, he adhered to the stated rule and used only a Dutch bible this would have ruled out those who were literate in isiXhosa but could not speak, let alone read, Dutch.

grouped by station, suggesting that at some stations women were requested to answer the literacy questions while at others they were not. Sampling bias could thus be a serious issue only if women at those stations that had lower female literacy were not asked to answer the literacy questions. There is no reason to believe this happened. The higher literacy rate of women, therefore, offer some support for Nunn's finding that female education was given priority at Protestant mission stations.³¹

[Table 10]

Finally, we include a measure of numeracy. While age-heaping is often used as a proxy for human capital attainment in the absence of more accurate measures like literacy, we include it here as a proxy for parent education, arguing that an individual's awareness of their age is to some extent dependent on their parents' ability to transfer that knowledge to them. The results confirm our expectation of a negative, significant coefficient. However, for our purposes here, the results are not very important because they have little impact on other explanatory factors, suggesting that while parental education may be important, it cannot explain away the impacts of any of the other independent variables. In other words, the differing impact of the missionary societies remains even if we control for a (rough) measure of parents' education levels, no matter which of several estimation methods are used.³²

LIBERATION THROUGH EDUCATION

One basic finding of this article, then, is that, even taking into account all the differences between the mission stations and missionary societies, a steadily increasing proportion of those people who had come to live in these communities were able to read and to write. It is of course difficult to make statements about trends on the basis of single points of observation, such as a census. In this case, however, the large sample size of 4,500 individuals and the consistent increase in literacy between age cohorts, with the younger being more literate, gives us confidence in the robustness of such a statement. Mission stations were not only providing some degree of protection from the oppression which had been the lot of the

³¹ Nunn, *Gender and Missionary Influence*.

³² For further details see ERSA Working Paper #284.

slaves and most of the Khoekhoe, and also, as the missionaries believed, offering the key to salvation, but also endowing their protégés with the ability to read, write and count.

The mission station inhabitants were certainly not typical of the mass of ex-slaves and Khoekhoe in the Cape Colony, even though residents comprised approximately 16.5% of the coloured population of the colony living outside Cape Town, and about 7.3% of the total population of the colony, including whites and the inhabitants of the city, where no division on the basis of race was made.³³ These station inhabitants would not have been the only literates in the colony's coloured population. There were missions which educated former slaves and Khoekhoe in all the major towns – Cape Town,³⁴ Stellenbosch, Worcester,³⁵ Port Elizabeth, Graaff-Reinet and Grahamstown.³⁶ In the Kat River Settlement in the Eastern Cape, in the years before the War of the Axe, 'the infant, juvenile, evening and Sabbath schools ... were affording instruction to upwards of 1,200 persons, diffusing extensively a knowledge both of the Dutch and English languages'.³⁷ Then there were those who learned to read in the Islamic schools of Cape Town, primarily Dutch in Arabic script.³⁸ In other words, there were a variety of opportunities for the coloureds to acquire a basic education, of which the mission stations were only one, though probably the most important numerically.

The mission inhabitants were not all immediately able to make use of their literacy and numeracy skills. The stations were seen as places which tied up labour, and thus forced up wages, to the disadvantage of the farmers. One of the more rabid of the farmers commented that 'the institutions are swarming with boys and girls old enough for work, but wanted at *school*'.³⁹ In fact, as the census made clear, most of those on the mission who could work for the farmers did do so, as most of the stations offered only limited possibilities for earning a living. Nevertheless, for all his vindictive ferocity, T.B. Bayley, the farmer in question, did have

³³ Cape of Good Hope, *Statistical Blue Book of the Colony* (1848).

³⁴ E.H. Ludlow, 'Working at the Heart: The London Missionary Society in Cape Town, 1819-1844', in J. de Gruchy (ed.), *The London Missionary Society in Southern Africa: Historical Essays in Celebration of the Bicentenary of the LMS in Southern Africa, 1799-1999* (Cape Town, David Philip, 1999).

³⁵ Strassberger, *The Rhenish Mission Society*.

³⁶ R. Ross, 'Congregations, Missionaries and the Grahamstown Schism of 1842-3', in J. de Gruchy (ed.), *The London Missionary Society in Southern Africa: Historical Essays in Celebration of the Bicentenary of the LMS in Southern Africa, 1799-1999* (Cape Town, David Philip, 1999).

³⁷ J.R. Innes, 'Memorandum on the Kat River Settlement', in *British Parliamentary Paper 635 of 1851 (Select Committee on Kafir Tribes)*; see also, Ross, 'Congregations'.

³⁸ A. Davids, *The Afrikaans of the Cape Muslims from 1815 to 1915*, doctoral dissertation (1992), University of Natal.

³⁹ Cited in Ross and Viljoen, 'The 1849 Census of Missions', pp. 393.

a point. The years after the emancipations (of both slaves and Khoekhoe, through Ordinance 50) saw an increase in the bifurcation of the rural labour force, which had begun before 1828. On the one hand there were those who were held in what for the slaves was formal bondage, and which after emancipation (and even before for the Khoekhoe) was continued by a large variety of legal and extra-legal means.⁴⁰ These formed the oppressed mass of the rural coloured population, held in thrall by the tot system and alcohol dependency, debt bondage and often raw violence. On the other hand there were those who by a combination of good luck, opportunity and strength of character were able to escape such bondage. Although obliged to do menial work as seasonal labourers on the wine and wheat farms, or as travelling sheep-shearers,⁴¹ they had some possibility of escape, some refuge to which they could retreat as necessary.

Within these two groups, there were of course distinctions on the basis of gender and age. Scully points out how the missionaries attempted to impose the forms of family life to which they were accustomed on the residents of the station.⁴² Indeed, the census is generally organised in terms of households. These were expected to have a male head. The gender hierarchies of Europe were propagated as though they were the natural order of things, or at the very least those which morality required. The oppression this entailed is evident, and the pressure on those who strayed from the missions' norms was often unbearable, as is shown by a number of infanticide cases around the missions.⁴³ Nevertheless, it was not just the external pressure to conform that kept the mission inhabitants obedient. There were clear advantages to living on a mission station, which most of the inhabitants presumably thought outweighed the irksomeness of the discipline imposed on them. Even though the men, and generally the unmarried women too, had to work on the farms, it was possible for some to withdraw from the labour process under which they, or at least their parents, had suffered before emancipation. Mission station residents could engage in seasonal work and enjoy the freedom of mobility.

⁴⁰ D. Van Arkel, G.C. Quispel and R. Ross, *De Wijngaard des Heeren? De Oorsprong van 'die Blanke Baasskap' in Zuid-Africa* (The Hague, Martinus Nijhoff, 1983).

⁴¹ C. Bundy, 'Vagabond Hollanders and Runaway Englishmen: White Poverty in the Cape before Poor Whiteism', *The Societies of Southern Africa in the 19th and 20th Centuries*, 13, 1984.

⁴² P. Scully, *Liberating the Family: Gender and British Slave Emancipation in the Rural Western Cape, South Africa, 1823-1853* (Portsmouth, New Hampshire, Heinemann, 1997).

⁴³ Scully, *Liberating the Family*.

Education was a powerful liberating force. We can reasonably assume that those who had most chance of joining the more privileged section of the bifurcated labour force were those who had acquired extra skills, of which literacy was the most important. The coloured and later the black elite of the Cape Colony came in the first instance from those whom the missionaries, and their wives and daughters, had taught to read and to write. From as early as 1838 there was a 'kweekschool', or teaching training establishment, at Genadendal, which was beginning to turn out young men to work in the mission schools and later in those run by the Anglican and Dutch Churches.⁴⁴ There was also a steady stream from the schools of the Kat River who began as teachers and then moved into a variety of other positions throughout the colony. In the early 1850s the school at Lovedale, near Alice, would begin to provide secondary education. Both of these developments should be unsurprising given our results: Genadendal had the largest number of literate residents (257) in 1849, while Lovedale had the second highest literacy rate (48%).

Being on a mission station mattered, but being on the right type of mission station may have mattered even more. The slow process of bringing the ex-slaves, the Khoekhoe and the amaXhosa into the colonial economy, at any level above that of unskilled labourer, began from those societies that offered education, and not only devotion, as a beacon of hope. Certain mission societies did this better than others. To have lived on a Wesleyan or London Missionary Society station, and perhaps on a Free Church of Scotland station, gave advantages over living on Rhenish, Moravian or South African Missionary Society stations. Over and above this, it was a great advantage to have been brought up as a child on a mission station, rather than arriving there as an adult. This was particularly the case for the women.

As yet we can only guess at the advantage which mission station residents had over their fellows who, despite their emancipation, still lived as effectively tied labourers on the farms, nor do we have any indication of the success of mission education in the towns of the colony. Nevertheless, the evident distinction, by the early twentieth century, between the mission station residents and the rest of the coloured population, or for that matter between the

⁴⁴ B. Krüger, *The Pear Tree Blossoms: A History of the Moravian Mission Stations in South Africa, 1737-1869* (Genadendal, Moravian Book Depot, 1966), pp. 175-183, 269.

descendants of the first generation of the Xhosa converts and their fellows, makes it clear just how crucial mission education was.

CONCLUSIONS

The general belief that the educational attainment of the non-white South African is and always has been deficient is unfounded. In this article we argue that the attainment has been considerable, and largely on account of the missions. Mission stations make attractive units of observation for social scientists, since the exogenous impact of missionary activity allows the researcher to propound a causal argument. Recent research has shown, for example, that Protestant mission stations in Africa, by emphasising educational attainment for their converts, seem to have had a greater impact on long-run African economic performance than their Roman Catholic counterparts. Using a census of Cape Colony mission stations undertaken in 1849, we contribute to this literature by investigating the determinants of literacy at Cape mission stations, run by six different Protestant missionary societies. The census allows us to control for numerous possible explanations of literacy: the age of individuals, the length of residency at the station, emancipation rates, youth rates, gender biases, marriage patterns and even a proxy for parental education. We find that none of these additional factors explains away the differences in the impact of the various Protestant missionary societies. The results show that the London Missionary Society, the Wesleyan Society, the Rhenish Society and the Free Church of Scotland were more successful at helping their converts to become literate than the South African Missionary Society (the reference group) and the Moravian Society (which had the largest number of residents). Certain further generalisations can be made across the various missionary societies. For example, being female and being born at a station both improved literacy scores.

Disregarding these variations, we find that literacy rates were relatively high, even compared to similar ex-slave societies elsewhere in the world. And perhaps more importantly, in the post-emancipation nineteenth century, mission stations offered ex-slaves, the Khoekhoe and the amaXhosa a way to escape the discriminatory labour practices of the farms. As well as the immediate advantages this provided, the stations gave their residents, and above all their residents' children, skills with which to consolidate their position in Cape society. By far the

most important of these was literacy, and so the investigation of the patterns of its acquisition, which we have attempted in this paper, provides insight into the deeper patterns of South African colonial history.

APPENDIX

Equation 1 calculates the Whipple Index: $W = \frac{\sum (n_{25} + n_{30} \dots + n_{65} + n_{70})}{\frac{1}{5} \sum_{i=23}^{72} n_i} \times 100$. A linear

transformation yields the ABCC-index: $ABCC = (1 - \frac{(WI - 100)}{400}) \times 100$ These linear transformations

(the ABCC-index) can then be interpreted as an estimate of numeracy.

TABLE 1: Descriptive statistics by station of the 1849 census

Station	Soc	Pop	Crit	N	Share	Age	Res	Eman	Born	Male	Married
Avontuur	LMS	266	m	52	1.11%	42.6	4.7	100.00%	0.00%	100.00%	88.46%
Bethelsdorp	LMS	440	hh	166	3.55%	44.0	25.6	6.02%	6.63%	48.80%	88.55%
Clarkson	Mo	356	a	80	1.71%	39.2	8.8	93.75%	0.00%	50.00%	100.00%
Dyzelskraal	LMS	99	a	43	0.92%	44.1	8.1	79.07%	0.00%	48.84%	97.67%
Ebenezer	Rh	205	hh	52	1.11%	44.5	17.9	44.23%	23.08%	100.00%	59.09%
Elim	Mo	911	a	373	7.97%	40.8	10.3	66.22%	0.54%	48.92%	69.35%
Enon	Mo	382	a	191	4.08%	35.1	18.5	20.94%	29.84%	49.74%	64.94%
Farmersfield	We	476	hh	104	2.22%	38.2	7.9	100.00%	0.00%	97.12%	93.27%
Genadendal	Mo	2429	a	1099	23.49%	42.9	21.1	45.86%	20.47%	51.14%	71.68%
Goedverwacht	Mo	117	m	26	0.56%	37.7	5.9	96.15%	0.00%	100.00%	84.62%
Groenekloof	Mo	1097	hh	238	5.09%	43.4	18.3	43.70%	10.08%	94.54%	80.25%
Gwali	FC	268	a	131	2.80%	40.8	19.2	20.61%	13.74%	38.17%	68.70%
Hankey	LMS	685	a	278	5.94%	39.0	10.9	41.37%	1.44%	51.08%	83.33%
Haslope hills	We	272	m	115	2.46%	41.3	5.3	50.43%	40.00%	45.22%	99.13%
Hermon	Rh	23	a	11	0.24%	37.5	1.0	100.00%	0.00%	54.55%	18.18%
Kruisfonteyn	LMS	187	a	87	1.86%	35.1	6.5	94.25%	2.30%	49.43%	95.40%
Lovedale	FC	99	a	48	1.03%	32.9	5.1	100.00%	0.00%	41.67%	53.19%
Pacaltsdorp	LMS	553	a	213	4.55%	40.8	19.0	28.17%	12.21%	48.36%	85.45%
Pniel	SA	261	a	110	2.35%	37.6	2.8	100.00%	0.00%	50.00%	93.33%
Raithby	We	62	m	12	0.26%	39.4	2.1	100.00%	0.00%	100.00%	100.00%
Rietvley	FC	125	a	52	1.11%		8.4	57.69%	1.92%	53.85%	57.69%
Saron	Rh	518	m	122	2.61%	41.4	1.1	100.00%	0.00%	100.00%	90.98%
Schietfontein	Rh	123	m	21	0.45%	39.0	14.2	14.29%	0.00%	100.00%	95.24%
Scottsbottom	-	43	m	14	0.30%	32.5	5.8	78.57%	0.00%	100.00%	78.57%
Shilo	Mo	668	a	263	5.62%	40.9	9.7	63.88%	0.00%	47.53%	89.35%
Somerset West	We	270	hh	62	1.33%	39.2	6.7	77.42%	11.29%	87.10%	69.35%
Stynthal	Rh	275	hh	62	1.33%	42.5	3.0	100.00%	0.00%	95.16%	91.94%
Theopolis	LMS	285	hh	71	1.52%	43.8	20.7	26.76%	19.72%	94.37%	78.87%
Trappes valley	We	89	hh	26	0.56%	36.7	7.9	92.31%	0.00%	73.08%	73.08%
Zoar	SA	846	m	390	8.34%	38.3	9.6	34.62%	1.79%	49.74%	81.79%
Zuurbraak	LMS	548	a	166	3.55%	42.1	14.1	58.43%	5.42%	100.00%	94.94%
Total		12977		4678		40.8	14.2	52.59%	9.94%	59.63%	79.80%

Notes: 'Soc' is the name of the missionary society. LMS' is the London Missionary Society. 'We' is the Wesleyan Methodist Society'. 'Rh' is the Rhenish Missionary Society. 'Mo' is the Moravian Society. 'FC' is the Free Church of Scotland. 'SA' is the South African Missionary Society. 'Prov' is the region where each station was located. 'Pop' is the total population of each station, including women and children. 'N' is the number of residents at each station for whom we have literacy information. 'Crit' is the criterion of selection, whereby a = all adults, m = males and hh = householder, thus including widows and occasionally unmarried women. 'Share' represents the size of each mission station as a proportion of the total number in our sample. 'Res' is the average residency period of the residents of each station. 'Eman' is the share of individuals who arrived after emancipation. 'Born' is the share of individuals born at the station. 'Male' is the share of males at each station in the sample. 'Married' is the share of married residents at each station.

TABLE 2: Descriptive statistics by society of the 1849 census

Society	Abb.	N s	Nr	Share	Age	Res	Eman	Born	Male	Married
South African Missionary Society	SA	2	500	10.72%	38.2	7.1	49.00%	1.40%	49.80%	83.96%
London Missionary Society	LMS	8	1076	23.07%	41.0	14.7	43.59%	6.13%	62.73%	87.80%
Wesleyan Methodist	We	4	319	6.84%	39.1	6.8	77.12%	16.61%	74.61%	89.34%
Rhenish Missionary Society	Rh	5	268	5.75%	41.9	5.4	82.46%	4.48%	97.01%	85.29%
Moravian Society	Mo	7	2270	48.67%	41.5	16.9	51.23%	13.57%	55.31%	74.90%
Free Church of Scotland	FC	3	231	4.95%	38.7	13.9	45.45%	8.23%	42.42%	63.04%
Total		29	4664		40.8	14.2	52.51%	9.97%	59.51%	79.80%

Notes: 'Society' is the name of the missionary society. 'Abb' is its abbreviation used in the text. 'Ns' is the number of mission stations managed by each society. 'Nr' is the number of residents living at stations of the society. 'Share' represents the proportional size of each missionary society. 'Res' is the average residency period of the residents of each society. 'Eman' is the share of individuals who arrived after emancipation. 'Born' is the share of individuals born at the station. 'Male' is the share of males at each station. 'Married' is the share of married residents at each station.

Age group	N	Literacy	Numeracy
13–22	345	49.38%	85.51%
23–32	1288	38.13%	66.83%
33–42	1065	26.25%	62.68%
43–52	886	14.06%	55.59%
53–62	593	11.13%	56.70%
63–72	272	6.25%	54.23%
73–82	73	4.29%	47.95%
Total	4522	25.38%	62.87%

TABLE 3: Literacy and numeracy rates by age cohort

TABLE 4: Literacy and numeracy rates by station

Station	N	Literacy	Numeracy
Avontuur	52	25.00%	81.73%
Bethelsdorp	100	44.00%	48.19%
Clarkson	80	16.25%	51.56%
Dyzelskraal	42	45.24%	55.23%
Ebenezer	14	57.14%	69.71%
Elim	373	15.55%	84.12%
Enon	187	49.73%	71.99%
Farmersfield	104	35.58%	9.62%
Genadendal	1099	23.75%	83.48%
Goedverwacht	26	7.69%	48.08%
Groenekloof	238	13.87%	80.88%
Gwali	131	36.64%	50.57%
Hankey	259	42.47%	72.84%
Haslopehills	58	29.31%	21.74%
Hermon	11	27.27%	100.00%
Kruisfonteyn	83	34.94%	60.34%
Lovedale	48	47.92%	57.29%
Pacaltsdorp	212	41.51%	68.66%
Pniel	110	9.09%	57.95%
Raithby	12	0.00%	10.42%
Rietvley	52	34.62%	0.00%
Saron	122	6.56%	79.92%
Schietfontein	21	4.76%	41.67%
Scottsbottom	14	21.43%	26.79%
Shilo	263	11.79%	41.83%
Somerset West	56	33.93%	28.23%
Stynthal	62	14.52%	68.55%
Theopolis	71	32.39%	19.37%
Trappesvalley	26	53.85%	43.27%
Zoar	194	9.79%	42.95%
Zuurbraak	166	19.88%	39.16%
Total	4286	25.36%	62.87%

Notes: Statistically, Hermon records a numeracy rate of 102.3%, which is nonsensical. The small sample size and fewer than 20% of individuals that record ages that do not end in either a zero or five, explains this statistical anomaly. We have therefore changed the percentage to 100%.

TABLE 5: Comparison of literacy rates at Cape mission stations with rates in various cities of the Americas and the Caribbean

		Year	City	Region
Cape mission stations	Cape Colony	1849		23%
Boston, MA	USA	1850	91%	95%
New York City	USA	1850	94%	94%
Philadelphia, PA	USA	1850	93%	93%
Santiago	Chile	1854	47%	13%
Buenos Aires	Argentina	1855	52%	24%
San Juan (Coloured pop)	Puerto Rico	1860	18%	3%
San Jose	Costa Rica	1860	40%	39%
Havana (Coloured pop)	Cuba	1861	7%	24%
Kingston	Jamaica	1871	40%	16%
São Paulo	Brazil	1882	42%	15%

Source: Engerman and Sokoloff, *Economic Development*; own calculations.

TABLE 6: Literacy and numeracy rates by society

Society	Literacy	Numeracy
South African Missionary Society	9.54%	47.19%
London Missionary Society	36.45%	58.41%
Wesleyan Methodist	33.98%	25.39%
Rhenish Missionary Society	12.61%	73.50%
Moravian Society	21.67%	76.33%
Free Church of Scotland	38.53%	52.14%
Total	25.37%	62.87%

TABLE 7: Cross-correlations

	Literacy	Ageheap	Age	Res	Eman	Born	Male	Married
Literacy	1							
Ageheap	-0.1056	1						
Age	-0.3049	0.1412	1					
Res	0.1843	-0.056	0.2222	1				
Eman	-0.2644	0.0701	-0.1043	-0.698	1			
Born	0.3355	-0.1056	-0.2102	0.4134	-0.38	1		
Male	-0.0777	0.0362	0.0638	-0.0701	0.085	-0.074	1	
Married	0.0404	0.0504	-0.0676	0.0187	-0.0235	0.0054	0.1267	1

Notes: 'Literacy' is the literacy score. 'Ageheap' is one if an individual records a multiple of five in their age. 'Age' is the age of the individual. 'Res' is the length of time an individual has resided at a mission station. 'Eman' is a dummy variable which is one if a resident arrived after 1838, the emancipation of the slaves at the Cape. 'Born' is a dummy variable which is one if a resident was born at the mission station, i.e. if their period of residency equals their age. 'Male' is a dummy variable and is one if an individual is male. 'Married' is a dummy variable and is one if an individual is married.

TABLE 8: OLS regression of station characteristics on mean station literacy score

	Model 1	Model 2	Model 3	Model 4	Model 5
LMS	0.262**	0.235*	0.192*	0.212**	0.202*
	2.24	2.04	1.75	2.23	2.05
We	0.211	0.232*	0.128	0.201*	0.227*
	1.7	2.02	1.12	1.96	2
Rh	0.126	0.167	0.131	0.161	0.142
	1.02	1.41	1.19	1.49	1.25
Mo	0.104	0.056	-0.03	-0.024	-0.039
	0.87	0.49	-0.27	-0.25	-0.38
FC	0.303**	0.235	0.162	0.096	0.105
	2.24	1.67	1.2	0.81	0.86
Age		-0.018	-0.022**	-0.013	-0.014
		-1.7	-2.2	-1.36	-1.41
Res		0.012**	0.021**	0.022**	0.022**
		2.56	2.49	2.79	2.76
Eman			0.323*	0.348**	0.330*
			1.88	2.23	2.03
Born			0.625*	0.425	0.417
			2.09	1.6	1.53
Male				-0.232*	-0.209
				-2.03	-1.71
Married				-0.241	-0.189
				-1.63	-1.09
Numeracy					0.1
					0.6
Constant	0.094	0.720*	0.578	0.527	0.466
	0.9	1.75	1.46	1.51	1.26
R ²	0.298	0.475	0.599	0.735	0.74
N	30	29	29	29	29

Notes: 'Literacy' is a binary variable which is one if an individual is able to read. 'LMS' is the London Missionary Society. 'We' is the Wesleyan Methodist Society. 'Rh' is the Rhenish Missionary Society. 'Mo' is the Moravian Society. 'FC' is the Free Church of Scotland. 'Age' is the age of the individual. 'Res' is the length of time an individual has resided at a mission station. 'Eman' is a dummy variable which is one if a resident arrived after 1838, the emancipation of the slaves at the Cape. 'Born' is a dummy variable which is one if a resident was born at the mission station, i.e. if their period of residency equals their age. 'Male' is a dummy variable and is one if an individual is male. 'Married' is a dummy variable and is one if an individual is married. 'Numeracy' is one if an individual records a multiple of five in their age. All the variables used here are averages for each of the stations. The South African Missionary Society is the reference group.

TABLE 9: Children's literacy on two mission stations

	Genadendal	Elim
Boys above 12, can read	177	62
Boys above 12, cannot read	114	52
% literate	60.82	54.39
Girls above 12 can read	149	76
Girls above 12, cannot read	42	16
% literate	78.01	82.60
Children under 12, can read	72	63
Children under 12, spelling and at school	468	140
Infants and others not at school	316	140

TABLE 10: Linear probability modelling of the determinants of literacy, robust standard errors

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Age	-0.022*** -9.91	-0.021*** -9.23	-0.022*** -9.82	-0.021*** -9.64	-0.022*** -9.76	-0.021*** -9.3
Age2	0.000*** 5.29	0.000*** 5.45	0.000*** 6.04	0.000*** 5.91	0.000*** 6.05	0.000*** 5.76
Res	0.008*** 17.78	0.003** 2.57	0.003*** 3.04	0.003*** 3.09	0.003*** 2.91	0.003*** 2.7
Res2		-0.000** -2.35	-0.000*** -2.64	-0.000*** -2.64	-0.000** -2.53	-0.000** -2.32
Eman		-0.159*** -7.81	-0.154*** -7.64	-0.152*** -7.57	-0.151*** -7.51	-0.152*** -7.57
Born		0.250*** 10.03	0.271*** 11.09	0.271*** 11.11	0.270*** 11.02	0.270*** 11.03
LMS			0.219*** 8.62	0.215*** 8.45	0.211*** 8.14	0.207*** 7.99
We			0.300*** 9.18	0.303*** 9.3	0.299*** 9.07	0.313*** 9.47
Rh			0.103*** 3.05	0.108*** 3.22	0.084** 2.45	0.070** 2.03
Mo			0.055** 2.3	0.042* 1.76	0.042* 1.7	0.03 1.21
FC			0.188*** 5.25	0.170*** 4.69	0.171*** 4.67	0.172*** 4.68
Male				-0.043*** -3.38	-0.045*** -3.44	-0.046*** -3.57
Married					0.018 1.22	0.021 1.37
Numeracy						-0.055*** -4.46
_cons	0.804*** 16.56	0.884*** 17.32	0.779*** 14.58	0.804*** 14.92	0.807*** 14.79	0.818*** 15
r2	0.164	0.216	0.258	0.26	0.261	0.265
N	4120	4120	4107	4106	4053	4051

'Literacy' is a binary variable which is one if an individual is able to read. 'Age' is the age of the individual. 'Res' is the length of time an individual has resided at a mission station. 'Eman' is a dummy variable which is one if a resident arrived after 1838, the emancipation of the slaves at the Cape. 'Born' is a dummy variable which is one if a resident was born at the mission station, i.e. if their period of residency equals their age. 'LMS' is the London Missionary Society. 'We' is the Wesleyan Methodist Society. 'Rh' is the Rhenish Missionary Society. 'Mo' is the Moravian Society. 'FC' is the Free Church of Scotland. 'Male' is a dummy variable and is one if an individual is male. 'Married' is a dummy variable and is one if an individual is married. 'Numeracy' is one if an individual records a multiple of five in their age. The South African Missionary Society is the reference group.