

HENRY LICHTENSTEIN

Maps of southern Africa

Roger Stewart

Between 1803 and 1806 Henry Lichtenstein, a physician and future naturalist, visited the Cape Colony where he undertook three long journeys. 'Karte des europaeischen Gebiets am Vorgebirge der Guten Hoffnung', was published in 1812 in his Reisen im südlichen Afrika and 'Charte von dem Lande der Beetjuanas' was described in his book, but published in 1807 in the Allgemeine Geographische Ephemeridien. Lichtenstein's now scarce maps have received little attention; the accuracy of longitude on his eclectic map of the Colony was a significant advance and an important milestone in the history of travel and cartography in South Africa.

In December 1802 Martin Hinrich Carl Lichtenstein (1780–1857) – also known as Wilhelm Hinrich Carl – arrived in Cape Town, the year in which he had received a doctorate in Medicine from the University of Helmstedt in Germany. Dr Lichtenstein was to tutor the teenage son of the Colony's new Governor-General, Jan Willem Janssens, who took up office in early 1803. In 1802 the Dutch Batavian Republic had taken over control of the Colony as a condition of the Treaty of Amiens; the British had controlled the Colony from 1795, after having defeated the forces of the near bankrupt Dutch United East India Company (VOC), which was dissolved in 1800.



Fig. 1
M. H. C.
Lichtenstein
in c. 1806 by
Ambroise
Tardieu (Private
Collection).

Henry Lichtenstein at the Cape¹

Lichtenstein was only twenty-two years old when he arrived in Cape Town; he not only tutored the governor's son but also attended to the health of the Janssens family and inadvertently became directly involved in managing two notable public health challenges.² In 1804 he was a member of a small medical team that was required to deal with an epidemic of virulent dysentery that had broken out in a military camp in Cape Town. He too acquired the disease and was fortunate to survive: one in five who contracted the disease died, one of whom was the Governor's son and Lichtenstein's pupil. While still suffering from lingering symptoms of the disease, Lichtenstein developed and implemented a successful smallpox containment and vaccination programme amongst the indigenous and settler communities in the Roggeveld, near the north-eastern border region of the Colony.

Lichtenstein undertook three long journeys on ox-wagon (1804–05). He was a member of the party of Jacob Abraham de Mist, the Commisary General, which travelled about 300 km towards the northern boundary of the Colony and took a circuitous return route via the Roggeveld; the party then travelled about 800 km to the eastern border and returned via Graaff Reinet (see Fig. 2). His final long journey was to the north-east, in the company of Magistrate De Graaf; they travelled 500 km beyond the Colony, to the land of the 'Beetjuanen' (Bechuanas), as far as about 50 km north-east of present day Kuruman (about 1100 km north-east of Cape Town). On his travels he took a great interest in the lives, culture and issues of the local inhabitants and collected a modest number of natural history specimens.

After the Battle of Blaauwberg (Blue Mountain) in 1806 the British took control of the Cape Colony. Soon thereafter, Lichtenstein returned to Europe with General Janssens, where he immersed himself in writing about the Colony, covering diverse subjects such as his travels, the history of the Cape, aspects of its natural history, ethnography (including the language) of the Bechuana people and medicine; he also produced two maps. In 1811 he was awarded an honorary PhD

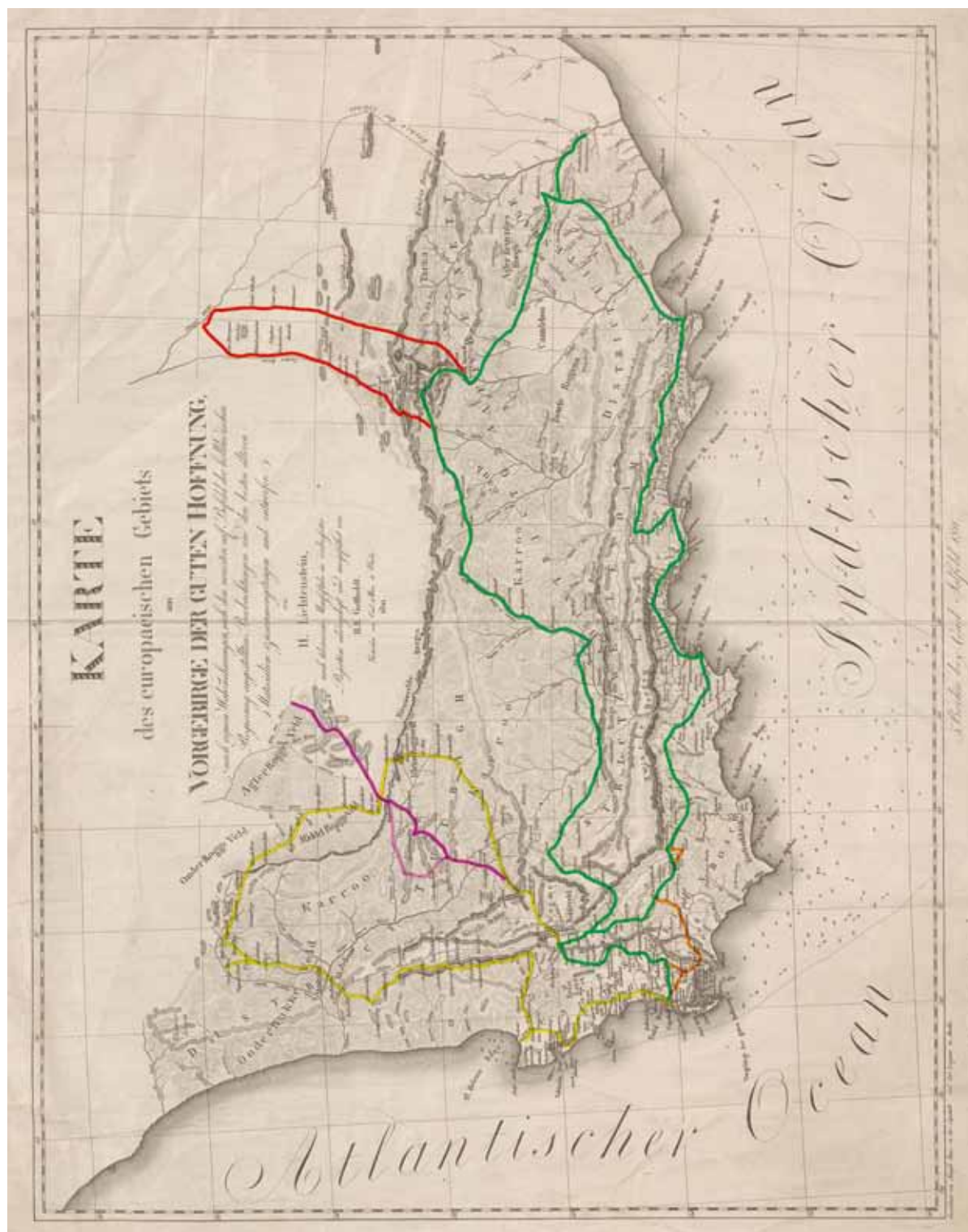


Fig. 2 Lichtenstein's map of the Colony and his journeys. Yellow: 1st journey; green: 2nd journey; purple: part of 3rd journey; red: Janssens' loop; light mauve: Lichtenstein's return route from his smallpox campaign; orange: parts of short excursions (see Fig. 5). With permission of the National Archives of Netherlands.

and appointed Professor of Zoology at the University of Berlin. Later he became director of the Berlin Zoological Museum and was one of the scientists responsible for the creation of the famous Berlin Zoological Gardens. He also wrote a history of the Berlin Academy of Song. Lichtenstein died at sea at the age of 77, apparently of heart failure, while returning to Germany after giving a lecture in Sweden.

Cape of Good Hope

Lichtenstein's map of the Cape Colony (Fig. 2) 'Karte des europaischen Gebiets am Vorgebirge der Guten Hoffnung' (Map of the European territory at the Cape of Good Hope) was published in his *Reisen im südlichen Africa* (Travels in Southern Africa).³ The publisher's imprint on the map reads 'Berlin bey Carl Salfeld 1811', but the map was published in 1812 in Volume 2 of the book, despite having been described by Lichtenstein in Volume 1 (1811). The map was drawn by Josephus Jones, the Cape-born artist and cartographer, in Cape Town and by Carl Langner in Berlin, while H.H. Gottholdt reduced the large manuscript map and also improved the projection; also in Berlin, Carl Mare engraved the copperplate for the printed map. New engravings of Lichtenstein's map of the Cape of Good Hope were published in translations of his book: in Dutch (1814)⁴ and English (1815).⁵ The Dutch edition of the map is Plate #10 in Koeman,⁶ and the English edition is #231 in Norwich.⁷

Lichtenstein's book, complete with map, is now scarce, as are all three versions of the loose map: for 33 years, no sale has been captured in the *Antique Map Price Record*.⁸ The map also was overshadowed by John Barrow's 1801 'General Chart of the Colony of the Cape of Good Hope',⁹ and, consequently, Lichtenstein's map is neither well known nor appreciated for its merits.

Lichtenstein's map extends from approximately 29°S to 35°S and from 34°E to 45°E of Ferro (El Hiero), a short distance beyond the eastern border at the Great Fish River. His 'European Territory at the Cape of Good Hope' was the part of southern Africa that then was controlled by the Batavian Republic, i.e. the Cape Colony (hereafter Colony). The map correctly shows the magisterial districts of the Colony that were confirmed by the Batavian Government in 1804: Cape, Stellenbosch, Zwellendam, Graaff Reinet and the two districts that had been created by the new government to accommodate the expanding border and increasing administrative burdens, viz. Tullbagh and Uitenhage.¹⁰ Lichtenstein's north-eastern boundary

of the Colony seems to follow Barrow's 1801 map. In 1804, the year before Lichtenstein travelled across this north-eastern boundary, the Batavian border had been extended beyond the Nieuweveld Mountains to the Zak (now Sak) River, where Lichtenstein visited a mission station. Lichtenstein's map should have extended at least this far and not stopped at the Little Riet (Reed) River.

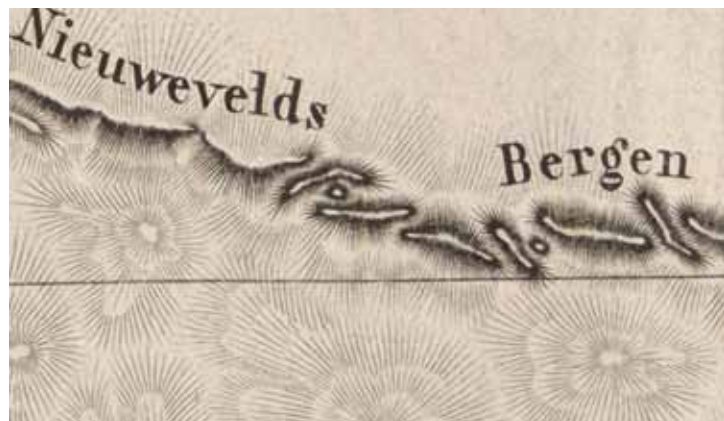


Fig. 3 Mare engraved rather strange hachuring over the German version of the map which gives the appearance of thousands of small hills, which they are not. With permission of the National Library of Netherlands.

The longitude scale in the German and Dutch versions is unremarkable, but it is uniquely scaled in the English map: lines of 1° change are shown from 35° 46'E of Ferro, with subdivisions of 5' (Fig. 4). It is tempting to speculate that the (anonymous) designer of this English map, engraved by Michael Thomson, took Ferro to be 17° 46'W of Greenwich (it is approximately 17° 40'W), perhaps in order to make it easier to convert longitude from Ferro to Greenwich.

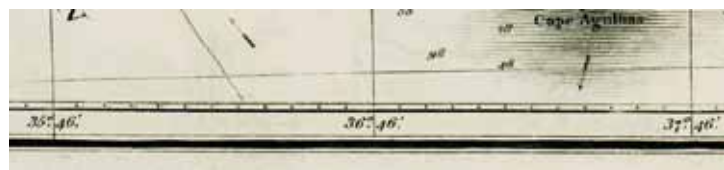


Fig. 4 The unusual longitude scale on the English edition of Lichtenstein's map. With permission of the University of Stellenbosch.

Explanation of the Map

In the explanation of his map of the Colony, Lichtenstein declared that he had compiled it because Barrow's map was 'seldom found of any use'. The governor sought 'a more complete and correct map of the country'. Lichtenstein set out to provide such a map and was of the opinion that his completed map

'is not so replete with errors as Mr. Barrow's'; nevertheless, he admitted that 'I am far from saying that there is not room for improvement of mine.'¹¹ Lichtenstein's explanation of his map (as translated by Anne Plumtre, see note 2) reveals his approach to mapping the Colony:

...the [Dutch] materials already in existence were first attentively revised, with a view to correcting the errors they contained; and in the second place, the southern coast was carefully examined by some very intelligent and experienced sea-officers, in several voyages which they made from Table Bay to Algoa Bay. The results of these researches were then thrown together on a very large scale, and laid the foundation of the present map. The journey taken by the Governor himself [Janssens] in which he, as well as the aide-de-camp Captain Paravicin de Capelli, directed their attention extremely to correcting what was erroneous in Mr. Barrow's map, furnished a stock of materials, which has contributed essentially towards accomplishing the object in view, while the observations which I made on my different journeys still farther promotes it.^{11A}

He explains that astronomical observations were made only during his last long journey, to the north-east, the government having provided him a sextant. He did not describe any other kind of surveying.

Lichtenstein's map was both eclectic and a co-production. He declared disarmingly that he relied not only on older VOC maps but also on information from Barrow and other sources, presumably local, if he was not confident of the information or if he had not travelled the area. With regard to the coastline, he admits that the west coast of his map followed Barrow's map and that he used Arrowsmith's ocean depths on the southern coast; uncertain of the position of Saldanha Bay, he took the mean of four sources of information. The information from these was integrated and edited in the light of information gained on the spot during extensive journeys in the country and from contemporary voyages by sailors along the southern coastline. The manuscript map was then drawn in Cape Town by Josephus Jones, an experienced draughtsman and artist who had drawn maps with VOC surveyors and cartographers.

Lichtenstein commented on the lack of detailed

topographical information as a consequence of the colonists not being familiar with large areas of the Colony: 'the complete development of these particulars is reserved for that part of my work which will treat of the geography and natural history of the country'. These comments by Lichtenstein may explain the relatively few topographical features about which Koeman was critical (*infra*). Unfortunately, Lichtenstein did not publish his treatise on the geography and natural history; nor did he produce a promised detailed map of the Cape Peninsula.

Lichtenstein highlighted the accuracy of his Graaff Reinet coordinates, for which he had received astronomical readings taken by an unnamed English engineer. Graaff Reinet is about 600 km east-north-east of Cape Town, at approximately 32° 15'S and 24° 32'E of Greenwich, and about three-quarters of the distance to the eastern boundary of the Colony. Lichtenstein's Graaff Reinet is on the correct latitude, but the engineer's longitude was approximately 16' too far east. By way of comparison, Barrow's latitude of Graaff Reinet was approximately 32° 10'S and longitude, determined by dead reckoning, 25° 55'E, i.e. an error in longitude of about 1° 23' or 130 km too far east. The error of 16' on Lichtenstein's map was a material improvement.

Routes on the map

Lichtenstein's map of the Colony shows some short excursions he made from Cape Town and, more importantly, he identified all his stations on the entire routes of his first two journeys and part of his third journey. He showed his route to the land of the Bechuana only as far as the Little Riet River (Fig. 2), which was an earlier border in the north-east of the Colony. A couple of weeks after his return to Tulbagh on his third journey, Lichtenstein retraced part of his north-eastern route as far back as the Roggeveld. This excursion on horseback is notable for its medical purpose in that it contained the spread of smallpox from Klaarwater (Griquatown) to the more densely populated areas of the Colony. His outbound route from Tulbagh to the Roggeveld followed the ox-wagon tracks of the earlier journey but, on his return, he took an adventurous route to the west, to vaccinate the few settlers in the barren, uncharted and still very sparsely inhabited area of Tankwa Karoo. Lichtenstein shows the return route on his map (Fig. 2), but the description in his book is very short and cryptic.¹² He described the detour in more detail in unpublished manuscripts and

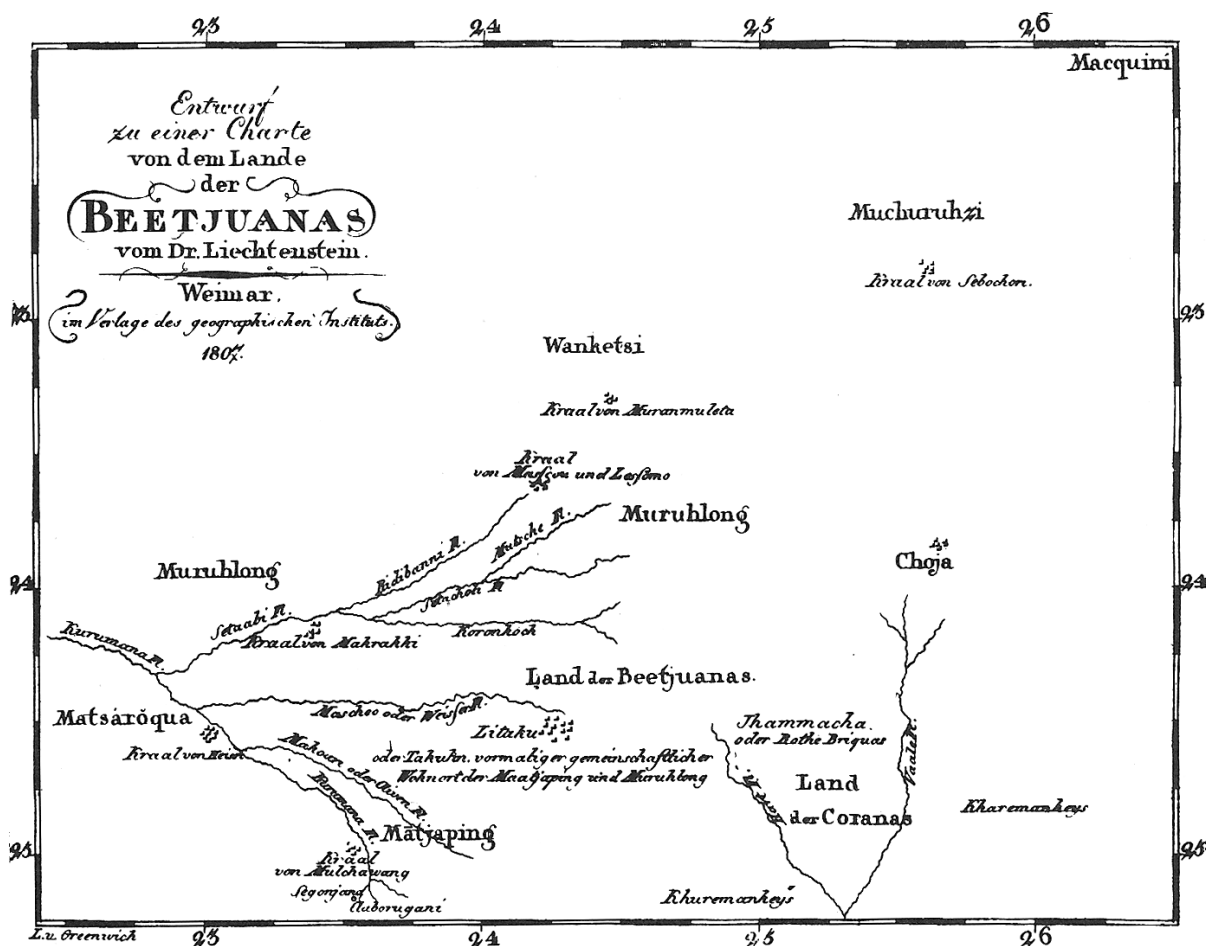


Fig. 6 Small format edition of the map missing from Volume 2 of Lichtenstein's *Reisen im südlichen Africa*, Private collection.

north-east of the map and, therefore, the Bechuana groups named on the map were placed closer together than described in the text.

Lichtenstein's intended map described in Volume 2 of his book may have been just a larger format version of his 'Charte von dem Lande der Beetjuanas', but might have been extended to include his route from the Riet River (the north-eastern limit of his third journey shown on his map of the 'European territory' – Fig. 2) to the village of Litakun, north-east of Segonjana, where the Bechuana King had his residence. One can only speculate on the reason for Lichtenstein's omission of his intended map – perhaps he became less confident of his latitude measurements. Lichtenstein and William Burchell were on friendly terms, and in 1812 Burchell spent a couple of months with the Bechuana and wrote ethnographic descriptions about them. It is tempting to speculate that they had exchanged information on their Bechuana experience,

which might have included the position of Segonjana. The accuracy of Burchell's nocturnal determinations of latitude is exemplified at his 'Garden' station, about 4 km east-north-east of Segonjana: 27° 27'S.²⁰

Lichtenstein in Cape cartography

Lichtenstein's map of the Cape Colony has been compared with John Barrow's map of 1801. Barrow lived in Cape Town from 1797 until 1804 and also undertook three extensive tours in the Colony (1797–1798). They were both in the Colony in 1803 and 1804, but neither mentions having met the other, although Governor Janssens was their common link. Barrow's 'General Chart of the ... Cape of Good Hope' was published in the first volume of his *Travels in Southern Africa*. A comparison of the full titles of Barrow's and Lichtenstein's maps reveals fundamental differences of personal style and approach to mapping the Colony.²¹

Barrow: 'To His Excellency the Right Honorable the Earl of Macartney This General Chart of the Colony of the Cape of Good Hope, Constructed from bearings, estimation of distances & frequent observations for Latitudes in travelling thro' the Country in the Years 1797 & 1798 Is Humbly Inscribed, by his obedient & faithful Servant John Barrow.' (S. J. Neele, the engraver)

Lichtenstein: 'A Map of the European Territory of the Cape of Good Hope Compiled and Sketched from Personal Observations, From the Latest Surveys made by order of the Dutch Government and from the Best Old Materials. By H. Lichtenstein.' ('Engraved by Carl Mare. Drawn by Joseph Jones in Cape Town and Carl Langer in Berlin')

Barrow described his general map as a solo effort, although he did use other sources,²² about which he was silent; whereas Lichtenstein openly admitted to the collaborative nature of his. There was a good reason for Barrow's largely solo effort. In the 1790s Governor Cornelis de Graaf, whose nephew later travelled with Lichtenstein to the land of the Bechuana, had taken many VOC maps to the Netherlands.²³ The VOC kept their maps secret; so secret that the maps De Graaf took with him remained undetected for more than one and a half centuries, until Cornelis Koeman discovered them in the Delft Archives.²⁴ Therefore, when Barrow arrived he did not find the most important maps of the Colony and he came to the erroneous, but understandable, conclusion that the VOC had not produced any significant general maps of the region.

Barrow's open prejudice against and contempt for the Boers probably also ensured that the surveyors and cartographers who had worked for the VOC, and were still resident in the Cape, elected not to enlighten or work with him. Lichtenstein also would have noted the absence of general maps of the Colony; however, he befriended the local cartographers and collaborated with them. It is possible that on his return to Europe in the company of the ex-governor, Lichtenstein gained access not only to documents but also to the VOC maps taken from the Cape: Lichtenstein and Janssens had landed in the Netherlands, where Lichtenstein remained for four months.²⁵

As his 'obedient and faithful servant' Barrow intended to provide answers for Lord Macartney, who had complained that 'we are shamefully ignorant

even of the geography of the country; we have no map that embraces one-tenth part of the Colony; I neither know nor can I learn where this Graaff-Reinet lies – whether it is five hundred or a thousand miles from Cape Town'.²⁶ Barrow's decision to produce an accurate map of the Colony was a laudable response to his not finding maps that satisfied his and Macartney's needs and to his disappointment with the flawed maps published by earlier travellers, such as Sparrman and Le Vaillant.²⁷ On his journeys in the Colony, he determined latitude with a sextant about every 35 miles and estimated longitude by dead reckoning – a very different approach from that taken by Lichtenstein – and his general map of the Colony of the Cape of Good Hope was a significant advance on prior published maps.²⁸

At numerous places in his book Lichtenstein pointed out errors in Barrow's map; he also made some unnecessary comments and, correctly but not necessarily wisely, took Barrow to task for his indiscriminate contempt of the Boers (paradoxically, Barrow married the daughter of a Boer, Anna Maria Truter, an accomplished botanical artist).²⁹ Lichtenstein's comments clearly angered Barrow, who launched an anonymous, vituperative attack on Lichtenstein,³⁰ in the 21 pages of a review of the English translation of Lichtenstein's book.³¹ Lichtenstein was wise not to respond to Barrow's diatribe; and Barrow did not respond to criticism of his map by Lichtenstein or, later, by Burchell.

In 1950 Koeman offered comments (quoted below) on both Barrow's and Lichtenstein's maps in the context of his review of the eighteenth-century VOC maps he had found.³² Koeman commented that 'Barrow's work was not superior to the older general maps... [he] has made several mistakes'. In Barrow's defence, he had not undergone formal training in surveying or cartography; on the other hand, and unlike Lichtenstein, he elected not to work with experienced local surveyors and cartographers. Koeman concluded somewhat unflatteringly that 'we may not reject Barrow's map as a complete failure'. Koeman also commented that 'Lichtenstein's map shows for the greater part the same imperfections as Barrow's on which it was partially based, as Lichtenstein himself admitted.' 'The lack of topographical detail... strikes the eye'. Lichtenstein had deliberately avoided including topographical detail for which he did not have good evidence. Koeman was of the opinion that Lichtenstein's map was 'at a lower level' than Barrow's, but concluded: 'Thanks to distribution in a printed

edition, however, first Barrow's map and after 1815 Lichtenstein's map could pass for the most reliable maps of the southern part of Africa'. His final comment, though, was that 'the value formerly awarded to Lichtenstein's map in the cartography of South Africa is on a much lower level.'

Somewhat surprisingly, Koeman did not comment on Lichtenstein's much more accurate longitude, the benefit of astronomical determinations by the anonymous English engineer, which was a significant advance on a problem that had beset cartography of the Colony since the Portuguese first rounded the Cape of Good Hope in the fifteenth century. In 1752 Nicolas-Louis de Lacaille had accurately fixed the position of Cape Town,³³ but Lichtenstein's longitude of Graaff Reinet, about 6° to the east of Cape Town, was the first accurately determined and mapped longitude of a settlement so distant from Cape Town.

Vernon Forbes, an eminent geographer, reviewed Barrow's map and observations of the geography of the region in the context of maps made by other pioneer travellers between 1750 and 1800.³⁴ He concluded that 'in spite of somewhat inaccurate fixings ... the map contains no major errors and ... it is indeed the first modern map to be published of the regions' Forbes also pointed out that Lichtenstein admitted that Barrow's map 'is infinitely to be preferred to all the older (printed) maps' Forbes did not analyse Lichtenstein's map because he decided on a chronological cut-off of 1800; had he analysed it, he would certainly have mentioned Lichtenstein's more accurate longitude. Both Barrow and Lichtenstein correctly had Table and Algoa Bays at similar latitudes, thus correcting an error that had beset all earlier maps on which Algoa Bay was charted significantly further north than Table Bay. Both cartographers used contemporary information from sailors for some of the southern coastline.

Lichtenstein's place in the cartography of southern Africa is chronologically juxtaposed with both Barrow and Burchell, but neither Koeman nor Forbes published an analysis of Burchell's map, which has not received much attention in this century.³⁵ William John Burchell (1781–1863) came to southern Africa in 1810 as a well established naturalist, especially in the field of botany. He undertook an extensive, self-funded journey to explore the Colony and beyond (1811–1815) and he made contributions in numerous fields such as natural history, anthropology, art, geology, geography and cartography.³⁶ Like Barrow, Burchell's map was largely a solo effort; unlike

Barrow and Lichtenstein, Burchell had no government motivation to map the region, no government connections or support and he supplied his own equipment. Burchell discarded the maps of earlier travellers and, having been wounded by Barrow's anonymous literary barb, commented that 'As to the miserable thing called a map which has been prefaced to Mr Barrow's quarto, I perfectly agree with Professor Lichtenstein that it is so defective that it can seldom be found to be of any use'.³⁷ As with Barrow and Lichtenstein, the title of Burchell's map reflects his approach to mapping the territory;

'Map of the Extratropical part of Southern Africa. Constructed by William J. Burchell, Esq., in which his own track is laid down entirely from the geographical and astronomical observations made during these Travels and the remaining parts accommodated to it, and formed mostly of new materials combined with others selected from various documents and wholly re-arranged.'³⁸

Burchell initially set out to chart his route and not to produce a general map of the Colony for official purposes. He took a treasured sextant with him, but his telescope was inadequate for accurate astronomical determination of longitude; he relied on dead reckoning, although he did occasionally determine longitude astronomically.³⁹ Burchell had trained himself in astronomy while on St. Helena. On his trek through southern Africa, he determined the latitude of about 40 of his stations and frequently checked magnetic variation, and on his return to England, he plotted his data on a large manuscript map (2.6 x 2.3 m), with a scale of 9 inches per degree, which was reduced to 82.5 x 70 cm for engraving and printing. Burchell's latitudes were very accurate,⁴⁰ but he systematically overestimated longitude as he travelled north-east: for example, his longitudes at Mossel Bay (22° 14'E), Graaff Reinet (24° 28'E) and Klaarwater, today's Griquatown (24° 30'E), were too far east by 6', 16' and 1° 15' respectively.

The mapped coordinates of Graaff Reinet and Fort Frederick (in today's Port Elizabeth on the shores of Algoa Bay), 600 km east-north-east and 660 km east of Cape Town respectively, provide some indication of the relative accuracy of the maps of Burchell, Barrow and Lichtenstein (Table 1).

	Latitude	Error	Longitude	Error	Latitude	Error	Longitude	Error
	Graaff Reinet				Fort Frederick			
Actual	31° 15'		24° 32'		33° 57'		25° 37'	
Barrow	32° 10'	5'	25° 55'	1° 23'	33° 55'	-2'	26° 55'	1° 18'
Lichtenstein	32° 15'	0'	24° 48'	16'	34° 07'	9'	25° 37'	-0'
Burchell	32° 15'	0'	25° 0'	28'	33° 58'	1'	25° 49'	12'

Table 1 Coordinates of Graaff Reinet and Fort Frederick; longitude east of Greenwich (Ferro 17° 40'W). Lichtenstein's longitude was determined astronomically; Barrow's and Burchell's by dead reckoning.

The maps of southern Africa by Barrow, Lichtenstein and Burchell all had considerable influence on later mapmakers. Aaron Arrowsmith Snr's map of the 'Colony of the Cape of Good Hope' was drawn 'from Mr. Barrow's survey'.⁴¹ So too were maps by Cary, Pinkerton, Thomson and Lizars.⁴² The highly regarded Arrowsmiths regularly updated their maps and, in 1815 Aaron Snr published a map of 'South Africa delineated from various documents'.⁴³ This map clearly is based on Lichtenstein: it shows his journeys and even the Orange River detour of Janssens. In 1817 Arrowsmith published another map of the 'Cape of Good Hope',⁴⁴ which also was based on Lichtenstein, but without the routes he had travelled. Burchell's later map (1822) influenced the 1834 maps of the Cape Colony by John Arrowsmith,⁴⁵ and the Society for the Diffusion of Useful Knowledge,⁴⁶ both drawn from a large manuscript map by Lewis Hebert in the Colonial Office, who used Burchell's map as one of his sources.⁴⁷ Sydney Hall, who had engraved maps for the Arrowsmiths and Burchell, also based his popular map on Burchell's.⁴⁸

Conclusion

Lichtenstein's place in the history of cartography of South Africa was overshadowed by Barrow, who unquestionably was the first to make a significant advance on prior printed general maps of the Cape Colony; Lichtenstein's co-produced eclectic map was, perhaps, a modest advance on Barrow's map, although it included some similar errors, but the improvement in longitude was significant, thanks to astronomical determination by an anonymous English engineer and the combined contributions of Jones, Langner and Gottholdt. His map of the Colony was arguably the most accurate and detailed charting up to 1815 of his extensive travels in southern Africa.

Acknowledgments

I am grateful to Lynne Fourie and Mimi Syffert, of the J. S. Gericke Library of the University of Stellenbosch, South Africa for their assistance with digital images of the English edition of Lichtenstein's map and I thank the University for permission to publish parts of its map (Fig. 4).¹⁰ I also thank the National Archives of the Netherlands for permission to publish its digital image of the German edition of Lichtenstein's map (Figs. 2, 3 and 5).

Notes

1 Otto Spohr, ed., *W. H. C. Lichtenstein. Foundation of the Cape / About the Bechuanas*. Translated, edited and with biographical introduction by Dr O. H. Spohr, Balkema, Cape Town, 1973. Lichtenstein's brief biography is on pp. 3–14.

2 Anne Plumtre, trans., *Henry Lichtenstein and Travels in Southern Africa, in the years 1803, 1804, 1805, and 1806*, Colburn, London, 1815 and reprinted Van Riebeeck Society, Cape Town 1928 and 1930), II: pp. 182–85 and pp. 442–51.

3 'Karte des europaischen Gebiets am Vorgebirge der Guten Hoffnung: nach eigenen Wahrnehmungen, nach den neuesten auf Befehl der holländischen Regierung und den besten älteren Materialien zusammengetragen und entworfen von H. Lichtenstein, nach kleinerem Maasstabe in verbesserter Projection niedergelegt und ausgeführt von H. H. Gottholdt. Gestochen von Carl Mare in Berlin 1811. Gezeichnet von Joseph Jones in der Capstadt und Carl Langner in Berlin'. (46 x 60 cm; C Mare sculp). In Hinrich Lichtenstein. *Reisen im südlichen Africa, in den Jahren 1803, 1804, 1805 und 1806*, Salfeld, Berlin, 1811, Vol. I, 1812 Vol. II). Lichtenstein's map was published in 1812. His book was republished by Brockhaus, Stuttgart in 1967. The map is NL-HaNA, Janssens / Kaarten, 4JSF, inv.nr. 1 in the National Archives of the Netherlands.

4 'Kaart Van het europesch gebied aan de Kaap de Goede Hoop: volgens eigene opmerkingen, naar de nieuwste, op bevel der Hollandsche regering ondernomene, waarnemingen en de beste vroegere bouwstoffen, versameld en ontwerpen door H. Lichtenstein' (45 x 59 cm; J. C. Bendorp sculp). In H. Lichtenstein. *Reizen in het zuidelijk gedeelte van Afrika in de jaren 1803, 1804, 1805 en 1806: uit het hoogduitsch vertaald door W. Goede, A. Blussé en Zoon*, Dordrecht, 1813–1815, map in Vol. 3 of 4 (1814).

5 'A Map of the European Territory of the Cape of Good Hope Compiled and Sketched from Personal Observations, From the Latest Surveys made by order of the Dutch Government and from the Best Old Materials. By H. Lichtenstein' (32 x 50 cm; M Thomson sculp). In Henry Lichtenstein, *Travels in Southern Africa in the years 1803, 1804, 1805 and 1806*, Colburn, London, 1812, 1815). Map in Vol. 2 (1815).

Available at: <https://digital.lib.sun.ac.za/handle/10019.2/812>

- 6 Cornelis Koeman, *Tabulae Geographicae Coloniae quibus Bonae Spei antiqua depingitur: eighteenth-century cartography of Cape Colony*, Hollandsch-Afrikaansche, N.V. Hollandsch-Afrikaansche Maatschappij, Kaapstad. Amsterdam. Pretoria, 1952.
- 7 Jeffrey Stone, ed., *Norwich's Maps of Africa*, Terra Nova Press, Norwich, VT, 1997.
- 8 *Antique Map Price Record*, available at <http://www.oldmaps.com/default.asp>
- 9 *To His Excellency the Right Honorable the Earl of Macartney This General Chart of the Colony of the Cape of Good Hope, Constructed from bearings, estimation of distances & frequent observations for Latitudes in travelling thro' the Country in the Years 1797 & 1798 Is Humbly Inscribed, by his obedient & faithful Servant John Barrow*, (46 x 69 cm) in John Barrow, *Travels into the Interior of Southern Africa*. Cadell and Davies, London, 1801. Available at <http://web.lib.sun.ac.za/omeka/items/show/163>
- 10 'Cape Colony 1652–1806' in Eric Walker, *Historical Atlas of South Africa*, Humphrey Milford Oxford University Press, Cape Town, 1922, Plate VII.
- 11 See Note 2, II: pp. xix–xxiii.
- 11A Ibid.
- 12 Ibid. pp. 450–1
- 13 Vernon Forbes, 'Dr. H. Lichtenstein's Vaccination Tour', 1805. *Africana Notes and News* 13(7) (1959): pp. 272–82.
- 14 See Note 2, II, pp. 47–66.
- 15 *Journal en verbaal eener landreys in den jaare 1803 door den gouverneur en generaal dezer colonie J.W. Janssens door de binnenlanden van Zuyd Africa gedaan*. (Journal and verbal report on the journey in 1803 by Governor of the Colony into the interior of South Africa) In E.C. Godée Molsbergen. *Reizen in Zuid-Afrika in de Hollandse tijd. Deel IV* (Travels in South Africa in the Dutch period, Part IV). (Den Haag: Nijhoff, 1932), pp. 100–209. The Orange River loop is described on pp. 183–200 of the journal.
- 16 Thelma Gutsche, *The Microcosm*, Howard Timmins, Cape Town, 1968, pp. 9–13.
- 17 Hinrich Lichtenstein, *Reisen im südlichen Africa ...* (Berlin: C. Salfeld, 1812), Vol. II, 635. Available at <http://goo.gl/Z6BSXF>
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Roger Stewart, Cape Town, South Africa: ristew@iafrica.com. Roger has written extensively on the mapping of South Africa and many of his articles have appeared in past issues of the Journal, all which can be found on the IMCoS website in the Journal archive. Roger is the South African representative of IMCoS. Cape Town will host the International IMCoS symposium from 19–21 October 2015.