

Worlds displaced: projecting the celestial environment from the Cape Colony*

ELIZABETH GREEN MUSSELMAN

Southwestern University

In the summer of 1834, as the effects of southeast winds and a new frontier war rippled through the Western Cape, Griqua leader Andries Waterboer made a tour of Cape Town and paid the kind of social calls expected of any visiting dignitary. The rounds included a visit to the Cape Observatory, one of the most fantastic institutional spectacles the colonial city had to offer.



Figure 1: The Cape Observatory, as sketched by John Herschel three years after Andries Waterboer's visit. The image conveys the sense of both isolation and proximity to nature that many Cape naturalists felt. The poisonous *Amaryllis belladonna*, a South African lily, depicted in the bottom right corner, suggests the dangers of the landscape. Reprinted courtesy of the South African National Library, Department of Manuscripts and Archives (reference ARP 2 (9163)).

From this isolated vantage point on the northwest border of the Cape Flats, Astronomer Royal Thomas Maclear would certainly have done his usual public demonstration of the moon and visible planets through the observatory's new 14-foot telescope. He might also have explained the less glamorous work that consumed the time of the observatory staff: tracking accurately the stars of the southern hemisphere, primarily for the purposes of more accurate navigation of the British fleet and mapping of the empire.

Waterboer had come to Cape Town at the urging of Peter Wright and John Philip, both of the London Missionary Society. To Waterboer, the missionaries and the colonial government to which they led him represented an efficient path to power and protection in Transorangia. To Philip and Wright, Waterboer (a convert) represented the best hope for civilizing the lands beyond colonial boundaries. In fact, Waterboer and Governor Benjamin D'Urban would sign the first treaty between the Cape colonial government and a non-European ruler.¹ The missionaries' like-minded scientific friends - Maclear, John Herschel, and Baron Carl Ferdinand Heinrich von Ludwig - escorted Waterboer through the observatory, the South African Museum, and (presumably) Ludwig's own spectacular garden as exemplars of the ordered natural spaces that civilization could offer.² Eleven years later, at least one other missionary (Frenchman Thomas Arbousset) would bring more southern African leaders (in this case several unnamed Sotho chiefs) to visit the observatory.³ The intimate connection between Christianity and the observatory reached back to its founding, when the first Astronomer Royal at the Cape, the Rev. Fearon Fallows, conducted his own services within the observatory chapel, which a fellow Cape clergyman called 'a *living monument* of his zeal in the Christian cause.' In that chapel, Fallows even baptized the son of his slave, Rebecca Soldaat.⁴

All the parties involved in Waterboer's visit hoped that through his treaty with the colonial government, the Griquas might build a protective wall against the neighbouring, powerful and expanding Ndebele military state led by Mzilikazi.⁵ Not coincidentally, the colonial government very soon after funded a major expedition to the South African interior led by Andrew Smith, the same South African Museum director who would have escorted the Griqua leader around his institution. The expedition had explicit scientific purposes, but also a secret political mis-

* The author thanks Andrew Bank, Nancy Jacobs, Mel Johnson, Julie Livingston, Thom McClendon, Pamela Scully, and Lance van Sittert for conversations and critiques that have enriched this paper. The author is also grateful for research funding received from the National Endowment for the Humanities, Southwestern University, Board of Higher Education and Ministry of the United Methodist Church, and the American Historical Association.

1. M. Legassick, 'The Northern Frontier to c. 1840: The Rise and Decline of the Griqua People,' in *The Shaping of South African Society, 1652-1840*, eds., R. Elphick and H. Giliomee (Middletown, Conn.: Wesleyan University Press, 1988), 396-404; R. Ross, *Adam Kok's Griquas: A Study in the Development of Stratification in South Africa* (Cambridge: Cambridge University Press, 1976), 19-20, 33-40.
2. C.F.H. von Ludwig to Thomas Maclear, 7 December 1834, Thomas Maclear papers, Cape Town Archives Repository (hereafter CTAR), vol. 7; John Herschel, 21 November 1834 diary entry, reprinted in D.S. Evans et al., eds., *Herschel at the Cape: Diaries and Correspondence of Sir John Herschel, 1834-1838* (Austin and London: University of Texas Press, 1969), 108. I say that Waterboer presumably visited Ludwig's garden because, while there is no specific record of such a visit occurring, Ludwig did escort the Griqua leader through part of his stay in Cape Town, and given Waterboer's tours of other scientific institutions, it seems unlikely that Ludwig would have passed up his own world-famous garden.
3. James Adamson to Thomas Maclear, 14 July 1845, Maclear Papers, CTAR, A515, vol. 1.
4. B. Warner, *Royal Observatory, Cape of Good Hope, 1820-1831: The Founding of a Colonial Observatory, Incorporating a Biography of Fearon Fallows* (Dordrecht and Boston: Kluwer Academic Publishers, 1995), 178-182, 217. Warner is quoting an obituary of Fallows published in the 17 August 1831 *South African Commercial Advertiser*.
5. Legassick, 'The Northern Frontier to c. 1840.'

sion to learn more about the customs and friendliness toward the colony of various African neighbours (particularly Mzilikazi). Clearly the meeting with the Ndebele leader made an impression on John Burrow, the hapless 18-year-old assigned to the expedition as astronomer and surveyor. After the expedition had returned to Cape Town, Burrow and expedition artist Charles Bell appeared at a fancy dress ball at the D'Urbans' dressed as 'Mzilikazi and his Great Wife.'⁶ This racial and sexual drag alternatively inspired mild amusement and annoyance in the ball's other guests, but none could deny that in one way or another, the Ndebele leader now had a presence in the social constellation of Cape Town.

Recognizing these as the antics of a rather foolish young man, we are still provoked to wonder at the cumulative message of these events. We find, for one thing, that astronomy promised to fulfill not only technical goals through its precision instruments, but also cultural and religious missions through its purportedly privileged access to the mathematical purity of God's creation. We locate the Cape observatory as a portal between worlds: between terrestrial and celestial, between the temporal and the Christian afterlife, between violence and peace, between 'barbarous' and 'civilized,' between African and European. We see astronomers both engaging African leaders in this moral universe and mocking their resistance to it. And we hear an awkward silence where we would hope to find Waterboer's reaction to what he saw through the telescope. How did Waterboer understand his visit and his place in the political and moral universe of the Cape? Did he willingly manipulate - or even share - liberal colonists' view of him as a portal between worlds, as a human equivalent of their observatory? We cannot be sure.

What we can establish from these stories is that the political universe had important connections to the celestial universe. So if we want to discern who mattered to each other in colonial South Africa - when, where, and why - we might reasonably look to an unexpected source: the stories that different southern Africans told about the world of the sun, moon, and stars. The records of many such stories may be frustratingly cryptic, but they are well worth exploring, for no matter how absorbing terrestrial affairs became at the Cape, the celestial environment was never an idle concern for the many different kinds of people who populated the area. Quite the contrary: for Cape cultures, the celestial realm acted as an elaborate staging area for their hopes and dreams on earth. This common interest threaded through the many differences between European precision astronomy, popular colonial cosmology, San skill with using stars for navigation, Khoikhoi moon mythology, and Nguni tracking of the heavens in order to set harvest times.

Here I will recount some of the most interesting stories told about celestial objects in South Africa's mid-colonial period (1780-1860). The recounting will highlight important congruence and dissonance between the Cape's various celestial narrative traditions. As always, the documentation for European elites far surpasses that for poorer colonists, let alone the thousands of Africans who interacted with them every day. I hope to mitigate this somewhat by telling the celestial

6. J. Burrow, *Travels in the Wilds of Africa, Being the Diary of a Young Scientific Assistant Who Accompanied Sir Andrew Smith in the Expedition of 1834-1836*, ed., P.R. Kirby (Cape Town: A.A. Balkema, 1971), 6.

narratives of European science as if they were just another set of stories, stories grounded in their own mythology. By doing this, perhaps we can see how every narrative about the heavens contained a kind of desire. No matter what form the narrative took, each culture's celestial stories told a wishful tale, a future deferred, about how life on earth might have been.

Sun, Moon, and Stars in Southern African Cosmologies

What little information we have about African cosmologies before and during the colonial period comes from European sources. Andrew Smith and W.H.I. Bleek did what was extensive research for that time on African ideas about the heavens. While certainly a far cry from twenty-first century multiculturalists, both Smith and Bleek took a deep interest in African cosmologies as they were - or at least, how they saw them to be. And both argued against a floodlight approach to liberal enlightenment that swept aside all cultural difference in its path. But for them, we would have a much more impoverished understanding of what black southern Africans thought about celestial objects during the colonial period. If we grant outright that their perspective is suspect, and that therefore so is much of their information, we must still take some advantage of this tremendous resource.

Smith kept detailed notebooks of cultural observations during his extensive travels all over southern Africa in the 1820s-40s.⁷ His excursions had intertwined political and sociological motives: Smith sought to understand the intricacies of southern African cultures both out of a deep personal curiosity and a political mandate to discern how to create more cooperation between the colony and its neighbours. His notebooks testify to hundreds, if not thousands, of hours spent observing southern African habits in food procurement and preparation, medicine, cosmologies, burial practices, dispensation of justice, and social hierarchy. What he did not understand immediately through observation, he probed more fully through interviews. Among this wealth of information is threaded a running commentary on how various southern African groups understood the celestial environment.

What Smith decided Africans lacked in metaphysical sophistication, they made up for in detailed positional reckoning. The Damara, he claimed, had given names to some celestial bodies, but had 'no idea of them' and believed that each sunrise brought a new sun. Smith did not clarify what it meant to have an 'idea of' celestial objects, but he probably meant an idea of their origin and physical nature. I will return to this metaphysical issue in a moment, but for now we should observe that for whatever reason Smith got more detailed answers from the various Africans he spoke to when he asked about the names, positions, movements and cultural uses of celestial bodies. For example, he noted that Sotho-speaking refugees of the mfecane, known as Mantatees, used the stars to divide the night into distinct periods: namely, when Venus first appears, when a great many stars appear,

7. Most of the information contained in those dozen notebooks has never made it into print. The notebooks are now in the collections of the South African Museum, but according to the museum's librarian, Rina Krynow, they rarely come out of the vault. In other words, these notebooks constitute a huge, virtually untapped resource on southern African customs in the early nineteenth century.

when the stars are all gone toward the west, before daybreak, and when they can see their cattle's horns.⁸

If stars could help to divide the night, then the moon provided a convenient tool for parsing the year. In a volume of 'Kaffir Notes,' Smith remarked that some unspecified Nguni 'calculate by months, which they reckon from moons and the names generally employed to designate those have some relation to their circumstances or what occurs during the existence of such moons.'⁹ From an amalgamation of further nineteenth-century sources on the Nguni, we know that the moon also served other important purposes. For the *eshwama*, or first-fruits celebration - celebrated by all Nguni groups until the turn of the twentieth century, the timing for the celebration had to be carefully calculated based on the lunar calendar. Among the Zulu, *izinyanga* (doctors) reckoned the proper date. The *eshwama* ceremony carried enormous importance: it began as an agricultural rite, and then increasing state formation during the early nineteenth century transformed it into a 'rite of clan identification and symbolic revitalization, focusing on the chief's secular powers and supernatural potency.' In fact, rulers' power became strongly associated with the sun and moon.¹⁰

Even given Smith's unusual empathy, one has to wonder about his implication that black southern Africans only applied a keen eye and a superstitious imagination to the heavens. A closer look at these 'superstitious' narratives about celestial bodies reveals an important metaphysics that earlier white observers all too readily discounted. We find clues to this metaphysics in Smith's own notes: for instance, he reported various Tswana 'superstitions' like the injunctions that no one should dance when a meteor falls; no one should tell tales before sunset lest clouds should fall on the orator's head; and no one must work during a new moon. The entanglement of human and celestial affairs reflected a 'cosmology in which persons, spirit forces, and material objects were interdependent.'¹¹

Smith also noted that the Great Namaqua 'expect sickness when there is an eclipse of the sun or moon. They do not know that they have souls but that they die as the beasts. When see planet Jupiter for which they have a name su lang [?] they say now is the fruitful season. The name signifies lambs loose. Consider luminous appearance like aurora unlucky.' He also became one of many to re-tell the story of the Moon and the Hare, narrated in numerous variations throughout Khoisan societies. In this tale, the Moon sent Hare to tell humankind that they would go through endless cycles of death and rebirth just as the Moon did. The Hare told humans instead that they each would die, never to live again. Hare's error so enraged the Moon that the Moon gave Hare a blow that cut his upper lip in two and caused its cleft (or hare lip).¹² Some Khoikhoi, at least, believed that they needed to watch the

8. Andrew Smith, Memoranda, 'Notes on Tswana, Sotho....' vol. A, Andrew Smith notebooks, South African Museum.

9. Andrew Smith, 'Kaffir Notes,' vol. 3, Smith notebooks, South African Museum.

10. K.Snedegar, 'First Fruits Celebrations among the Nguni Peoples of Southern Africa: An Ethnoastronomical Interpretation,' *Archaeoastronomy*, vol. 23, 1998, 31-38, on 32.

11. J.Comaroff, *Body of Power, Spirit of Resistance: The Culture and History of a South African People* (Chicago and London: University of Chicago Press, 1985), 53-54.

12. All anecdotes in this paragraph are from Andrew Smith, untitled notebook, South African Museum. For a longer version of the Moon and Hare story, see W.H.I. Bleek and L.C. Lloyd, *Specimens of Bushman Folklore* (London: George Allen, 1911), 56-65.

heavens carefully, not only to clarify the timing of various annual events, but also to avoid any dangers that celestial bodies might invoke in the lives of humans and the animals they ate.

We also have available in written form those narratives told in the late nineteenth century by a group of /Xam prisoners and their relatives to South African linguists W.H.I. Bleek and Lucy Lloyd. In these stories, the brightest objects in the night sky each had a name and a history. Many of these names and histories demonstrated that the /Xam used the night sky to mark time and activities appropriate to different seasons. For instance, they called Canopus ||xeta-Tkuatten, or the rice star, because when it arose the /Xam knew it was time to gather 'rice' (ant larvae).¹³

But the stories collected by Bleek and Lloyd also revealed more than a careful calendrical rendering. For example, what Europeans called the Milky Way, the /Xam referred to as !ko, and explained its origin as follows: one of the girls of the Early Race threw ashes into the sky so that her people could have a little light to find their way home by at night. This girl also threw !huin root into the sky to become the stars. Since the root was white when young and red when old, this made some of the stars white and others red.¹⁴ Another story says that the stars give the /Xam some of their heart to stave off hunger.¹⁵ The star canopy generally, then, seems to have had a benign presence in the lives of these /Xam. The stars offered a kind of cosmological completeness and, more immediately, a path to safety and food. The stories also indicate that the /Xam believed human beings had had some creative control in the construction of the heavens.

The late-nineteenth century /Xam told more ambivalent stories about the moon. While it, too, was created to provide light for human beings at night, its creator was /Kaggen, a powerful man-mantis trickster that long figured prominently in /Xam stories. The moon seems to have adopted its creator's trickster behavior, for the /Xam believed they should not look at the moon when they had shot game, lest the moon enable the game to run away.¹⁶ The moon was, in the words of Dia!kwain (a 'Grass Bushman' who spent a year with Bleek and Lloyd), 'a thing which knows things; for it sees things which will come to pass. It is the one who knows them, things which we do not know.'¹⁷ The moon also had a more violent existence than the stars. Apart from its retaliation against Hare, the moon also angers the sun so much that the sun stabs the moon with its knife (rays) until the moon is reduced to a back-bone. At this point, the sun spares the little piece, which goes home to grow back to its full size, only to begin the cycle anew.¹⁸

What happens when we step back from these fascinating stories, and try to discern their meaning? To what extent can we trust Smith, Bleek and Lloyd as

13. Ibid., 338-341. Preliminary notes for most of these published tales can be found in 'Bushman Names of Stars and Stories Connected with Them, Collected by W. H. I. Bleek and Lucy Lloyd,' BC 151, E4.2.1, Department of Manuscripts and Archives, University of Cape Town (hereafter UCT-Mss).

14. Ibid., 72-79.

15. Ibid., 80-83.

16. Ibid., 66-69.

17. J.D. Lewis-Williams, ed., *Stories That Float from Afar: Ancestral Folklore of the San of Southern Africa* (Cape Town: David Philip, 2000), 249-250.

18. 'Bushman Names of Stars,' BC 151, E4.2.1, UCT-Mss.

sources on how southern Africans understood the celestial environment? On the one hand, these three were unusually liberal specimens of nineteenth-century colonial thinking. They deplored their fellows who would dismiss African cultures as simplistic and irrational. On the other hand, particularly in Smith's writing, the anthropological gaze is very much in evidence. Though closer inspection gave Smith a more nuanced view of southern African life, he gathered all of this intelligence under the umbrella of the liberal civilizing mission. Only those cultural differences that could exist peaceably and unproblematically under colonial rule were welcome. Cultural complexity served him as evidence of Africans' suitability for further cultivation under European tutelage, not for their exemption from such education.¹⁹ For Bleek and Lloyd, detailing San language and culture meant preserving a 'primitive' specimen of human evolutionary history that was rapidly disappearing under colonial expansion.²⁰

The veneer of rugged and sympathetic empiricism in Smith, Bleek and Lloyd's work thus only thinly covered these researchers' belief that their observations were already historical. We cannot trust our colonial informants not to flatten complicated cosmological beliefs into prosaically detailed just-so stories. In fact, we cannot know for sure whether stories like that of the Moon and Hare were meant as serious metaphysical claims about the beginning of the universe, or instead were told as fables to children (and anthropologists) - or both.

Still, if treated gingerly, the narratives recorded by Smith, Bleek and Lloyd suggest several intriguing possibilities. First, women not only had particular creative powers, but also acted as acknowledged partners in the economy.²¹ Second, the /Xam seem to have perceived the stars as behaving more predictably and benignly toward humans than the moon did. The stars may have represented pattern and cycle and the cooperation of nature with human needs, while the moon brought life's unforeseen - but inevitable - difficulties. But whether or not they or any other Khoisan group actually saw these celestial objects as gods is more fraught with controversy. Ever since seventeenth-century colonists first claimed that 'Hottentots' worshipped the moon, European observers had alternately parroted and discredited the idea that the Khoisan identified gods with the celestial bodies.²² One thing seems quite clear from reading these stories though: that the culturally specific concepts of 'worship' and 'god' do not capture the meaning. The San certainly thought the moon and stars had an important impact on their day-to-day life and that they might even have powers over certain of their activities. They sometimes even feared the moon and what it might do. The authors of a recent Khoikhoi history make this clear when they say that it is probably incorrect to say the Khoikhoi

19. For example, see Smith's comments under 'mental capacity' in his volume of 'Kaffir Notes,' South African Museum.

20. S.Dubow, *Scientific Racism in Modern South Africa* (Cambridge: Cambridge University Press, 1995), 32, 51, 66, 78-81, 118.

21. M.Guenther, *Tricksters and Trancers: Bushman Religion and Society* (Bloomington and Indianapolis: Indiana University Press, 1999), 7-8.

22. I.Schapera, ed., *The Early Cape Hottentots; Described in the Writings of Olfert Dapper (1668), Willem Ten Rhyne (1686), and Johannes Gulielmers de Grevenbroek (1695)* (Westport, Conn.: Negro Universities Press, 1970; reprint, 1933), 139; P.Kolbe, *The Present State of the Cape of Good Hope*, trans. Guido Medley, 2 vols. (London: W. Innys and R. Manby, 1731-1738); Bleek and Lloyd, *Specimens of Bushman Folklore*, 435; M.Gusinde, *Von Gelben und Schwarzen Buschmannern* (Graz: Akademische Druck-U. Verlagsanstalt, 1966); Guenther, *Tricksters and Trancers*, 64-66. Also see Nicolas Louis de Lacaille, critique of Peter Kolbe, ca. 1750-54, Department of Manuscripts, National Library of South Africa (hereafter NLSA), MSB 297, 1(2).

worshipped the moon; rather, they seemed to see it as ‘the physical manifestation of a supreme being associated with heaven, earth, and especially rain.’²³

Even if Khoisan did not literally worship the moon, even if they only considered the moon and stars as cosmologically significant actors at the beginning of time for the purposes of children’s stories - even if we must remain wary of the earliest narrative recordings of these beliefs - we still can feel some security in the conclusion that the celestial environment staged many southern Africans’ hopes for their future. For the Nguni, the heavens cued the different acts of the growing season; political fortunes rose and fell with the court’s ability to match celestial signs to terrestrial realities. And even if the Khoisan’s various Moon and Hare stories made no straightforward metaphysical claims about origins, the very telling and re-telling of the story gave the sky a kind of significance. The moon marked out phases of life and death; it traced out a remorseless, cyclical path whose long standing survived well beyond the extent of a human life - as attested in the existence of oral traditions that spanned across generations. In short, the sky had a proximity to terrestrial life that no telescope was needed to establish.

The ‘Naturally’ Telescopic Eye and ‘Cultivated’ Calculation

Europeans decided that they had found a particularly happy home in southern Africa for their favourite dramatic meeting between ancient savagery and progressive development.²⁴ This makes it all the more interesting to find the following narrative told by Europeans about the San (Bushmen): in the words of the botanical explorer William Burchell, San eyes were ‘little inferior in optical power to small telescopes.’²⁵ Or, as Andrew Smith put it in more detail:

The continual use to which they apply the eyes and ears, not only as a means of discovering their food, but also as useful agents in self-preservation, renders their senses of seeing and hearing amazingly acute, and capable of furnishing a degree of assistance quite unknown to the inhabitants of quiet and civilized countries. In situations where the eye is unavailable, it is wonderful with what certainty and readiness the ear directs to an object; and again where distance renders sound inaudible, the eye often operates with a precision and force, which a person who has never witnessed the like, would scarcely be disposed to credit. By the latter alone, they will often discern with distinctness what others require a telescope to distinguish, and discover the nature and appearances of particular objects, when persons less versed in observation would scarcely be able to perceive the figures themselves.²⁶

-
23. E.Boonzaier et al., *The Cape Herders: A History of the Khoikhoi of Southern Africa* (Cape Town and Johannesburg: David Philip, 1996), 49.
 24. L.E. Merians, *Envisioning the Worst: Representations of ‘Hottentots’ in Early-Modern England* (Newark, N.J.: University of Delaware Press, 2001).
 25. W.J. Burchell, *Travels in the Interior of Southern Africa*, 2 vols. (London: Longman, Hurst, Rees, Orme, Brown and Green, 1822-24; reprint, Cape Town: C. Struik, 1967), vol. 2; 55, 266.
 26. Andrew Smith, ‘Observations relative to the Origin and History of the Bushmen,’ *South African Quarterly Journal*, vol. 1, no. 2, 1830, 171-189, on 178-179.

Many other Europeans who encountered the San marveled at their visual skill, but Burchell and Smith's comparison of this facility to that of the European eye aided by a telescope is striking. The telescope played a key practical and symbolic role in resolving the outlines of new territories: celestial blobs became well-defined nebulae and double stars; terrae and aquae incognitae became detailed charts; disputed land became a maze of fences and borders. And all of this, the European required a prosthetic telescope to do, while the San carried this skill within their very bodies. Smith acknowledged the weirdness of this for his contemporaries when he said that 'a person who ha[d] never witnessed the like, would scarcely be disposed to credit [it].' But he then tries to deflate this incredulity by depicting this visual acuity as a kind of environmental adaptation. He implies here that the senses of 'civilized' people are not as sharp because they do not require such sharpness for daily survival. Ironically, then, one of the most desirable qualities in 'civilized' life - the keen senses needed fully to appreciate nature, music, and the like - had to be located in mechanical devices. Another irony: whereas the San represented the impossible dream for the civilizing mission, their 'telescopic' vision suggested that such a mission was either fundamentally misguided - or at least needed to tread carefully, lest too much get lost in the process of 'improvement.' (Educated settlers informed by romantic notions of the 'noble savage' became accustomed to tiptoeing around such ironic obstacles.)

An obvious next question for the Cape's small scientific community was that if the San had such natural facility with their own eyesight as a scientific instrument, might their minds be equally adept at scientific method? No one in the eighteenth and nineteenth centuries was sanguine about this outcome - neither did anyone think to consider whether the San might *wish* to become scientifically minded - but some European observers insisted on the possibility. Among the flaws in this plan was that Africans' visual acuity actually seemed to impede mathematical ability. Smith observed of some unspecified Nguni that

they have so little that they are familiar with the appearance of all and can readily miss anything by the eye. They never think of calculating their people or enemies but judge by the bulk and therefore they have not yet found the necessity of having number which can easily be applied. In estimating the distance of one place from another they say it is so many nights from a certain place[;] that is they must sleep so many nights on the road. When asked how old such and such a child is they shew it by telling how tall it is.²⁷

And on the Khoikhoi (again, unspecified), he remarked that they 'always know a road having once traveled it - points to place in heaven where sun was, uses fingers in calculating over five - eye very quick.'²⁸ Several decades earlier, the German explorer Heinrich Lichtenstein had similarly remarked on Xhosa having extraordinarily keen visual memories, but little interest in large numbers or counting time.²⁹

27. Smith, 'Kaffir Notes.'

28. Andrew Smith, untitled notebook, vol. 4, Smith notebooks, South African Museum.

29. Henry [Heinrich] Lichtenstein, *Travels in Southern Africa in the Years 1803, 1804, 1805 and 1806*, trans. A. Plumtre, 2 vols. (Cape Town: The Van Riebeeck Society, 1928-30), vol. 1; 345-346. Also see Burchell, *Travels*, vol. 2; 559-560.

The sharp eye that could recognize individual cattle or people and game approaching from miles away had enormous value in the Nguni's transhumant, livestock-based culture. For the more migratory Khoikhoi, the sun and stars understandably would have attained the most significance as markers of place. To the British imperial government, however, the world was an elaborate and expanding mercantile network kept humming by a steady stream of accountants' figures. Astronomical calculation provided one more method of accounting that, through its precision guidance for navigation, streamlined capital-making in the British empire.³⁰ Astronomers contributed to the world's legibility as much through mathematical acumen as visual ability, evident, for example, in the fact that observations had no public utility until they had been reduced (calibrated against standard measurements and for error).³¹ Of course, in all of these cultures, the fine level of resolution was startling: one just directed its precision at individuating cattle; while another directed its precision at finding a path through a known, finite area of land; while the last directed its precision at enumerating property.

We have no one on record bothering to consider whether Europeans could develop the Africans' keen vision, but some colonists did wonder whether Africans could learn mathematical precision. Just months after the end of slavery at the Cape (and several months before Waterboer's visit to the Cape Observatory), the head of the South African Public Library, A.J. Jardine, considered this question in the popular periodical he edited, the *Cape of Good Hope Literary Gazette*. He pointed across the Atlantic at the example of Benjamin Banneker, a free African-American tobacco planter who taught himself mathematics and astronomy, produced a series of almanacs, and participated in the survey of the Federal Territory (now the District of Columbia).³² Banneker's achievements gave Jardine ammunition against those who argued that 'Negros' lacked any natural capability for mathematics. 'If anyone should adopt so inconclusive an argument, let him reply to this question: "Can you calculate an *Ephemeris*" [a predictive register of celestial bodies' movements]? If the reply is in the negative, then, in fairness, the respondent must acknowledge his inferiority of intellect to the coloured subject of this brief notice.' Jardine went on to weave a 'revolting' counterfactual in which Isaac Newton was an African slave whose genius shattered beneath the lash of an ignorant task-master's whip.³³

Liberals like Jardine hoped that Cape slaves, though still held in indenture until 1838, would flourish under their newfound freedom and that Africans might gradually benefit from a European system of education.³⁴ A mathematically sophisticated connection with the heavens offered a quick and sure transcendence over the prosaic concerns of life below. The path to such transcendence at least

30. W.J. Ashworth, 'The Calculating Eye: Baily, Herschel, Babbage and the Business of Astronomy,' *British Journal for the History of Science*, vol 27, 1994, 409-440.

31. For example, see Maclear's instructions for his staff's daily routine in 'Weekly Register of the Observatory, 1849-1854,' Royal Greenwich Observatory Papers (hereafter RGO) 15/2, Cambridge University Library.

32. S.A. Bedini, *The Life of Benjamin Banneker: The First African-American Man of Science*, 2nd ed. (Baltimore: Maryland Historical Society, 1999); R. Eglash, 'The African Heritage of Benjamin Banneker,' *Social Studies of Science*, vol. 27, 1997, 307-315.

33. [A. J. Jardine], 'The Negro Mathematician and Astronomer,' *Cape of Good Hope Literary Gazette*, vol 4, no. 3, 1834, 43.

34. W.T. Ferguson and R.F.M. Immelman, eds., *Sir John Herschel and Education at the Cape, 1834-1840* (Cape Town: Oxford University Press, 1961); T. Keegan, *Colonial South Africa and the Origins of the Racial Order* (Charlottesville: University Press of Virginia, 1996); A. Bank, 'Liberals and Their Enemies: Racial Ideology at the Cape of Good Hope, 1820-1850' (Ph. D. thesis, Cambridge University, 1995).

initially meant service to colonial instructors. For example, Fearon Fallows (the first Astronomer Royal at the Cape) wrote to his supervisor at the Admiralty that he planned to purchase a 'prize slave.' He would try the 'experiment' of educating this 'boy' in the arithmetical and accounting methods used at the observatory. If the experiment worked, Fallows said, he would continue to request more 'sharp lad[s]' until he could always be certain of having well-trained assistants. 'Moreover, they would always be under *absolute command*: - you may smile at my scheme and perhaps the Board of Longitude may imagine I have some spirit of Quixotism about me, however the experiment shall be tried.' Unfortunately, no further record of this slave or this experiment has been found, though there is certainly evidence of free black men indentured to observatory staff.³⁵

Inspired to a similar project, a missionary in Genadendal in 1831 appealed to Capetonians for geography books. He needed the texts for 'two Hottentot lads under my instruction, who have made considerable advances in the English language. They are complete masters of Mathematical and Physical Geography, and what I more immediately require, is some distinct treatise on Political Geography.'³⁶ People like Fallows and the Genadendal missionary believed that such an education would not only expand the mind, but order it as well. As John Herschel would write in a popular introduction to natural philosophy several years before his arrival at the Cape and the ending of slavery there, 'the liberty of speculation which we possess in the domain of theory is not like the wild licence of the slave broke loose from his fetters, but rather like that of the freeman who has learned the lesson of self-restraint in the school of just subordination.'³⁷ In other words, neither total freedom nor the total lack of it fostered good scientific habits. By the early nineteenth century, even the most optimistic Capetonians did not believe the situation in the Western Cape offered a great deal of hope in this regard, since the lion's share of the African and Asian population lived either in actual or virtual servitude to Europeans or in 'savage conditions.' The liberal colonial vision of a disciplined African astronomy both needed and regretted the reality of fetters on the ground.

Still, with bodies so well suited to the fine-grained observations of stargazing and generally exempted from the abuses of slavery, Cape liberals believed, the various 'uneducated' populations of southern Africa just might learn the mental habits to become true astronomers. Indubitably - or so said the logic of British imperialism - replacing anarchy and its evil twin, coerciveness, with a society organized around a blend of lawfulness and liberty, would provide the context needed for the growth of a scientific culture, not just among wealthy Europeans, but all of the colony's inhabitants. But the danger for Africans was that in an industrial, imperial society instrumental skill (such as telescopic eyesight) could readily be treated as precisely that - instrumental, in both the sense of being important and being subject to exploitation. Caught up in the apparently benign and universal aesthetic of this logic, the imperial eye did not recognize fully how violent and particular its vision truly was.

35. Fearon Fallows to John Barrow, 25 July 1822, Public Record Office, ADM 1/4601, quoted in Warner, *Royal Observatory*, 180-181. I have enclosed 'boy' in quotes above because the word was often misused to identify grown men.

36. 'Extract of a Letter from Genadendal,' *Cape of Good Hope Literary Gazette*, vol. 1, no. 13, 1831, 167-168. I have not yet discovered any records indicating what became of these two young men.

37. John Herschel, *A Preliminary Discourse on the Study of Natural Philosophy*, ed., Dionysius Lardner, *The Cabinet Cyclopaedia of Natural Philosophy* (London: Longmans, 1831), 190-191.

The Fine Line between Reliable and Gullible

We find an interesting example of this blithe arrogance in William Mann during a stay in the Cold Bokkeveld. Mann was an assistant at the Cape Observatory from 1846 to 1872, during which time Maclear sent him on numerous excursions into the countryside as part of the measurement of an arc of meridian. This determination would allow a much more accurate picture of the earth's shape and therefore improve navigation and mapmaking. The project involved years of surveying and calculation that taxed much of the observatory staff's time and physical strength.

To Mann, the contrast between the sophistication of this work and the rural people who offered him hospitality was too delicious to resist. He described the 'boers' of the Cold Bokkeveld this way to his mother back home in England:

The Schoolmaster would do well to pay a few visits among them - they certainly want it - for instance our host Carl, who was supposed to be a cut above his neighbours for *learning*, when he found that we had come from Zwartland, enquired with a very grave face whether we had found the star? We not quite understanding what he meant demanded an explanation, upon which he stated he had heard that a star had been lost, & that the astronomers were determined to find it, & that they had taken soldiers & people & intended to go from mountain to mountain & work day & night till they did so! He firmly believed this, & we found afterwards that it was the general belief all over the country.³⁸

As it turns out, Mann's informants were not as ignorant as he believed. Four years earlier, on 13 October 1838, a large meteorite had fallen in that area, leaving pieces scattered throughout the countryside. In fact, Mann's superior at the observatory, Thomas Maclear, had ridden out to collect specimens of this meteorite, and had shipped them to several men of science in England, where renowned chemist Michael Faraday had analyzed a piece that is still exhibited in the British Museum.³⁹

In his report at the time to the Royal Society of London, Maclear included reports from one eyewitness, a 'Bastaard Hottentot' named Kieviet. Kieviet saw and heard the meteorite burst apart while he was out collecting wood with his employer, Barend Jooste, and another of Jooste's servants, Jacob Rooy. One J. Truter recorded Kieviet's description in an affidavit:

38. William Mann to Sarah Fyers Mann, 15 October 1842, quoted in William Mann, *The Cape Diary and Letters of William Mann, Astronomer and Mountaineer, 1839-1843*, ed., B. Warner (Cape Town: Friends of the South African Library, 1989), 50-51.

39. Ibid; Thomas Maclear, 'An Account of the Fall of a Meteoric Stone in the Cold Bokkeveld, Cape of Good Hope,' *Philosophical Transactions of the Royal Society of London*, vol. 129, 1839, 83-87; idem., 'Further Particulars of the Fall of the Cold Bokkeveld Meteorite,' *Philosophical Transactions of the Royal Society of London*, vol. 130, 1840, 177-182. Also see 9 and 19 November 1839 entries in Mary Maclear diary, 1839-40, Thomas Maclear Papers, NLSA, MSB 323, 1(2); John Lee to Thomas Maclear, 6 July 1839, Maclear Papers, CTAR, A515, vol. 7.

It was a fine clear morning; there were no clouds in the sky, and there was no wind. At about nine o'clock a.m., whilst we were busy loading the waggon with wood, close to the foot of the mountain, we heard a strange noise in the air resembling the loudest thunder we had ever heard, and on looking up we perceived a stream passing over our heads, issuing a noise which petrified us with terror; a burst took place close to the waggon, when something fell and a smoke arose from the grass. My master sent me to look what it was that had fallen, when I found a stone quite warm, so much so that I could not hold it in my hands: I brought it to my master, I do not know what he did with it. This stone now produced to me is part of the one I took up; it might have been then about the weight of seven or eight pounds.⁴⁰

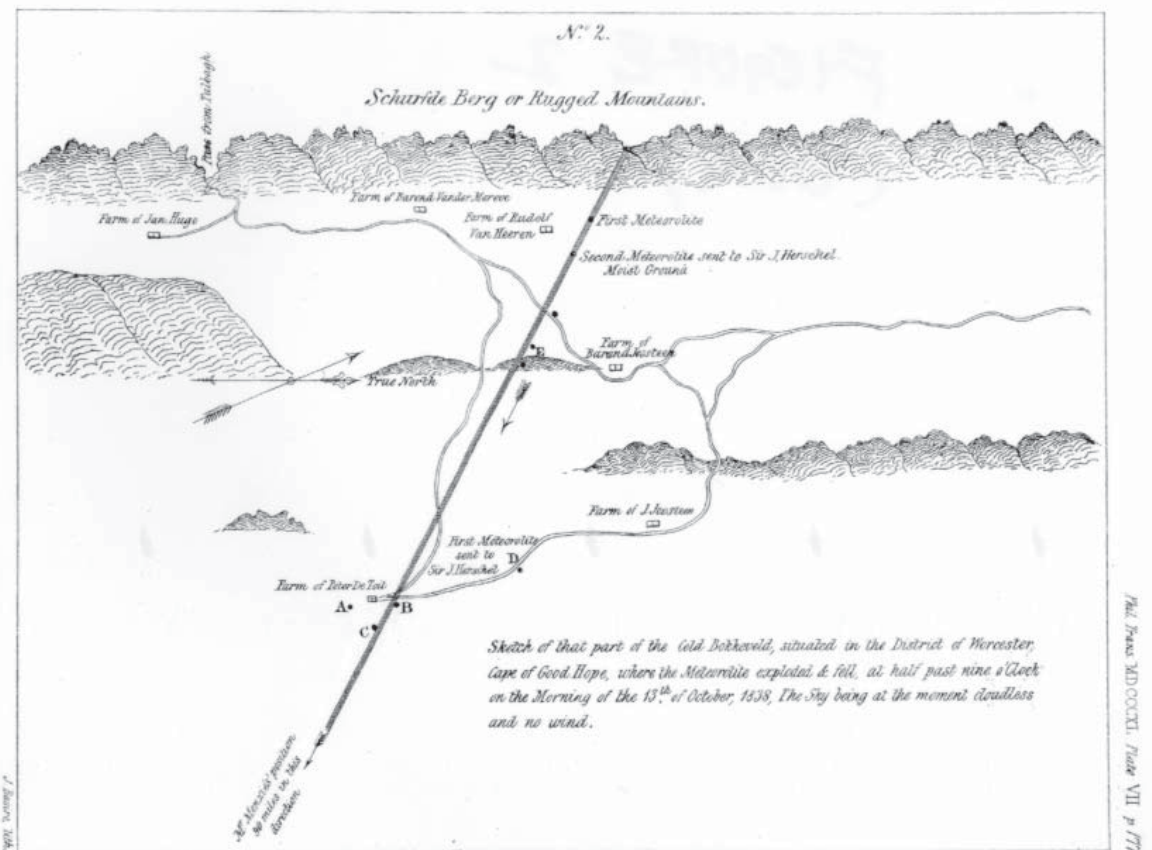


Figure 2: The path of an 1838 meteorite as it crashed along the Cold Bokkeveld. This illustration originally appeared along with Kieviet’s eyewitness account in Thomas Maclear, ‘Further Particulars of the Fall of the Cold Bokkeveld Meteorite,’ *Philosophical Transactions of the Royal Society of London*, vol. 130, 1840, 177-182.

Interpreting Kieviet's report is a tricky business, since only his mark at the bottom of the affidavit came from his own hand. For example, we do not know whether he volunteered or was prodded to give his observations about the time, weather, and weight of the meteorite sample. We also cannot discern whether Kieviet's 'terror' at the meteorite's fall truly reflected his state of mind. The experience would have been unusual and alarming for anyone, and furthermore many southern African cultures considered comets, and perhaps meteorites as well, bad portents. On the other hand, his interviewers may have invented or exaggerated Kieviet's fright in order to emphasize what they may have seen as his questionable epistemological status. Still, in the end, we have the fact that Truter did take a statement from Kieviet (and, for whatever reason, not his employer, Jooste), and that Maclear passed it along to the Royal Society of London. It seems that for men of science, whatever Kieviet may have lacked in credibility he made up for in proximity to the incident, as he 'happened to be quite close to the spot where the burst took place and the meteorolite fell.'⁴¹ Once again, being there and a sharp eye had kept Africans in the game of producing scientific knowledge, if only for a while. In that very moment of terror, when a part of the heavens exploded into the world below, another breach closed momentarily. For what I believe was the first time, a sub-Saharan African became an astronomical authority on the pages of one of Europe's most prestigious scientific journals. This suggested that the liberal colonial dream of African cultivation through mathematical astronomy was more than just a fantasy. The comet might just be a true portent of cultural mergers to come.

The Master's Lament

Kieviet's example sparkled on the pages of the Royal Society's journal as an exception to the general European rule that servants - particularly African ones - could not be trusted. This woeful refrain heard from Europeans across the globe took on a particular shrillness in the empire, where otherness, unpredictability, and danger seemed especially acute. The complicated mix of cooperation and resistance that slaves and African and European labourers actually engaged in posed a real problem for precision astronomy. On the one hand, the real work of astronomical observation could not continue without enormous amounts of labour, more, in fact, than the hand-strapped Cape could usually accommodate. On the other hand, the real work of astronomical observation required the most extreme levels of timeliness, reliability, and sobriety - the kind of moral and physical purity that only missionaries and astronomers were just crazy enough to demand.⁴²

In this regard, Cape astronomy flailed in limbo from the beginning. In the process of producing one of the first catalogs of the southern heavens, the irritable Lacaille had relied strictly on the assistance of 'uneducated native boys' when the technical work he wished to do also required a relatively high level of literacy and

40. Maclear, 'Further Particulars,' 182.

41. *Ibid.*, 181.

42. For a striking example of this demand for purity, see John F.W. Herschel, *A Treatise on Astronomy* (London: Longmans, 1833), 1-2.

numeracy.⁴³ Fearon Fallows found his first (English-born) assistant so drunk and disorderly that he demoted him to labourer and eventually fired him altogether. The next assistant - Patrick Scully, the colony's Catholic chaplain - at first pleased his beleaguered supervisor tremendously but had to be dismissed when Fallows became 'eyewitness to his improprieties with a young house-maid, about seventeen years of age, the daughter of a Settler, under my own roof.'⁴⁴ Fallows soon learned that conflicts between astronomers and their servants had long preceded him. When he asked around about the abbé Nicolas Louis de Lacaille, whose mid-eighteenth century celestial mapping at the Cape the observatory had been charged to continue, Fallows found 'an old slave alive who clearly remembered Lacaille because he had given her a beating for kicking his dog.'⁴⁵ Whatever he thought of this behaviour - he did not say - it was quite clear that moral purity had not been a hallmark of Cape astronomy.

One can imagine a great deal of such irascibility and abuse in the observatory's first decades, as the buildings took ages to complete, the British Admiralty refused to pay for security to keep looters off the construction site, snakes crawled out of every disturbed patch of bush (about which more later), the all-important mural circle (which measured a star's 'latitude' in the sky) failed to work properly, and assistants continued to disappoint or disappear.⁴⁶ Astronomy, revered at home as that other queen of the ordered natural empire, fumbled along at the Cape through its numerous constraints. While the Royal Observatory at Greenwich literally set the global standard for predictive accuracy - particularly after George Biddell Airy took charge in 1835 and regimented every procedure - its sister at the Cape found that nearly every attempt to copy Greenwich instruments and measures flopped. One of Maclear's assistants, Charles Piazzi Smyth, who had grown up among scientific royalty in England, complained that since the government had not sprung for labourers' quarters, 'dirty black flea-y servants' had to be allowed into the 'beautiful rooms of the wings so exquisitely fitted up.'⁴⁷

On one of his first excursions into the Cape landscape, the private astronomer John Herschel and his family climbed a nearby mountain, and remarked that 'The Country seems fertile but wants trees & inhabitants.' On another journey, he and his wife Margaret spotted two San (a man and boy) sleeping by the road. 'Both Ditto Ditto when we returned 2 hours after!!'⁴⁸ Poor use of resources, laziness and disorderliness irritated Herschel no end, as further evidenced by his attempts to

43. Historical introduction by an 'unnamed friend' on Lacaille's life and work, in the 'Historical Journal of the Voyage Made to the Cape of Good Hope by the Abbé de la Caille,' trans. Elizabeth Melck, NLSA, MSB 297, 1(1).

44. Fearon Fallows to John Barrow, 17 July 1824, quoted in B. Warner, *Astronomers at the Royal Observatory, Cape of Good Hope: A History with Emphasis on the Nineteenth Century* (Salem, N.H.: A.A. Balkema, 1979), 13. Also see Warner, *Royal Observatory*, 78-83.

45. Fearon Fallows to J. Whittaker, 5 September 1821, quoted in B. Warner, 'A Letter from Lacaille,' in *Festschrift in Honour of Frank R. Bradlow*, ed., P.E. Westra and B. Warner (Cape Town: Friends of the South African Library, 1993), 62.

46. Thomas Maclear to George Biddell Airy, 4 February 1835, RGO 15/28, Cambridge University Library; Fearon Fallows to unnamed recipient, 7 November 1830, quoted in George Biddell Airy and Fearon Fallows, 'Results of the Observations Made by the Rev. Fearon Fallows, at the Royal Observatory, Cape of Good Hope, in the Years 1829, 1830, 1831,' *Memoirs of the Royal Astronomical Society*, vol 19, 1851, 1-102, on 26-27; Warner, *Astronomers at the Royal Observatory*, 16-25, 34-35, 45-46, 49.

47. B. Warner, *Charles Piazzi Smyth, Astronomer-Artist: His Cape Years 1835-1845* (Cape Town and Rotterdam: A. A. Balkema, 1983), 21. Unfortunately here, as in so many other cases, Warner gives no reference for the original letter.

48. Evans et al., eds., *Herschel at the Cape*, 106, 157.

rationalize both Cape education⁴⁹ and the nomenclature for southern hemisphere constellations. Upon hearing of the latter plan, Maclear wrote,

You need not despair of success, all the practical Astronomers will back you in expunging the heterogeneous jumble of Birds Beasts Men & Things so discreditable to modern Astronomy & which forms a sort of appendage to it, without a parallel in the other branches of science ... However it is not the mere names of the present groups that appear ridiculous in Astronomical research, it is the want of definable lines admitting of geometrical verification by which the limits of each group become as well known in position as any of the stars composing it.⁵⁰

The ‘heterogeneous jumble of Birds Beasts Men & Things’ that the constellations had become was unworthy of a more orderly modern astronomy. In a textbook he later wrote, Herschel replaced such ‘rude and barbarous’ constellations with ‘*natural* districts in the heavens.’⁵¹ Indeed, one of the ‘requirements of advancing civilisation’ was the rational naming of all visible stars, rather than the ‘savage’ habit of giving mythic significance to only the most conspicuous objects.⁵²

Smyth, Herschel and their contemporaries found themselves caught in a deep catch-22: empire needed precision astronomy to enable navigation and geodetic mapping. But precision astronomy had developed a set of work requirements that virtually ground to a halt in the face of the messiness and violence of Cape labour relations,⁵³ let alone cultural differences. The heavens thus presented a rarefied environment that both promised the possibility of divinely mathematical perfection and fanned the flames of disappointment in giving a sense of just how comparatively imperfect their access was to that world.

The Colony in Orbit

Practicing astronomy in a colony presented another challenge: it sometimes reinforced the uncomfortable feeling that the Cape was just a satellite, a side-show to Britain, the centre of the universe. A British correspondent to the *Cape of Good Hope Literary Gazette* drew this picture vividly. The anonymous writer took the occasion of the upcoming 1832 return of the Biela comet to scold the French

49. Ferguson and Immelman, eds., *Sir John Herschel and Education at the Cape, 1834-1840*.

50. Thomas Maclear to John Herschel, 13 December 1837, in B. Warner and N. Warner, eds., *Maclear and Herschel: Letters and Diaries at the Cape of Good Hope 1834-1838* (Cape Town: A. A. Balkema, 1984), 206-207.

51. Herschel, *A Treatise on Astronomy*, 162-163.

52. John F.W. Herschel, ‘On the Advantages to Be Attained by a Revision and Re-Arrangement of the Constellations, with Especial Reference to Those of the Southern Hemisphere, and on the Principles upon Which Such Re-Arrangement Ought to Be Conducted,’ *Memoirs of the Royal Astronomical Society*, vol. 12, 1842, 201-224; E. Green Musselman, ‘Swords into Ploughshares: John Herschel’s Progressive View of Astronomical and Imperial Governance,’ *British Journal for the History of Science*, vol. 31, 1998, 419-436.

53. Much of the observatory’s most important data did not get reduced and published until the last few decades of the nineteenth century. See especially complaints about observations made at mid-century ‘without skill and without judgment’ in David Gill, *Catalogue of 4,810 Stars for the Epoch 1850; from Observations Made at the Royal Observatory, Cape of Good Hope, during the Years 1849 to 1852, under the Direction of Sir Thomas Maclear, Kt., F.R.S., Her Majesty’s Astronomer at the Cape* (London: Eyre and Spottiswoode, 1884).

for their superstition and the Cape for their ignorance of comets. An astronomical education, he argued, gave people a more appropriate sense of their relative insignificance in the universe, a lesson that was especially important for residents of the Cape, which the writer referred to variously as a ‘satellite’ and ‘another planet.’ In their enlightened age, comets and planets could be ‘referred to their true places in the system; the movements of both, as well as their physical agency on one another, have become a matter of easy calculation.’⁵⁴ The message for Cape colonists was this: imperial possessions, like their equally capricious sister satellites in the heavens, eventually submitted to the superior ocular and statistical power of the British state. In post-Copernican iconography, satellites revolved around the monarchical centre and followed the rigorous laws of its supporting state bureaucracy.

In another popular jest about a decade later, a comet again provided the occasion to ruminate on how peripheral the Cape was. William Layton Sammons, in one of his whimsical poems in his *Sam Sly’s African Journal*, welcomed the most recent visitor as if it were any well-born civil servant on the way to or from India. Sammons chided the comet for neither announcing itself in advance nor staying long enough for good acquaintance. But he ended the verse on a more conciliatory note, begging for news from abroad:

Since thou has kenn’d all *lower* nations,
 Thou art *above* all speculations
 Of earthly kind - thine *high* flown notions
 Admit not of these grosser motions,
 Or should I ask in the plainest manner
 If thou art looking out for fresh guano?⁵⁵

While at first Sammons depicted the comet and other colonial visitors as ‘*above* all speculations,’ he finished the poem by smearing it in bird feces and the commercialism of the Namibian guano trade that had just begun flowing through Cape ports.⁵⁶ Sammons played with the sense of high and low implicit in European understanding of the heavens, and suggested that the highest flyers in the British empire actually had the basest interests at heart. He thus traded deference to the metropole (of the kind encouraged by the British writer to the *Literary Gazette*) for a carnivalesque world where high became low and vice versa. In both visions, the skies brought the empire together. Like the sea, the celestial blanket covered the globe in one fabric, providing a screen on which to project the utopian and dystopic visions of a one-world empire.

If a more confident, independent spirit began to emerge in the pages of the Cape popular press in the 1840s, the observatory found itself more beholden to orders from London. The Admiralty established the Cape Observatory to improve practical astronomy and navigation, especially by providing a corrective set of

54. The Man in the Moon, ‘[Letter],’ *Cape of Good Hope Literary Gazette*, vol. 1, no. 1, 1830, 5-7.

55. [William Layton Sammons], ‘The Comet,’ *Sam Sly’s African Journal*, vol. 2, no. 79, 1844, 4. The comet is now known as de Vico-Swift.

56. L. van Sittert and R. Crawford, ‘Historical Reconstruction of Guano Production on the Namibian Islands, 1843-1895,’ *South African Journal of Science*, vol. 99, 2003, 13-16.

‘comparative observations’ from a different part of the globe but similar longitude.⁵⁷ This vision was thus explicitly utilitarian, as Maclear, the Cape’s Astronomer Royal for most of the nineteenth century, well understood. He explained to the president of the British Association for the Advancement of Science that

Hitherto the examination of nebulae with powerful instruments also the measurement of double stars have been left, exclusively, or nearly so, to the zeal and resources of private Astronomers. The public Observatories being devoted to the more immediate utilitarian branches of cataloguing and of improving the planetary theory of systematic observations ... Thus our public Observatories cultivate the fundamental base work and triangulation rather than the physical constitution, our system and its translation in space rather than the organization of systems more remote.⁵⁸

At the time, the only ‘private astronomer’ at the Cape working on the physical constitution of celestial bodies was John Herschel, who spent four years in Cape Town before returning home to publish his observations. Herschel could afford the luxury of going beyond positional astronomy (precisely locating celestial objects and their movements), and delve more deeply into the creation and destruction of nebulae, comets, and other heavenly bodies. This kind of work could dig into the heavens as an archive of universal history. Besides this significant exception though, the main theme of astronomy’s story at the Cape was one of service: service to the finer accuracy of British Admiralty’s Nautical Almanac, service to the needs of the Greenwich Observatory and the European scientific elite, service to the massive British trading network that considered the Cape one of its nodes and needed accurate navigational tools to get there. For most astronomers working from the Cape, every measurement proved an exercise in outpost humility.

Nearer the Stars ... and Snakes in the Grass

However, it seemed that every narrative in Cape cosmology had its counter-narrative. The San’s telescopic eyes paradoxically placed them closer to and further from the supposedly higher truth of astronomy. The cyclical, predictable phases of the moon did not entirely mitigate its ability to wreak havoc in Khoisan societies. Likewise, whereas the stars sometimes seemed to belie the Cape’s distance from the centre of the universe, in other stories, the Cape achieved a proximity to the heavens that happened nowhere else on earth.

European stargazers in southern Africa found the air remarkably clear. In fact, this observation became so commonplace that it even found its way into one of the many guides for prospective immigrants to the Cape: ‘The purity of the atmosphere is such that a book may usually be read by the light of the moon,

57. Order in Council, 20 October 1820, quoted in Airy and Fallows, ‘Results of the Observations,’ 4-5. Also see the copy of John Barrow to Thomas Henderson, 16 January 1832, in RGO 15/28, Cambridge University Library.

58. Thomas Maclear to Thomas Romney Robinson, 1 April 1850, Maclear Papers, CTAR, vol. 24. Maclear considered these orders so important that he had a nearly irreparable falling out with his beloved assistant Charles Piazzi Smyth over the matter. See ‘Observations of a Comet, 1843’ in RGO 15/1, Cambridge University Library.

with perfect ease, during the summer months.’⁵⁹ Commenting on a lunar eclipse, Presbyterian minister and salonier James Adamson touted the significance of this closeness to the heavens:

Many of the most beautiful and interesting phenomena of the heavens are here more beautiful and interesting, from the pure and gentle transparency of the atmosphere through which we gaze at them. A spectator accustomed to the hazy skies of the North, turns oft with untired gladness to the distinct and vivid objects of our horizon, the hues and changes of the twilight, or the brilliancy of the azure noon. The nearer to us of the heavenly bodies partake of this distinctness; the setting planets blaze like masses of flame on the sea; the moon, after rushing in obscurity through the sun’s radiance, early displays its filmy thread of light, and in its increase presents at all times an appearance of substantial rotundity, very dissimilar to its vapoury and languid disk in the English sky.⁶⁰

For Adamson, the position of the Cape reinvigorated the heavenly bodies from their emaciated state in Europe. The coal-infested skies that signaled Britain’s prosperity also drew a veil between its telescopes and the heavens above. In all its newness, this Scottish émigré claimed, the Cape promised to pull back that veil anew, leaving nothing but crystal-clear Truth.

But this transparency came at a price. As described above, even the most optimistic man of science in this period believed that the Cape’s fresh quality brought the attendant burden of barbarism. Very soon after ‘coolies’ erected his 20-foot reflector in Claremont, on the outskirts of Cape Town, John Herschel wrote home to an astronomer friend that

the Southern heavens are very rich and full of extraordinary objects. I cannot help believing that we are *nearer the stars* here. I mean that the Milky Way is not quite equidistant from the Earth all round - but that we are situated excentrically in it, and nearer to it in that quarter which intervenes between Canopus + α Centauri. I have not room here to state the grounds of this opinion. Meanwhile, whether owing to proximity or to intrinsic constitution, some of the globular clusters such as ω Centauri + others are objects of such magnificence as of themselves to repay the trouble of bringing a large telescope to view them.⁶¹

Notice that Herschel did not simply proffer a rational explanation for his feeling of proximity to the stars - he also said that he could ‘not help believing’ it to be so, regardless of the validity of that feeling. This suggests that there was more

59. J.C. Byrne, *Emigrant’s Guide to the Cape of Good Hope*, 2nd ed. (London: Effingham Wilson, 1848), 6. Also see Burchell, *Travels*, vol. 1, 483-484; Warner, *Royal Observatory*, 74-75.

60. [James Adamson], ‘Eclipse of the Moon - September 2, 1830,’ *South African Quarterly Journal*, vol. 1, no. 4, 1830, 447-450, on 447.

61. John Herschel to W.H. Smyth, 10 May 1834, John Herschel correspondence, Royal Society of London, 21.160. Emphasis appeared in the original.

going on here than a technical point about the accuracy of Cape astronomical data. Herschel made this even plainer in his diary a few months earlier after he got his first good look at the moon through his large telescope:

The Moon at full - as it rises it presents a round, dull blotchy human face, with broad nose sulky mouth and standing perpendicularly has just the effect of some preternatural being - Demon - or god of some barbarous nation looking down on his African territory & sniffing with sullen pleasure the scent of some bloody rite or looking down on the whole region as a scene of carnage agreeable to his nature & will.⁶²

We might seek another technical explanation here, and remark that the moon *is* viewed 'upside down' from the southern hemisphere. However, this fails to give us the full meaning of Herschel's story. By invoking the 'god of some barbarous nation,' he may have been referencing stories he no doubt had heard about 'Hottentot' moon worship. Certainly, no matter how lighthearted he may have meant this remark to sound, Herschel saw something sinister in the visage of this inverted moon and the land that lay beneath. The whiff of cannibalism in this passage makes us rethink his sunny words about being 'nearer the stars' a few months later. Living in that rarefied environment proved an exhilarating but raw and dangerous experience for Herschel, a voyage back to first principles that could ordain or destroy.⁶³

No one understood the biblical proportions of this celestial proximity better than Thomas Henderson, for a very brief time Fallows' successor and Maclear's predecessor as the Cape's Astronomer Royal. He and his assistant, Lieutenant William Meadows, could scarcely have hated more the locale of their assignment. Meadows captured his loathing in verse:

Dread serpents dispute our just claims to a place
Which ages ago was assigned to their race.
And they lurk in our pathway, our chambers molest
Old Eolus for pastime delights to whirl round
The vanes of ten mills which are seen from Snake Mound.
The 'Slough of Despond' intercepts our main road,
And near 'Dismal Swamp' stands our stately abode.⁶⁴

The two phrases in quotation marks referenced John Bunyan's *Pilgrim's Progress*, the second-most popular text in Britain, in which the main character, Christian, struggles through 'slough of despond' and 'dismal swamp' toward the Celestial City. The snakes that crawled all over the relatively isolated and bushy

62. John Herschel, 24 February 1834 diary entry, quoted in Evans et al., eds., *Herschel at the Cape*, 49. The original diaries are in the Harry Ransom Humanities Research Center, University of Texas-Austin.

63. Green Musselman, 'Swords into Ploughshares.'

64. William Meadows, 'Description of the Royal Observatory, Cape of Good Hope,' 1832, quoted in Warner, *Astronomers at the Royal Observatory*, 34-35. Warner does not give the original location of this poem.

observatory grounds, no doubt encouraged the association. Henderson sketched equally horrific images for his successor, Thomas Maclear, of his 'residence in Dismal Swamp among Slaves and Savages. No wolves or Hyænas visible ... - but what was much worse - plenty of insidious venomous deadly snakes ... What would you think if on putting out your Candle to step into bed, you were to find one lurking beside the Bed?'⁶⁵ While Maclear would later shrug off these nightmares, he and his family continued to struggle with snakes and servants.⁶⁶

More to the point, Henderson's vision once again shows us the wormy underbelly of European astronomers' delight at the Cape sky's transparency. The purity of that vision had taken these 'civilized' explorers back to the beginning, when the Fall was a recent rather than distant memory. Similarly, contemplating moonlight from southern Africa took another nineteenth-century Cape writer back to another dawn of civilization, to ancient Athens where

all that was illustrious on earth, for science, and philosophy, was concentrated, - and the instability of human grandeur ... was feelingly brought home to the heart, by the appearance of a few sickly fires, kindled by barbarians in the rudest state of savage ignorance, amid the mouldering remains and probably on the site of some gorgeous edifice, beneath whose classic shade, a Solon developed the researches of human wisdom, or a Socrates inculcated his divine precepts of morality and virtue.⁶⁷

Either way - whether from a postlapsarian dismal swamp or a Dark Ages Athens - they would have to buy knowledge at a terrible price all over again.

Conclusion

While it is anachronistic to see these early nineteenth century statements as prognostications of apartheid to come, we can say this: studying the skies from the Cape felt fateful. It felt fateful not only to the Europeans colonizing the southern tip of the African continent, but also to those people who had lived there before conquest. To those who knew how to read them, the heavens pointed the way ahead: to game, to home, to harvest, to new lands, to civilization. They also presented the past: the creative impulses of the Early Race, the explanation of the hare's cleft palate, the nebular ovens of new stars, creation. The very collapse of past and future into the cyclical celestial realm made it difficult if not impossible to predict whether one was going forward, going back or going around in circles.

I have argued here that southern Africans projected onto celestial bodies these ambivalent desires about the past and the future. These narratives continued to diverge rather than merge over time. As the educational demands for a career in astronomy grew, the relative quality of colonial education for its black inhabitants

65. Thomas Henderson to Thomas Maclear, 27 April 1833, RGO 15/30, Cambridge University Library.

66. Thomas Maclear to George Biddell Airy, 4 February 1835, RGO 15/28, Cambridge University Library; Mary Maclear diary entries for 1 December 1839, 18 May 1840, NLSA, MSB 323, 1(2).

67. 'Moonlight,' *Cape of Good Hope Literary Magazine*, vol. 1, 1847, 36-48, on 38.

declined. But education in mathematics and abstract science withered for much of the white population as well in the face of a pervasive attitude that the government should prioritize practical education.⁶⁸ A curriculum on the latter model would give students

a facility for commercial business and a thorough acquaintance with subjects appertaining to agriculture. The construction of outline maps, - natural philosophy, - and the economy of the animal and vegetable kingdom, - are all very excellent; but are not to occupy more than a small part of the time of the boer's son, because in this colony, in the agricultural districts especially, parents cannot spare their sons after they are 14 or 16 years old, - their personal attendance and manual services on a farm being absolutely necessary, when labourers are really as scarce as gold.⁶⁹

Thus astronomy started out as the vocation and avocation of a very few people, and continued as such. This sequestration of astronomy leaves us to wonder if that allowed other celestial knowledges to continue with minimal interference. For instance, some of the Nguni ceremonies tied to the skies mentioned earlier went into decline at the turn of the twentieth century, but other less visible manifestations of African cosmologies (like folktales) continued for some time thereafter.⁷⁰

Certainly it is important to understand how colonial power relationships defined the subsequent fates of southern African cosmologies. But I have asserted here that we gain something equally important from treating imperial and subaltern cosmologies as equivalent kinds of narrative. From the records of the most institutionalized precision astronomy at the Cape Observatory to the oft-repeated Khoisan folktale about the moon's control over human life and death - each projects a fantasy onto the black screen above. It was an environment beyond reach, and so an ideal space to stage the dreams and nightmares of the South African future.

68. On the comparatively low value accorded to theoretical science in the late nineteenth and early twentieth centuries, see L. van Sittert, 'Making the Cape Floral Kingdom: The Discovery and Defence of Indigenous Flora at the Cape, c. 1890-1939,' *Landscape Research*, vol. 28, 2003, 113-129; idem., "'The Handmaiden of Industry': Marine Science and Fisheries Development in South Africa 1895-1939,' *Studies in History and Philosophy of Science*, vol. 26, 1995, 531-558.

69. A.C.W., 'Education,' *Cape of Good Hope Literary Magazine*, vol. 1, no. 1, 1847, 69-77, on 74-75. For the counter-argument to this emphasis on practical education, see 'The Board of Examiners,' *Cape of Good Hope Literary Gazette*, vol. 5, no. 2, 1859, 65-70.

70. Snedegar, 'First Fruits Celebrations,' 32. On the persistence of these narratives to today, see, for example, Guenther, *Tricksters and Trancers*, 126-145.