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Adventures in Gondwana: Science in the South

Well before the modern vogue for global history, scientific thinkers and visionaries began to think in terms of vast temporal and geographical scale. The German meteorologist and geophysicist Alfred Wegener proposed the outlandish concept of continental drift around 1912, although the idea took half a century to win majority scientific support. One of Wegener's early supporters was the eminent South African geologist and archaeologist, Alex L. du Toit, whose pioneering work for the Geological Commission of the Cape Colony focused on the dry Karroo basin with its rich assemblage of geological strata and prehistoric fossils. In 1921, du Toit proposed that Gondwanaland was a unit land mass focused on the South Pole. This super-continent began to fracture around 160 million years ago to constitute the land masses of Africa, South America, India, and Australia.

In *Our Wandering Continents* (1937) du Toit sought to explain the "architecture of the globe."[1] His book was dedicated to the memory of Alfred Wegener though in fact it modified Wegener's view of a single supercontinent, Pangea, by proposing the existence of two huge hemispheric landmasses, Laurasia in the north and Gondwana in the south. Until the early 1960s, when the theory of plate tectonics came to be widely accepted, the Wegener-du Toit theory of continental drift was "widely ridiculed at northern hemisphere major universities."[2] On his death in 1948 he was hailed as perhaps "the greatest scientist that South Africa has produced."[3]

The ideological as well as the scientific potential of du Toit's iconoclastic view of global geological history was immediately appreciated by the South African statesman Jan Smuts, who proved adept in harnessing science as a means to project South Africa's national ambitions on an international scale. Smuts's personal philosophy of holism proposed a cosmological view according to which all elements of knowledge (and faith) cohered. Holism helped him to conceive of South Africa, understood as a racially exclusive nation-state, and as a vital element of an expanded British commonwealth that was

1 Sidney H. Haughton, *Obituary Notices of Fellows of the Royal Society* 6, no. 18 (1949): 385–95.
2 Arthur B. Ford, "The Road to Gondwana via the SCAR Symposia," in *Antarctica: Contributions to Global Earth Sciences*, ed. Dieter K. Fütterer et al. (Berlin: Springer, 2006), 3.
3 "Obituary: Alexander Logie du Toit," *The South African Archaeological Bulletin* 3, no. 9 (1948): 14.

capacious enough to accommodate growing colonial nationalist sentiment within the developing white, Christian dominions.

In theory, the Smutsian whole was greater than the sum of its parts. But the reality of South Africa's racially divided society entailed that not all its human parts could or should be accorded equal status: Smuts's understanding of the higher unity presupposed underlying diversity. His theory of holism can therefore be seen as a conservative reading of evolutionary science that naturalised social and racial hierarchies. In its attention to the complex, adaptive interactions between organisms and their environments, holism served as an inspiration to what Peder Anker has called "imperial ecology."[4]

The Wegener hypothesis and the southern hemispheric spin brought to it by Alex du Toit fitted in well with Smuts's broad outlook. In a remarkable address delivered in 1925 on the topic of "South Africa in Science," Smuts sought to reorient scientific perspectives from north to south. Wegener's ideas provided the means to do so, while du Toit's illuminating emendations offered the key to understanding Gondwanaland. Smuts posited Africa as the southern hemisphere's "mother continent" from which South America, India, Australia, and Madagascar had subsequently split or "calved off." By placing South Africa at the centre of this "great divide" Smuts was making a case for the country's singularity as well as its universal significance. He drew deftly on evidence in fields ranging from botany, zoology, meterology, astronomy, and paleontology to advance his case.

Smuts was particularly enamoured of the recent discovery by the Australian-born physical anatomist, Raymond Dart, of *Australopithecus africanus* (southern ape), which had just been recovered from a lime quarry at Taung in the Northern Cape. Much against prevailing scientific opinion (and mirroring northern hemisphere scepticism about Gondwanaland theories of continental drift) Dart argued that *Australopithecus africanus* was the crucial "missing link" in hominid evolution; its discovery validated Darwin's speculation that Africa was the cradle of mankind.[5]

Operating from entirely different premises to those of Smuts, but with some of the same themes in mind, Jane Carruthers has explored over the course of her distinguished

4 Peder Anker, *Imperial Ecology: Environmental Order in the British Empire, 1895-1945* (Cambridge, MA: Harvard University Press, 2001).
5 Saul Dubow, *A Commonwealth of Knowledge: Science, Sensibility and White South Africa 1820-2000* (Oxford: Oxford University Press, 2006).

academic career "what it means to be African in an increasingly transnational world."[6] Her approach to environmental history is ever alert to global interconnectedness. Yet, whereas some global historians tend to eschew national boundaries, Carruthers remains closely attuned to the particularities of the South African nation state as well as to the porosity of Southern Africa and its borderlands as a geopolitical region.

In her landmark study of the environmental politics of the Kruger National Park, Carruthers, like William Beinart, picked up on conservationist ideas emanating from the United States. Most her work, however, is focused on interconnections in the southern hemisphere, notably between South Africa and Australia. On account of their shared histories as white settler societies within the British empire, Australia and South Africa do indeed invite comparison. Their scientific heritages have much in common and there has been a long tradition of interchange. Intellectual influences have often moved laterally between the two countries, as well as proceeding indirectly through the mediation of the British metropole.

South-South political cooperation is today often invoked in warm terms, largely as a rejection of imperialist attitudes and northern hemisphere domination. A major new Australian-based research project on race and ethnicity in the Global South led by Warwick Anderson of Sydney University seeks to highlight intellectual complementarities and common networks. Similarities should not, however, obscure differences and tensions within the global south. The limits to cooperation are as important as the possibilities.

In their closely observed study of competing "botanical nationalisms" in South Africa and Australia, Libby Robin and Jane Carruthers have shown how the politics of botanical nomenclature divided South Africa (and Africa more generally) from Australia at successive International Botanical Congresses in Vienna (2005) and Melbourne (2011). At issue was a dispute as to whether the genus *Acacia* should be classified as an African or Australian "type." The study by Robin and Carruthers of the institutional and intellectual politics at play provides an instructive example of the ways in which local nationalisms play out in a global context. It is amusing to discover that in 1911, on the occasion of the coronation of King George V, diplomatic and colonial nationalist sensitivities were

6 Jane Carruthers, "Tracking in Game Trails: Looking Afresh at the Politics of Eco-history in South Africa," *Environmental History* 11, no. 4 (2006): 804–29.

aroused by the accusation that South Africa was stealing the Australian national floral emblem, namely, *its* treasured wattle (*Acacia*).[7] The larger intellectual point made by Robin and Carruthers is that the complexities of local nationalisms, perspectives, and affinities always have to be taken account of in the comparative history of empire.

A similar point has recently been made by Bennett in his history of attempts to establish a school of forestry at Tokai, Cape Town, in 1905–6. This particular initiative was part of a number of efforts in the period leading up to and immediately following political unification in South Africa in 1910 to create viable national scientific and technical institutions. Forestry had long been a domain where inter-colonial expertise was shared. There were well established intra-imperial networks in existence. Botanical exchanges were an established feature of the British and Dutch empires. Kirstenbosch National Botanical Gardens, established in 1912, was the epitome of (Cape-inflected) South Africanism in action. Yet, whereas Kirstenbosch flourished, the attempt to create a national school of forestry at nearby Tokai foundered, largely as a consequence of intercolonial rivalries and sensitivities affecting the as yet un-unified South African state. The shared ideal of "empire forestry" as expressed in what was to be the first school of forestry in South Africa (as well as the southern hemisphere) was not fulfilled.[8]

South Africa's relative ambivalence about Antarctic exploration offers another instance where South-South collaboration was pursued rather ineffectually. The heroic imperial age of polar exploration had already passed when Smuts, in the 1925 address mentioned above, strongly endorsed a call made by G. C. Simpson, director of the Meteorological Office, London, for international collaboration in respect of meteorological stations in the Antarctic.[9] The Australian polar explorer, George Hubert Wilkins, also presented plans at this time for such a scheme. This would include South Africa, which had economic and strategic interests in the South Atlantic, including whaling and fisheries. There was existing support for a South African Antarctic expedition from an Austra-

7 Libby Robin and Jane Carruthers, "National Identity and International Science: The Case of Acacia," *Historical Records of Australian Science* 23 (2012): 34–54; see also Jane Carruthers and Libby Robin, "Taxonomic Imperialism in the Battles for Acacia: Identity and Science in South Africa and Australia," *Transactions of the Royal Society of South Africa* 65, no. 1 (2010): 48–64.

8 Brett M. Bennett, "The Rise and Demise of South Africa's First School of Forestry'," *Environment and History* 19 (2013): 63–85. For further discussion of the regional rivalries that South African unification aroused in the scientific communities and institutions, see Dubow, *A Commonwealth of Knowledge.*

9 Jan Christiaan Smuts, "South Africa in Science," *South African Journal of Science* 22 (1925): 14.

lian-born zoology professor at Stellenbosch University, E. J. Goddard, who couched his appeals in terms of national prestige and international, Commonwealth cooperation.[10]

Australian affinities with the Antarctic and with the idea of Gondwanaland, so well evoked by Tom Griffiths's appeal for a "deep-time" approach to environmental or ecological history, has thus far met with only intermittent interest in South Africa.[11] Although there was enthusiasm in some quarters to establish a sovereign South African "sector" in the Antarctic, southwards Smutsian expansionism was pursued lackadaisically during the interwar years. A more concerted effort by South Africa to establish a presence in the Antarctic was in fact made during the apartheid years with the establishment of weather stations on Marion and Gough Islands in 1948.[12] In 1958 South Africa officially took over a Norwegian base in the Antarctic and the following year it became one of twelve founding signatory members of the Antarctic Treaty. Minister of external affairs, Eric Louw, who aggressively defended South Africa's diplomatic interests at the United Nations at this time, spearheaded the country's claims in the Antarctic. Coming at a time when the country was experiencing growing pressures for international isolation, a visible Antarctic presence was newly attractive since it presented possibilities to prove the country's scientific and diplomatic standing in a hostile world.[13]

The more clement political environment of post-apartheid South Africa offers fresh possibilities for major international scientific collaboration. Here the record is mixed. In respect of Antarctic research, a new well-equipped polar research ship, *SA Agulhas II*, came into service in 2012. So far it has not been fully utilised. There are concerns that the country's potential to make a real impact in southern ocean research is not being fulfilled because of the government's failure to make good on highly-publicised promises.[14] Rather more can be expected from the announcement in 2012 that South Africa will cooperate with Australia in another big science program, the uniquely powerful Square

10 Susanna Maria Elizabeth van der Watt, "Out in the Cold: Science and the Environment in South Africa's Involvement in the Sub-Antarctic and Antarctic in the Twentieth Century" (doctoral thesis, University of Stellenbosch, 2012), 33–5.
11 Tom Griffiths, *Slicing the Silence: Voyaging to Antarctica* (Sydney: UNSW Press, 2007), ch. 4; "Environmental History, Australian Style," *Environmental Humanities* (forthcoming, 2014), http://environmentalhumanities.org/ .
12 Stanley P. Jackson, "Meteorology and Climatology," in *A History of Scientific Endeavour in South Africa*, ed. Alec C. Brown (Cape Town: Royal Society of South Africa, 1977), 402.
13 Klaus J. Dodds, "South Africa and the Antarctic, 1020-1960," *Polar Record* 180 (1996): 36–7.
14 Anne M. Treasure et al., "South African Research in the Southern Ocean: New Opportunities but Serious Challenges," *South African Journal of Science* 109, no. 3–4 (2013): 1–4.

Kilometre Array radio telescope, which may allow astronomers to see back to the time preceding the formation of the first stars and galaxies.

The power of the Square Kilometre Array depends on finely connected networks of collaborative knowledge. Vast sums of money were invested by South Africa and its competitors to secure a favourable outcome since winning the bid brings prestige to the countries involved. Ultimately, the decision whether to centre the €1.5 billion project in Western Australia or in South Africa's Northern Cape resulted in a Solomonic compromise whereby both countries stand to share in a "dual-site" arrangement.

This largely unanticipated solution serves as a reminder that collaborative transnational scientific enterprises are seldom free of rivalries. For all its claims to universality—and what could be more universal than a project to explore the early universe itself—science remains profoundly national and significantly competitive. This is not always sufficiently acknowledged.

In a similar vein, historians of transnational knowledge production frequently use the metaphorical language of mapping, networking, and the web to signal that ideas do not disperse outwards from a core; rather, the process is one of reciprocity and mutual influence. Words like "hybridity," "fluidity," and "interpenetration" therefore proliferate. Writers adopting such "de-centred" approaches implicitly assume that mutuality confers benefits to all and that efforts to transcend the insular boundaries of the nation state must be a good thing. It may be, in part. One of the weaknesses of global history is its tendency to "flatten" differences in the pursuit of congruence, scale, and pattern-making. Jane Carruthers does not make this mistake. She embraces historical span while remaining keenly aware of the local contexts and institutions that affect the production of environmental and scientific knowledge. This is one of the signal strengths of her approach as an environmental historian.