

Imagining Future Agricultural Landscapes in a new Sudan: entitled expertise, cultural intransience and fine warm rain in the English wilds

Johanna Zetterstrom-Sharp

Department of Anthropology, Goldsmiths, University of London

T.ZetterstromSharp@gold.ac.uk

@johannazsharp (twitter, instagram)

Johanna Zetterstrom-Sharp is Lecturer in Anthropology at Goldsmiths, University of London, as well as Deputy Keeper of Anthropology at the Horniman Museum and Gardens. Her current research focuses on collections from the end of the British Empire in Africa, with a wider interest in museums, heritage and nation building and the intersection of these with legacies of colonialism.

This work was supported by the British Academy under Grant pf150102.

Imagining Future Agricultural Landscapes in an Independent Sudan: entitled expertise, cultural intransience and fine warm English rain in the wilds

This article sits in response to work on the rolling out of development-centred technical and scientific expertise at the decline of the British empire in Africa. Specifically, it focuses on the imagining of future agricultural landscapes in Sudan, exploring how such imagining was framed by the social and colonial worlds in which scientific knowledge about agricultural capacity in the north and south was produced. It draws on a private archive of letters, photographs and objects compiled by Roger Brain, an agricultural scientist engaged in research and census work for the University of Khartoum in Sudan between 1953 and 1959. His archive reveals the underlying assumptions, conventions and anxieties that framed the ways in which he viewed and understood the landscapes in which he worked. I argue that this framing shaped regionalised notions of inevitable technological transformation in the north, and notions of a fragile cultural distinctiveness coupled with a deep nostalgia for rural intransience in the south. Ultimately I suggest that this shaped the production of scientific knowledge by Roger Brain and others like him, woven through the production of policy and planning regarding Sudan's economic future after independence.

Keywords: Sudan, colonialism, agriculture, development, future imaginaries, technology

Introduction

In August 1953, Roger Brain, a prolific letter writer, wrote to his parents on Air Malta headed paper as he flew across the Mediterranean towards Khartoum in Sudan for the first time. With trepidation, he noted that “everyone has been back and forth quite a bit” and he felt “rather like the pale little school boy”, surrounded as he was by seasoned British colonials returning to Khartoum from leave. Roger had recently attained a second-class BSc from Bristol University, specialising in Agriculture; a reflection of his youth spent working on the farms surrounding his family home in Chippenham,

Wiltshire. This qualification was enough to land him a research and teaching post at the Faculty of Agriculture (FoA) at the University of Khartoum (UoK). Roger Brain worked at the Faculty for 6 years, finally leaving Sudan in 1959 to direct the establishment of a new agricultural research facility at Moor Plantation in Ibadan, Nigeria. He arrived in Sudan at the cusp of independence, six months after the signing of the Anglo-Egyptian Accord which set out the terms for British withdrawal. In 1956 Sudan became independent, albeit amid significant political tension, and by the time Roger left in 1959 the majority of British governmental and academic posts had been replaced by Sudanese candidates. His role at the faculty was officially engaged in this transitional process. He was appointed to both undertake census research and provide training, working towards the establishment of a stable and sustainable economic future for Sudan, based on increased agricultural productivity.

This article sits in response to the significant volume of work focusing on the rolling out of development-centred technical and scientific expertise at the decline of the British empire in Africa. Of particular interest are the imaginaries and cognitive infrastructures that underlay the technological and scientific planning of decolonial futures (Shamir 2018, Headerick 1981, Jasanoff and Kim 2015, Bennett & Hodge 2011) and - in the case of Sudan - the transformation of the regions agricultural landscapes through irrigation and mechanisation (Young 2018, Bernal 1995, Hodge 2007). Whilst this wider work has focused on governance, policy and planning, here I focus on the engagement of these official discourses with the domestic social worlds in which they were informed and created. As an agricultural scientist affiliated with the FoA, Roger Brain was professionally responsible for surveying existing agricultural practice in Sudan and training the next generation of Sudanese agricultural researchers and advisors. The way in which he, and other British academics like him, viewed and

understood the landscapes in which he worked thus informed policy and planning, influencing Sudan's future as an independent state. I am interested in the assumptions, conventions and anxieties that framed this process of knowledge production, in particular where underlying structures of racialised entitlement determined how the relationships between technology, people and landscapes were understood.

This article draws on the personal letters written by Roger Brain to both his parents and his wife, Audrey Brain, between 1953 and 1956. These were donated to the Horniman Museum and Gardens in London in 2015, along with a collection of objects, photographs and film reels. This collection presents a different kind of archive to that most often associated with histories of development, just as this narrative of mid-century British colonialism remains relatively understudied in relation to archives and collections in anthropology museums such as the Horniman. I focus on three interlinked contexts that feature in Roger Brain's letters. These include the relatively enclosed and established colonial social circles in which he was introduced as soon as he arrived in Sudan, fieldwork surveying intensive farming in the central grain belt just south of Khartoum, and census work in the far south east.

Imported expertise and agricultural planning

Roger Brain's professional and personal trajectory is one common to many British expats, situated within the expanding academic and expertise driven sector in British Africa post WWII. He arrived shortly after the UoK attained full university status in 1951 through a partnership scheme between the University of London and a series of pilot institutions in Africa, also including Accra, Kampala, and Ibadan. At the UoK this relied on a significant movement of British expertise, with degrees awarded by the UoL until UoK became Sudan's national university in 1956 (McIlroy 1957). The field of Agricultural science within the Faculty of Agriculture during this period (1951-1956)

was particularly dominated by British expats given its reliance upon imported technologies and skills and its intersection with future oriented and Government led development, research and planning.

There is a large critical literature focusing on the intersection of late European imperialism with both the establishment of universities in the Empire (Ajayi *et al* 1996, Abrokwa 2017, Hargreaves 1973) and the technocratic development doctrine that framed mid-20th century relationships with former colonies (Isaacman & Roberts 1995, Headrick 1981, Shamir 2018, Bennett & Hodge 2011, Shiva 1991, Meskell 2018). Of particular interest here is work that highlights the enduring ideas and ideological assumptions scientific researchers, technical experts and policy advisors left behind in the wake of independence in the 1950s and 60s, and how these shaped the way in which post-colonial futures were imagined by new governments, former colonial powers, and an expanding network of NGOs (Hodge 2007, Mitchell 2002, Young 2018). As noted by Hodge (2007, 11), late imperialism may be regarded as “an imperialism of science and knowledge”, albeit knowledge that was produced within the particular context of imperial withdrawal. As an agricultural scientist, Roger Brain was engaged in imagining future agricultural landscapes in Sudan through census work, teaching, and research.

Teaching at the FoA was organised around a 3-year diploma in agriculture, agricultural science, and agricultural engineering, designed to provide professional training for future Sudanese employees of the Sudan Ministry of Agriculture (McIlroy 1957). The FoA had a largely Arabic speaking intake of students from wealthy northern families. Research at the faculty operated within a network of government-owned experimental farms, including Shambat where the faculty buildings were located. This enabled research centred on regional plant genetics, pathology, entomology, soil science and agronomy, leading toward policy level recommendations for the development of

Sudan's agro-industries (Bacon 1948). Staff at the Faculty were engaged in training incoming employees of government posts as a result of Sudanisation policies.

Sudanisation included the replacement of British held positions within the colonial Sudan Political Service (SPS) by Sudanese candidates in an independent civil service between 1953-1955 (Sconyers 1988). FoA Staff were also directly involved in gathering data for the many development oriented surveys and reports undertaken at the time. These sought to establish economic priorities for Sudan and to enlist international commitments to development funding.

Despite the embeddedness of both FoA teaching and research within the broader unified landscape of national agricultural development, it is important to note the regional bias toward the mechanised and irrigated cotton cultivation in the Nile Delta in both curriculum and allocation of experimental resource. As recently explored by Young (2018), this regionalisation of agricultural productivity was central to the way in which Sudan's future agricultural landscapes were imagined and financed in the lead up to independence.

Cultural fragility and rural isolation

The need to realign economic productivity and social development of the south with the northern and central regions around Khartoum in the lead up to unification at independence presented a persistent problem for economic planners and policy makers. The Zande Scheme initiated in western Equatoria in the 1940s is significant as the only large-scale industrialised agricultural project actualised in the south prior to independence. This "experiment in social emergence" (Tohill 1943 in Reining 1966, 143) included plans to combine the industrialisation of a southern cotton-industry with the development of transport and communications infrastructure, and a wide-ranging education program (Reining 1966, 142-148). Reining's (1966) historical but

comprehensive account is significant since it highlights how what was first conceived of as a comprehensive plan for self-sufficiency quickly became downgraded to supplying northern cotton markets with good quality and affordable cloth at the expense of local markets and workforce. In June 1955 this ultimately led to riots in Nzara, the industrial centre of the scheme, as cultivators and factory workers protested against low wages and the lack of representation of southerners in positions of authority. Reining (1966) highlights how this regional economic inequality was defended by a paternalistic concern over protecting southern populations from rapid changes brought by industrialisation and the introduction of a cash economy (1966, 189-195). This, he argues, came down to “vague impressions about ‘primitives’ in certain ‘stages of development’” (1966, 193), highlighting without directly articulating the deeply racialised component of this which meant European planners were “not dealing with specifics such as Uganda or the Azande”, but forecasting the effects of particular interventions on the basis of race. The general assumption was that whilst mechanisation and the introduction of new strains of cotton might effectively increase the economic capacity of the land, its populations remained unable to grasp or withstand the cultural and social impacts of such fast-paced economic change.

In partial response to the isolation of the Zande Scheme, the SPS commissioned a number of surveys and reports setting out wider proposals for the development of the south. This included the Jonglei Investigative Team (JIT) survey, initiated in 1952, developing into a wider but less thorough survey by the Southern Development Investigation Team (SDIT), established in 1953. These reports accumulated existing data supplied through administrative authorities. They also relied on ground-level census work and research; for SDIT this was undertaken by research staff affiliated with the UoK. Both reports made extensive recommendations for further research and

investment associated with the rural isolation of particular regions, which were rarely followed up. They shared with initial planning for the Zande Scheme an overriding concern that technologically engineered economic growth be integrated within a much wider landscape of careful social and infrastructural development. Young (2018,) explores how this emerged through the use of descriptive prose as a means of articulating possible futures for the south in the final JIT report. Whilst quantifiable numbers were favoured in the forecasting of investment in technologically engineered landscapes in the north, a focus on embedded social development was not so easily measured or predicted.

It is important to recognise the way in which development in the south was assessed as distinct from the project of building broader national economic security, focused on the north. The SDIT report in particular begins by stating that although the “social, political and economic advance” of southern populations cannot be treated independently from the future of Sudan as a whole, the “human, environmental and ecological conditions are distinct” (SDIT 1955, 1). Central to this perceived distinctiveness was a caution that the primary objective of economic development should avoid causing “so drastic and rapid disturbance of tribal life and structure that the social equilibrium cannot be maintained” (SDIT 1955, 1). This disturbance is most clearly identified where education and rapid economic growth is discussed as a harbinger of overwhelming social transformation leading to the “complete breakdown of the economic and social life of the people” (SDIT 1955, 87). This includes problems associated with young men showing a preference for paid employment over conscripted agricultural labour, taking children away from traditional farming duties to attend school, and empowering women to take greater authority over the household at expense of time spent on cultivation (SDIT 1955, 87-97). Primitivism thus included concerns

over the failure of southern populations to make effective economic decisions with respect to weighing up social change and agricultural responsibilities.

Young's (2018) work explores how established regionalised frameworks for understanding and creating knowledge about Sudan were embedded within, and re-inscribed by this process of planning for an independent economic future. This internalised and solidified regional economic inequality by, for example, limiting investment in technologically engineered agricultural futures for the south. An important thread to what follows is the way in which academic science and imported technology played a central role in determining "what was thinkable and reasonable" (2018, 13) in light of the social and economic value of particular agricultural development programmes. Here Young draws on Jasanoff and Kim's (2018) work on "sociotechnical imaginaries" to explore how science and technology should be understood as deeply embedded within existing "assemblages of materiality, meaning and morality that constitute robust forms of social life" when deployed in the imagining of collective futures (2018, 4). As such, although regarded as objective or neutral tools for the attainment of already defined futures, for example assisting the development of stronger and more resilient economies, they argue that science and technology both shape and are shaped by this process of future imagining. For Young (2018), this reveals how economic imaginaries in Sudan, heavily mediated through ideas of technological and scientific progress, were subjective and socially contingent, despite being articulated as quantifiable logic. This shaped the ways in which technology and science intersected with development programmes, and ultimately enabled embedded structures of knowledge to influence the ways in which scientific data was both created and deployed to assess the relevance or suitability of investment in technology and research as a catalyst for economic and social change.

Here I argue that in order to understand the subjectivity and social contingency of technocratic and scientific expertise, it is also important to reflect on the personal and social worlds in which the data that informed such expertise was created. Despite official colonial policy confirming support for a unified Sudan, the process of creating knowledge about and planning for the economic and social futures of southern populations were embedded within established and racialised frames of reference and research practice. This included the notions of cultural fragility and rural isolation that for planners distanced southern populations from broader and inevitable national technological transformation. In order to explore this further, I have chosen to focus in detail on the professional and private insights of a single individual – Roger Brain - to draw out the relationship between his immediate social world, the anxieties, entitlements and assumptions that permeated it, and the production of outwardly objective scientific facts. These, I go on to argue, foregrounded racial and cultural distinctiveness above economic capacity and entrenched an underlying nostalgia for intransient rural landscapes.

Private lives and professional expertise

Roger Brain's arrival in Sudan coincided with the development of SDIT in 1953, and in June 1954 he was elected to undertake one of a limited number of "pilot census samples" (SDIT 1955, 75) for the report, focusing on the Dongotonas, a mountain plateau in the Imatong range to the far south-east of Sudan. This work was undertaken with the FoA's cohort of students in 1954 as part of their field training. It is rare to find extensive personal archives relating the individuals who made up the massive networks of British academics and technocrats appointed to inform rather than lead the significant volume of development initiatives that characterised "late imperialism" in Africa.

However, in this case Roger Brain's archive of letters, photographs, film reels and objects pertaining to his time in Sudan can be found in the Horniman Museum's anthropology collection.

Unlike archives of material directly associated with governance, policy or research, the ad-hoc nature of acquisition in a collection such as this has resulted in significant archives relating to both the professional and private spheres of British colonial work. This has afforded important research focusing on everyday interactions in the British empire to better understand the ways in which colonial power is created, resisted, re-inscribed and maintained. As highlighted by Thomas (1994), such work can uncover the tensions and contradictions that exist between official governmental rhetoric, such as policy and planning documents, and the personal anxieties or inefficiencies of individuals engaged in colonial projects on the ground. Although by no means restricted to research focusing on archives attached to museum collections, the deep entanglements between anthropology as a discipline, the creation of its museums and the production of knowledge directly engaged with the practice of colonialism, has provided fertile ground (Bennet *et al* 2017). On the one hand, museums have been spaces in which the professional rhetoric of colonial governance has been both produced and publicly represented, yet on the other they have also accepted archives of an unofficial colonial nature such as personal collections made during fieldwork, letters, journals and photography albums. Roger Brain's archive may be understood in this light; although largely composed as a result of professional data collection, it is also a private collection of objects bought home to be displayed in the house, letters to his wife and parents written on an almost daily basis, and photographs from the field intermingled with shots of his family.

Of interest here is what the private social worlds and insights of an individual compiling data the final years of colonisation in Sudan can add to understandings of the ways in which particular scientific truths about landscapes, populations and their intersection with new technologies were established and articulated through work like his. This necessarily builds on the vast volume of work on “cultural technologies of colonial rule” (Dirks 2001, Cohn 1996, Bennet 1995, Said 1994) including imperial observation as an entitled surveyors gaze “from above and at a distance” (Cohn 1996, 101), capable of both comprehensive and ordered legibility (Bennet 1995, Rycroft 2006, Mitchell 1988, Pinney 2008). In this light, census reports and planning documents have been characterised “as sites of calculation” (Latour 1987) whereby perceptions of the “field” were amassed, ordered, transformed and reproduced as scientific truth, in turn reflecting back on the way in which the field was comprehended and acted upon, further embedding forms of governance and imperial legitimacy (See Bennet *et al* 2017 for similar discussion). In what follows I explore this in light of the specific context of colonial withdrawal and independence, extensive technological and scientific change, and the racial prejudices and entitlements embedded within the British colonial world in Sudan. These emerge to varying degrees of intentionality through Roger’s Brain’s personal insights intended for his family, his research practice, and through the conclusions drawn from this research.

Cornishware soup bowls, intensive farming and veiled maidens

With no experience of agriculture outside of Britain, Roger had prepared for his post by reading B. M. Boyns’ and Knight’s *Bibliography of Agricultural Science in the Sudan* (1949) and J. D. Tothill’s comprehensive handbook on *Agriculture in the Sudan* (1948). Both works were written by British men who had built their careers on long term engagement with agricultural research and development in the Empire. Tothill’s career

in the Colonial Civil Service included Directorships of Agriculture in Fiji, then Uganda, before his posting to Anglo-Egyptian Sudan as the Director of the Sudan Department of Agriculture and Forests where he oversaw planning for the Zande Scheme. Boyns had served in the Sudan Ministry of Agriculture, followed by his appointment as Dean of the School of Agriculture in the 1940s. He was well established within the academic scene in Khartoum, for example sitting on the elected and entirely British committee of the Philosophical Society of the Sudan as a founding member, established to “promote discussion, exchange of views, and research in moral, political and natural philosophy” in response to the rapid transformations occurring as a result of development policy (Philosophical Society of the Sudan 1948). Boyns’ primary research focused on the establishment of dairy herds, involved in the introduction and cross breeding of Devonshire Friesians to supply rising demands for fresh and powdered milk (Boyns 1947). Roger’s first professional encounter with agriculture in Sudan was thus through the lens of established colonial civil servants who had come to know their academic subject in the wider context of colonial governance.

Roger spent his first month in September 1953 living in Boyns’ family home located in Shambat where the FoA and its research farm were based. Here he was quickly introduced to the formal daily routine of colonial expat life. Not accustomed to having house-staff, he struggled to know how to interact with Takir, employed by Roger for his first three years in Shambat as a cook, cleaner and gardener. “I think I would manage myself” he muses in one letter, but “that’s just not done.”¹ Roger’s most significant anxieties, however, appear in relation to the extensive packing lists he sent to

¹ Horniman Museum and Gardens, archive E1630.40, letter from R. Brain to his parents, Shambat, September 1953.

Audrey, his wife. These lists veer between practical domestic requirements, such as “plenty of cheap sheets” and “small egg-cups,” and the technicalities of proper entertaining. The “nice blue Cornishwear soup bowls” are requested, along with the “fine tea pot” and silverware, as well as specific advice on appropriate formal-wear². The urgency of these packing lists depended upon Boyns’ instruction that Roger would be heading out on “trek” in early October to “learn something of the agriculture of the Sudan”, working with existing agricultural inspectors to survey government run plantations, focusing on dates, citrus and cotton. He prepared by purchasing trek equipment including a bed-rol and pair of safari trousers from Dr. Knight, a cotton breeder who had previously served in India.

Roger Brain began his tour just south of Khartoum, visiting the vast irrigated landscape of the Gezira plain, where he was based at the governmental research farm at Wad Medani. It is no surprise that Roger should begin here; cotton, the main crop of the Gezira, was well established as Sudan’s primary export, with the development of Gezira the focus of both future economic planning and the core emphasis of the FoA’s three-year diploma (Bacon 1948, 239). This ambitious British scheme, initiated in 1923, transformed a vast area of delta land between the White and Blue Nile through irrigation into a network of uniform plots, cultivated under a government tenancy scheme. The scheme allocated plots of land to tenants, and regulated crop cultivation, limiting what could be grown to primary cash crops, including cotton as well as dura (sorghum) wheat and lubia beans. A percentage of cotton yield was taken by both the Government and the Syndicate, the management board of the Gezira, in exchange for

² Horniman Museum and Gardens, archive E1630.68, letter from R. Brain to A. Brain, Shambat, September 1953.

mechanised assistance and reliable water supply. Bernal (1995) highlights how despite the long history of cultivation in the area, the delta was treated by British planners as a blank-slate. The scheme has thus been characterised as an imaginary based on the idea of repurposing an economic void, ordering both an unruly landscape and a disorganised and unstable population. This emerges clearly in Tothill's introduction which situates the focus on cash crops, predominantly cotton, within a benevolent desire to "bring about the emergence of happy and prosperous rural communities rapidly becoming fully literate, financially able and mentally wishing to participate in the advance of civilisation" (1948, 3). Imagining transformed economic landscapes thus included assumptions about inevitable social and cultural transformation, both as a result of absorbing new expertise and skills, and an increased economic mobility.

Roger travelled with Sudanese colleagues from the FoA who appear in his letters written during fieldwork in October and November 1953, most often in relation to cultural faux-pas such as one incident where he narrowly avoided serving a Muslim lecturer a stew prepared with spam. He also writes of encounters with Sudanese agricultural officers, surprised at their fluency in English, deep knowledge of their subject, and cosmopolitan outlook, and embarrassed by his own difficulties in learning Arabic. Descriptions of cultivated land in Gezira, the focus of the teams survey, are however largely bereft of the significant Sudanese agricultural workforce required to manage and farm the land. His letters offer accounts of land rotation between cotton, dura, lubia and land left fallow, and describe vast fields of cotton in yellow bloom, with particular attention to the role of mechanisation and irrigation in enabling such cultivation. This includes machinery for ploughing and the extensive use of aerial spraying against pests, "flying about 12 ft. [above ground] spraying about 40 acres per

flight.”³ However his focus is on the Government run network of canals managing water flow, without which the area “would be desert like the surrounding country”⁴. These canals take on an agency of their own; “the whole area” Roger writes “is watered from canals which lead to smaller ones...every 15 days about the water is allowed to flow out from this into the field which is ridged, when the water is about 4 inches deep in the furrows the supply is cut off”⁵. This unpopulated technologically mastered landscape is also reflected in his photographs of Gezira which focus on machinery and water engineering (Figures 1, 2).

Tensions over the control and management of water allocation provides a moment where Sudanese tenants and cultivators do emerge, but as agitators pitted against the otherwise orderly technological solution to repurposing barren land. This is in relation to a series of village trials attended by Roger led by “local sheiks” to try tenants for offences associated with water “theft”, referring to the unsanctioned use of governmental water supplies to grow crops other than cotton⁶. More commonly, the Sudanese residents of Gezira appear as largely distinct from the technical space of large-scale cultivation occupying a passive orientalist space, for example as “little Shepard boys in cloaks” guarding animals grazing on fallow land, or “uncovered”

³ Horniman Museum and Gardens, archive E1630.2, letter from R. Brain to his parents, Wad Medani, October 1953.

⁴ Horniman Museum and Gardens, archive E1630.92, letter from R. Brain to G. Willis, Abdel Marjid, October 1953.

⁵ Horniman Museum and Gardens, archive E1630.92, letter from R. Brain to G. Willis, Abdel Marjid, October 1953.

⁶ Horniman Museum and Gardens, archive E1630.2, letter from R. Brain to A. Brain, Wad Medani, October 1953.

women fetching water at sun-set⁷. This is extended north beyond Gezira, during tours of irrigated fruit plantations near Merowe on the border with Egypt. For example, in a letter addressed to Audrey from Nuri, Roger indulges in an orientalist fantasy as he describes the “sandy narrow streets between high mud walled gardens with palm trees”. “There is talk of a horse” he muses, “heaven forbid it will be just like the films here with Roger Pasha on his Arab charger galloping after veiled maidens down high walled avenues”⁸. Despite the official framing of large-scale cultivation as a project of progressive social and cultural transformation, Roger’s letters certainly differentiate between inevitable technological transformation and an underlying cultural intransience.

Roger returned to Shambat in early December 1953, where he was joined for Christmas by his wife. Together, they soon settled in to expat life in Khartoum. Letters home detail Roger’s committed membership of the local hockey team, and Audrey’s involvement in the Church committee. They hosted dinner parties, serving up devilled eggs and pineapple with cheese on cocktail sticks, getting “gay and rowdy” on gin fizz. They frequented Cabarets with dancing girls and balls organised by the District Commissioner, as well as going to the “pictures” in Khartoum. Audrey succeeded in growing roses and dahlias in the borders of their back garden, and they battled with the arid earth to produce tomatoes, a crop of lettuce, and some very small carrots.

In March 1954, Roger met a British colleague over drinks who had just returned from fieldwork in the Imatong mountains in the far south-east of Sudan, where Roger would himself be traveling a few months later in June:

⁷ Horniman Museum and Gardens, archive E1630.2, letter from R. Brain to A. Brain, Wad Medani, October 1953.

⁸ Horniman Museum and Gardens, archive E1630.78, letter from R. Brain to A. Brain, Nuri, October 1953.

We are it appears going to make a count of cattle etc. & crops owned by this tribe as they [regional agricultural officers] want to move them into a new area as their present site is becoming very eroded. It sounds a nice place apart from the rains and is supposed to look very much like the English Moors.⁹

Making a count of cattle, crops and people

Roger Brain travelled south for the first time along the Nile in May 1954 to Juba, passing Malakal on the border between Upper Nile Province and Equatoria. From Juba he was to trek overland to Torit and then travel south to the Dongotonas to undertake a pilot census for SDIT, returning north in September. Roger was accompanied by FoA students who were encouraged to take part in survey work as part of the FoA diploma, partly in an effort to engage the largely northern and elite student cohort with rural life in the south. The pilot census resulted in a report submitted to SDIT in October 1954¹⁰, which fed into the final SDIT report submitted to the Ministry of Finance and published in 1955 (SDIT 1955). The format of the SDIT population census included the selection of four “typical villages” in the Dongotonas. These included Ukuk, Ludwara, Isoke (Isohe), and two associated smaller plateau settlements named in the report as Dito and Moi Moi. Cultivated land associated with each village was measured, along with detailed accounts of plant species, rotation and soil quality with particular reference to soil erosion. There were also counts of livestock, including cattle, sheep, goats and poultry, with information sought on the management of livestock, such as grazing patterns.

⁹ Horniman Museum and Gardens, archive E1630, letter from R. Brain to his parents, Shambat, March 1954.

¹⁰ SAD.69/11/1-12, report on a survey of the Dongotona mountain range submitted to SDIT by the University of Khartoum.

Roger Brain's letter writing over the course of three months spent travelling around the south was prolific. As he approached Malakal in June 1954, he wrote separately to his parents and Audrey requesting that they keep his letters in lieu of a field-journal, so that he might "write them up one day" for public reference¹¹. Tellingly, unlike his letters written on fieldwork in the North which overwhelmingly presented a technologically cultivated landscape largely devoid of people, these letters are dominated by descriptions of and references to the southern Sudanese residents of Malakal, Juba, and the villages in the Dongotonas. This might partly be explained by the requirements for gathering data on numbers of cultivators and non-cultivators, household organisation and division of labour for the census. This included a count of men and women for each village, with sub-categories of married/single for men, and married/unmarried for women, as well as children, recorded as girls or boys. Households were also quantified by numbers of wives per "head of household". This data is used in the census report to make estimates on land use, calculating for example average areas cultivated by individuals or families, and average size of individual holdings. It emerges in the final SDIT report as both statistical information, incorporated into figures associated with the "south-eastern hills and mountains", and as limited prose.

This census work should be understood within the wider context of attempts to quantify both the agricultural and human resource available for development in the area, as stipulated by the SDIT framework. However, the presentation of this data as lists and numbers obscures the intrusive nature of the survey. At points in the report, for

¹¹ Horniman Museum and Gardens, archive E1630, letter from R. Brain to his parents, Malakal, June 1954.

example, it becomes clear that residents are further categorized by whether or not they have gone through puberty, or whether or not they are “sexually capable” or “capable of child bearing”, for men and women respectively. Information gathering relied on visual classification of all residents and verbally questioning “heads of households”, namely men, about their families. This process is elaborated on by Roger in one of his letters to Audrey written in Ukuk on the 4th of June, with an accompanying photograph (Figure 3):

The census takes two students sat down under a tree while [the] populous was brought for questioning. They [residents of the village] seemed to take it very well. It means asking all sorts of questions especially with regard to getting age right. The chap started by always asking to see the daughters - he would contemplate them and classify as over puberty etc...we do have fun don't we.¹²

The letter goes on to describe how confusion over a man who claimed to have four wives, yet listed only one child, was resolved through conclusions about his infertility, and a child born to a young women without a husband was listed as the child of the woman's father in order to include her within the restricted format of the census. There is an overriding narrative of compliancy in Roger's letters, assuring his readers that residents were happy to offer personal information on sexual partners, fertility, and puberty, “turning out to shake hands” on arrival of the team with their questions, notebooks, measuring tapes and cameras. Meanwhile both his letters and the report also contradict this, complaining that residents could rarely be relied upon to show up and that they purposefully hid cattle, suggesting that Roger and his northern students were understandably greeted with suspicion.

¹² Horniman Museum and Gardens, archive E1630, letter from R. Brain to his parents, Ukuk, June 1954.

Whilst the nature of the population census may have heightened a focus on local people in Roger's letters home, the language and ethnographic tone used to describe them indicates a deeper personal fascination with and desire to document residents from the moment his steamer leaves Juba. "The country here is more interesting", he notes, "very wide green plains with thatched grass huts and many natives, just like the pictures in-fact", referring to the archetypal images of Eastern Africa he was familiar with from watching colonial films in Khartoum. His letters focus in detail on peoples clothing, or lack of. In one passage, writing from the steamer stationed at a village between Malakal and Juba, Roger notes:

Here you get all types from most tribes some naked others in Eastern dress some in European, some in table cloths. We saw some fine men from the tribe that dye their hair ginger in cow urine wearing just short shirts, very funny. There are two men sitting just beneath me now in skull caps made out of lovely turquoise blue buttons then strings of blue beads round their neck and masses of green beads in almost a skirt – not quite long enough! Another has just gone by smoking a pipe with just a single string of blue beads round his waist.¹³

Or from Ludwara:

Found out what the girls wear here. The young ones wear a small piece of goat skin at the back and the front an apron of chain, very fascinating! This apron is actually made from these keychains you buy out here, they must have to buy at least two dozen doubling them up...[they] hang in two tails over the goat skin jangling round their rumps...The girls are all very modest if they sit they tuck the chain mail under them first. Whereas the men go gaily about in earrings and 1 string of beads sometimes not even that...They carry very wide bladed spears with tassels on and

¹³ Horniman Museum and Gardens, archive E1630, letter from R. Brain to his parents, Juba, July 1954.

some also have small leather shells, but they just won't sell spears or anything I have tried very hard for them to.¹⁴

These passages are typical of Roger's tone, seeking to categorise residents by "tribe" or region in relation to forms of body adornment, whilst consistently also commenting on peoples bodies. Occasionally this is explicit, in particular in letters to his wife Audrey, where he lingers on descriptions of the shape and size of women's breasts or comments on male endowment. Often this is combined with a flirtatious suggestion of anticipated jealousy, and small stick-cartoons in the margins featuring Buster, Roger's alter-ego, presenting himself to compliant local women and visa-versa. Descriptions and illustrations are accompanied by photographs. Unlike the series of technical photographs taken on fieldwork in Gezira, these images, often referenced in his letters, record daily life, as well as details such as clothing and local building types. When cultivation is mentioned, it is most often done so as an embedded cultural practice. In Ukuk for example, he describes the inside of a Tukl, referencing a photograph of the village included with the letter, moving on to describe land-clearance arrangements:

The chief also took me into a Tukl this morning. It was extremely clean and free from all smell inside, I was pleasantly surprised. They are about 6yrds across with low eaves, thatched conical in shape with beaten mud floors. (sketch and photograph included in letter). They live it seems mostly on porridge made from durra and sour milk twice a day and Merissa or native beer. They also hunt gazelle and eat that meat. They all have some land and it is usual for the people to all go to one plot and clear that, the owner of the plot providing beer in the evenings.¹⁵

¹⁴ Horniman Museum and Gardens, archive E1630, letter from R. Brain to A. Brain, Ludwara, July 1954.

¹⁵ Horniman Museum and Gardens, archive E1630, letter from R. Brain to his parents, Ukuk, July 1954.

A desire to document local culture was extended to a compulsion to acquire objects; something that his letters suggest was not straight forward. On arrival in Juba in May, Roger was immediately disappointed by the “lack of native objects to buy, spears etc.” His difficulties extend to the Dongotonas, where his first success was a two meter long spear which Roger unhappily notes is unused and “rather white”, commenting that they can always “stain it and not tell anybody”. He had better luck in Ukuk where he notes he was given a wooden sheep’s bell, and in Isoke he purchased a large bow and arrow. Roger promised Audrey he would have a “big hunt” for further objects on his return to Juba, and had some success in procuring a selection of headrests. He is most proud in his letters of getting hold of some “authentic beads” as worn by local women around their waists for Audrey to wear at “fancy dress dances”, accompanied by a coquettish warning that she might “catch a cold” down below. This collection was carefully packed and sent back to Khartoum, before being shipped to Wiltshire and stored in Roger and Audrey’s house. When they moved to Paris in 1969 it was unpacked, and displayed, strung up on the walls with fishing wire, and the majority of the collection has now been carefully re-packed and catalogued at the Horniman. Although the wider Brain collection at the museum includes textiles and wooden figures from Nigeria, the collection from Sudan is almost entirely limited to objects from the south despite the fact that Roger Brain and his family spent far more time during their six year stay working in and traveling around Khartoum. This is matched by a lack of reference to collecting elsewhere, other than the selection of Nubian pottery he picked up climbing up a pyramid in Nuri.

What was it about the south that engendered this conscious appropriation of an ethnographic gaze with all of its entitlements to personal enquiry, photographic documentation and accumulation of object specimens? It is important to recognise that

the knowledge that is personally foregrounded by Roger with an almost scientific candour is not about the economic potential of the land, but of the racial and cultural distinctiveness of its people.

Much like the English Moors

As noted, primary aim of the SDIT census was to map present cultivated land and, where possible, assess potential for economic development. On arrival to Isoke Roger Brain wrote to Audrey noting the difficulties his team faced finding their way in the Dongotonas, a place of wilderness with “very few paths or landmarks.”¹⁶ That morning he had got lost on his return from sitting on a mountainside, sketching and photographing the view across the valley (Figure 4). “You get some very good views...” he noted, “the general effect is very pretty except for their cultivations which scar the hillsides badly”. Cultivations running up the hillside were widely considered within academic and policy circles to be unsustainable due to soil erosion, evident in both scientific texts, such as Tothill’s (1948, Ferguson 1948) volume on agriculture in Sudan, and in planning documents. This is highlighted in the final SDIT report as one of the most significant concerns for agricultural development in the south-east (1955, 170-172), an issue exasperated by limited local understandings of the effects of land-clearance and water erosion, as well as over grazing. Roger’s census report from the Dongotonas describes existing measures to prevent erosion of the hillside as “rudimentary”, based on the positioning of material removed from land clearance horizontally across the hillside to catch running water. This is described as incomplete,

¹⁶ Horniman Museum and Gardens, archive E1630, letter from R. Brain to A. Brain, Isoke, June 1954.

allowing water runoff to form rannel erosion.

Despite the intention to measure cultivated land in the Dongotonas, the census report issued to SDIT begins by caveating the reports inaccuracies in this regard. Indeed far more attention is given to the population data outlined above, than the use of land. This was in part associated with the difficulties of access, noted above, however the report also highlights the teams difficulties in identifying the “often small, irregular patches” of cultivated land. This was due to “ill-defined” boundaries between cultivated, fallow and un-cultivated land, and ambiguous demarcation of individual plots as well as the boundaries between settlements. The report concludes that the most accurate method of measuring land included first identifying the land by sight and “stepping out” along a central base line, and then along a series of perpendicular offsets to measure the total area. Where land could not be accessed by foot, it was estimated visually. The report notes that cultivation of land running up hillsides meant “it was by no means possible to be sure that all the cultivated land had been seen”. This is considered to have been made particularly difficult by the time of year and the fact that a lot of land was “still being given its first cleaning”, and so looked much the same as the surrounding landscape. The team sought to clarify these ambiguities through speaking to local residents, but evidently mistrusted the information they were provided with, concluding that the “only reliable way to arrive at a clear and full appreciation of the situation was to have an intelligent and knowledgeable observer on the spot for at least a year”¹⁷.

¹⁷ SAD.69/11/1-12, report on a survey of the Dongotona mountain range submitted to SDIT by the University of Khartoum.

Whilst it is arguably the distance Roger places between his own scientific expertise and the accumulated knowledge of local residents that situates this mistrust, this landscape of ill-defined and ambiguous cultivation backed by uninhabited hillsides emerges in his personal letters as a place of deep familiarity. “Much like the English Moors”, this plateau landscape is repeatedly contextualised by his memories of the English countryside. Partly this is associated with the climate, for example in a letter written on arrival to Torit he describes the “very cool dull days, just like England”¹⁸, and later whilst staying in Ukuk he comments on the “fine warm rain” which reminds him of “a wet summers day in August”¹⁹. In Isoke Roger writes of the “thick low cloud” that obscured the view during an evening walk, “making it a November evening cold with a mist” concluding that “it was a very English scene”²⁰. A nostalgic evocation of an English pastoral idyll is extended to the description of soundscapes. For example in Ukuk, Roger comments on the wilderness of the surrounding country and the combination of hearing distant church bells from the Roman Catholic Mission in Isoke, and the “little recorder type instruments” played by the shepherd boys managing sheep on the hillside. “It sounds very pastoral indeed”, he muses, “one might be in England”²¹. Recorders and church bells appear later in combination with “cow bells” as a backdrop to a scene described from the camp-base in Isoke, a place he also describes earlier in the trip as “very much like the country round Glengariff”. He continues:

¹⁸ Horniman Museum and Gardens, archive E1630.45, letter from R. Brain to A. Brain, Torit, June 1954.

¹⁹ Horniman Museum and Gardens, archive E1630, letter from R. Brain to A. Brain, Ukuk, June 1954.

²⁰ Horniman Museum and Gardens, archive E1630, letter from R. Brain to A. Brain, June 1954.

²¹ Horniman Museum and Gardens, archive E1630, letter from R. Brain to A. Brain, Isoke, June 1954.

There is quite a lot of cultivation going on...the main area is wooded with grass glades very pleasant like England. We have wild edible berries like cherries to look at also wild asparagus...it's a pleasantly noisy place, always you can hear cow bells ringing as the cattle graze and lovely cattle they are too.²²

The most extended placement of rural England within the cloud-forests of the Imatong mountain range occurs on a visit to a forestry station and what appears to be a well-known British retreat located by a saw mill. Not only is the climate "very English" but Roger has found himself staying in a "little thatched cottage with electric light, running water and hot water." He continues:

We also have a fireplace and in the evening get a good log fire going. .. on the way up you pass a lovely waterfall...at the top is a lovely cottage rest house all wooden panels inside, furnished as well. The garden was English with hollyhocks, carnations, lovely rose trees – it's a heaven of a place...Most gov'n' [sic] officials round here find excuses to go there and it's no wonder...Really I never imagined to see such wonderful country in Africa. It really is terrific.²³

It is important to reflect on this displacement of rural England in eastern Equatoria (Bunn 2002). Despite Roger's familiarity with British intensive farming, including the tractors, combines and aerial spraying that he also encountered in the north, the English countryside evoked is of rolling hills, green glades, thatched cottages and distant church bells. The cultivated plots of land that Roger and his team of students had been sent to record emerge in his personal letters as disorganised and mismanaged; as "scars" on an otherwise wild and picturesque landscape. This is of course in stark contrast to his depictions of the vast and intensively farmed landscapes of Gezira where a focus on technologically driven agricultural development accounts for an inevitable

²² Horniman Museum and Gardens, archive E1630, letter from R. Brain to A. Brain, June 1954.

²³ Horniman Museum and Gardens, archive E1630, letter from R. Brain to A. Brain, June 1954.

and necessary transformation of the land. Returning to Roger Brain's green pastures and church bells, it is worth locating these archetypal forms of English pastoralism in a mid-century longing for a mythical organic past; of a "deep" England situated in the nations rural margins (Burden & Khol 2006: 24). This imagining of unspoiled and intransient landscapes, with simpler ways of life and uncomplicated morals, has been partly characterised as a symptom of industrialisation, of which the transformation of the land through industrial farming played a significant role (Burden & Khol 2006, Burden 2006, Mitchell 2002, Bunn 2002). Roger's nostalgia for rural intransience and its apparent embodiment in the Dongotonas is significant given the focus on and extent of planning for technologically engineered transformation and industrialisation of land elsewhere in Sudan. Arguably this had implications for the way in which existing cultivation was imagined as an unnecessary and economically void intervention into Sudan's own rural margins, with implications for the seriousness with which existing agricultural capacities were assessed.

Conclusion

After completing the survey for SDIT in late June, Roger Brain and his students travelled back to Juba where they were once again stranded due to strikes. On the return trip the group stopped off at the Central Rainlands Research Station in Tozi, run by Hugh Bunting, a Senior Research Officer for the Ministry of Agriculture formally involved in the Groundnut Scheme in Tanganyika. Tozi had been established by Bunting in 1952 as a mechanised commercial farm reliant upon natural rainfall rather than irrigation, specialising in establishing new strains of sorgum, cotton and groundnuts. This was a fully mechanised farm, including land preparation, sowing, inter-row cultivation, ridging and field spraying (Bunting 1956). Roger Brain was particularly excited by Tozi, impressed by Bunting – "an extremely sound man" – and

his letters enthusiastically describe the work of Massey Harris tractors, ploughs, combine harvesters and seed drills preparing the land and sowing new crops²⁴. The work had been delayed by a week due to poor turn out of staff as a result of a “Mohamedean feast” and persistent rains. However Roger notes that this was of limited concern: “they are only half way through their drilling which should be finished by now...still eight tractors and drills can cover the ground in no time”. Imported technology and scientific expertise could be relied upon to ensure agricultural productivity, despite the challenges posed by unpredictable weather and an unreliable workforce.

Narratives of the inevitable technological and scientific transformation of desolate and disorganised landscapes have been shown to have dominated within British imaginaries of Sudan’s agricultural future in the decade before independence. As demonstrated by Young (2018), this arose within well-established ways of calculating economic growth and agricultural productivity devised in order to measure the development of capital intensive projects in the grain-belt of north-central Sudan. Tozi was verification of this mastery for Roger Brain; in only two years what was imagined as a once barren landscape had already been transformed into “lovely flat blocks of land” into which new strains of higher yielding groundnuts and sorghum, developed by Bunting, were sown. Within this transitional moment in Sudan’s history the inevitability of progressive technologically driven transformation in the deep south, and particularly the south-east, was however less certain.

²⁴ Horniman Museum and Gardens, archive E1630,13, letter from R. Brain to parents, Tozi, October 1954.

This article has argued, following Young (2018), that this uncertainty was embedded in pre-existing frameworks for creating knowledge about Sudan that became re-inscribed within future policy through the practice and articulation of research and planning. As highlighted through both the Zande Scheme and the cautions expressed by the SDIT report, policy-level uncertainty lay not in the ability of technology to increase the agricultural productivity of the land, but in the ability of local populations to withstand the cultural and social impacts of such an increase. As noted by Young (2018), planners struggled to clearly articulate or predict the value of investment in agricultural technologies in the south, favouring descriptive prose over quantifiable numbers. This was in response to an identified requirement to focus on parallel social and cultural development programmes that would help prepare southern populations for the changes associated with industrialisation and a cash economy. Ultimately, however, Young highlights how this led to a lack of investment in the south and thus the entrenchment of already present economic and political inequality.

Roger Brain's private insights whilst on fieldwork in the north and south add a further dimension, highlighting how development planning was not a neutral reflection of social needs identified on the ground. Rather his letters and photographs suggest his assessment of cultivation in the Dongotonas was framed by deeply embedded assumptions and practices associated with notions of racial and cultural distinctiveness. Here he assumed an ethnographic descriptive tone in his desire to document and archive people's clothing and cultural practices; something he considered to be of future significance and interest. He also sought to collect objects as indicators of regional distinctiveness, to be taken home and displayed, finally destined for the Horniman Museum. Despite encountering residents and cultivators in both Gezira and Tozi, their presence is secondary to the detailed accounts of mechanised cultivation focused on by

Roger Brain in his letters home. These indicate that development and transformation was perceived of as inevitable despite an underlying cultural intransience, in contrast to the endangered cultural intransience at risk as a result of potential development in the south. Although Roger was commissioned to map existing agricultural capacities and to assess their potential for development, the fact that his report submitted to SDIT foregrounded population statistics over cultivation data highlights the crossover between private insights and professional data gathering. His letters demonstrate this census to have been an intrusive process involving the placement of northern students in a position of authority to extract personal information on fertility, puberty and sexual partners through questioning and visual assessment of residents.

There are clear levels of entitlement here that legitimated the collection of personal information from residents in the Dongotonas to inform public policy, whilst overlooking their capacity as knowledgeable cultivators. This emerges as a disassociation of people from their land, and thus their economic relevance. Despite existing cultivations stretching up the hillsides, these are regarded as not only insignificant, but as detrimental. Just as technology is considered to be beyond the capacities and capabilities of local people, so to it sits in tension with a deep nostalgia for rural wilderness. For Roger this emerges clearly in his letters as a longing for England's rural margins; an imagined pastoral idyll evoked through church bells and rolling hills. In his report, this is arguably traced through his dismissal of existing cultivations as disorganised and mismanaged; scars on an otherwise picturesque landscape. Taken together, Roger's personal concerns with the documentation of a fragile cultural distinctiveness and an endangered landscape arguably framed both the way in which research in the Dongotonnas was conducted, and the conclusions that were drawn.

Although I have intentionally focused on the work of a single agricultural scientist in colonial Sudan, Roger Brain's role as a British "expert" rolled out in order to support the development of University level education and to inform post-independence planning is one that characterises late imperialism in Africa. It is significant that technical and scientific expertise were often brought in from people with limited knowledge of the colonial and cultural contexts they were advising on, and, as in Roger's case, with preexisting ideas about what to expect and how to behave in these contexts. This era of late British colonialism in Africa has overwhelmingly been characterised as one that was future focused. One that reflected on itself, however erroneously, as supporting colonial territories to progress politically, economically and socially by providing the technologies and expertise required to support sustainably independent nations; a framework that continues to shape relationships between former colonial powers and their empires. In this article I have argued that despite this "new imperialism", old tropes linger; not just in the relationships of power and the movement of expertise, but in the production of expertise themselves.

Abrokwa, C. 2017. "Colonialism and the Development of Higher Education" in *Rethinking Postcolonial Education in Sub-Saharan Africa in the 21st Century* edited by in E. Siza and N. Makuvaza, 203-220. Rotterdam: SensePublishers.

Ajayi, J. F. A., K. H. G. Lameck, and A. G. Johnson, eds. 1996. *The African experience with higher education*. Accra and London: Association of African Universities in association with James Currey.

Appadurai, A. 2004. "The Capacity to Aspire: Culture and the Terms of Recognition" in *Culture and Public Action* edited by V. Rao and M. Walton, 59-84. California: Stanford University Press.

Bacon, G. H. 1948. "Education" in *Agriculture in the Sudan: being a handbook of agriculture as practiced in the Anglo-Egyptian Sudan* edited by J. D. Tothill. London: Oxford University Press.

- Bennett, B. M. and J. M. Hodge. 2011. *Science and Empire: knowledge and networks of science across the British Empire, 1800-1970*. Basingstoke: Palgrave Macmillan.
- Bennett, T. 1995. *The Birth of the Museum: History, Theory, Politics*. London: Routledge.
- Bennett, T., Cameron, F., Dias, N., Dibley, B., Harrison, R., Jacknis, I. and C. MacCarthy. 2017. *Collecting, Ordering, Governing: Anthropology, Museums, and Liberal Government*. Durham and London: Duke University Press.
- Bernal, V. 1995. "Cotton and colonial order in Sudan: a social history with emphasis on the Gezira Scheme" in *Cotton, Colonialism, and Social History in Sub-Saharan Africa* edited by A. Isaacman and R. Roberts, 96-118. London: James Currey.
- Boyns, B. M. 1947. "Sudanese Cattle as Milk Producers. With Plates 1 and 2." *The Empire Journal of Experimental Agriculture*. 15: No 57.
- Bunn, D. (1994) 2002. "'Our Wattled Cot' Mercantile and Domestic Space in Thomas Pringle's African Landscapes" in *Landscape and Power* edited by W. J. T. Mitchell, 128-175. Chicago, London: University of Chicago Press.
- Bunting, H. 1956. "Agricultural Research at the Sudan Central Rainlands Station, 1952-56." *Nature*, 17: 1103-1104.
- Burden, R. and S. Kohl. 2006. *Landscape and Englishness*. New York, NY: Rodopi.
- Chomsky, N. and M. Foucault. 2006. *The Chomsky-Foucault Debate: On Human Nature*. London: The New Press.
- Cohn, B.S. 1996. *Colonialism and Its Form of Knowledge*. Princeton, NJ: Princeton University Press.
- Dirks, N.B. 2001. *Castes of Mind: Colonialism and the Making of Modern India*. Princeton: Princeton University Press.
- Ferguson, H. 1948. "Equatoria Province" *Agriculture in the Sudan: being a handbook of agriculture as practiced in the Anglo-Egyptian Sudan* edited by J. D. Tothill, 875-918. London: Oxford University Press.
- Green, S. and G. King. 2001. "Seeing what you know: Changing constructions and perceptions of landscape in Epirus, Northwestern Greece, 1945 and 1990" *History and Anthropology*, 12 (3): 255-88.
- Hargreaves, J. D. 1973. 'The Idea of a Colonial University', *African Affairs*, 72 (286): 3626-3636.

- Headrick, D. R. 1981. *The Tools of Empire: technology and European imperialism in the nineteenth century*. Oxford: Oxford University Press.
- Hodge, J. M. 2007. *Triumph of the expert : agrarian doctrines of development and the legacies of British colonialism*. Ohio: Ohio University.
- Isaacman, A. and R. Roberts, eds. 1995. *Cotton, Colonialism, and Social History in Sub-Saharan Africa*. London: James Currey.
- Jasanoff, S. and S. Kim, eds. 2015. *Dreamscapes of Modernity : sociotechnical imaginaries and the fabrication of power*. Chicago: University of Chicago Press.
- Latour, B. 1987. *Science in Action*. Harvard: Harvard University Press.
- McIroy, R. J. 1957. "Agriculture at the University of Khartoum." *Nature* 179: 394-394.
- Meskell, L. 2018. *A Future in Ruins: UNESCO, World Heritage, and the Dream of Peace*. Oxford University Press: Oxford.
- Mitchell, T. 1988. *Colonizing Egypt*. Cambridge: Cambridge University Press.
- Mitchell, T. 2002. *Rule of experts: Egypt, techno-politics, modernity*. Berkeley: University of California Press.
- Mitchell, W. J. T. (1994) 2002. *Landscape and power, Second edition*. London: University of Chicago Press.
- Pinney, C. 2008. "Colonialism and Culture", *The SAGE Handbook of Cultural Analysis*, edited by T. Bennett and J. Frow, 382-405. London: SAGE.
- Philosophical Society of the Sudan. 1948. 'PHILOSOPHICAL SOCIETY OF THE SUDAN: REPORT UPON THE 1946/7 AND 1947/8 SESSIONS', *Sudan Notes and Records*, 29 (2): 232228-32.
- Reining, C. C. 1966. *The Zande Scheme: an anthropological case study of economic development in Africa*. Evanston: Northwestern University Press.
- Rycroft, D. 2006. *Representing Rebellion: Visual Aspects of Counter-Insurgency in Colonial India*. Delhi: Oxford University Press.
- Sconyers, D. 1988. "Hurrying Home: Sudanization and National Integration 1953-1956" *Bulletin (British Society for Middle Eastern Studies)*. 15 (1/2): 7464-74.
- SDIT. 1955. *Natural Resources and Development Potential in the Southern Provinces of the Sudan: A preliminary Report by the Southern Development Investigation Team 1954*. Khartoum: Sudan Ministry of Finance.
- Shiva, V. 1991. *The Violence of the Green Revolution: Third World Agriculture, Ecology and Politics*. London: Zed Books.

- Shamir, R. 2018. 'Head-hunters and knowledge-gatherers: Colonialism, engineers and fields of planning', *History and Anthropology*, 29 (4), 469-92.
- Schwarz, B. 2011. *The White Man's World*. Oxford: Oxford University Press.
- Schwarz, B and R. Gilmour. 2011. *End of Empire and the English Novel since 1945*. Manchester: Manchester University Press.
- Said, E.W. (1993) 1994. *Culture and Imperialism*. London: Vintage.
- Thomas, N. 1994. *Colonialism's Culture: Anthropology, Travel and Government*. Princeton: Princeton University Press.
- Tothill, J. D. 1948. *Agriculture in the Sudan : being a handbook of agriculture as practised in the Anglo-Egyptian Sudan*. London: Oxford University Press.
- Young, A. 2018. *Transforming Sudan : decolonization, economic development, and state formation*. Cambridge: Cambridge University Press.

Figure 1. Photograph of a North America-made Caterpillar D2 tractor and plough at Wad Medani, a Faculty of Agriculture research farm in Gezira. Photo taken by Roger Brain whilst conducting a survey of intensive farming. Horniman Museum and Gardens archive, E1630.

Figure 2. Photograph of water engineering at Gezira. Photo taken by Roger Brain whilst conducting a survey of intensive farming. Horniman Museum and Gardens archive, E1630.

Figure 3. Photograph of Faculty of Agriculture students interviewing for University of Khartoum SDIT population census, Dongotonas, June 1954. Horniman Museum and Gardens archive, E1630.

Figure 4. Photograph taken by Roger Brain across mountain valley during University of Khartoum SDIT population census, Dongotonas, June 1954. Horniman Museum and Gardens archive, E1630.