8

THE MYTH OF BORDER FORMATION IN COLONIAL AFRICA

Jack Paine, Xiaoyan Qiu, and Joan Ricart-Huguet

Introduction

The European partition of Africa created borders that have persisted to the present day. Africa's international borders are mostly arbitrary creations – or so goes the conventional wisdom. Many claim that Africa's borders rarely accounted for the location of historical states, often ignored basic geographic realities, and are mostly straight lines (Barbour, 1961; Yakemtchouk, 1971; Herbst, 1989, 2000; Englebert, 2000; Alesina et al., 2011). Similarly, as explained in a textbook that prepares students in West Africa for standardised tests, "Africa was divided without consideration of local populations or pre-existing cultural groups," which explains why "most African borders . . . followed astronomical, mathematical or geographical lines" (Hiribarren, 2018, p. 118). Widely cited statistical evidence supports the idea that African borders are "natural experiments" because the boundaries of ethnic homelands are uncorrelated with local features (Michalopoulos & Papaioannou, 2016).

The hallmark event of this partition process was the infamous Berlin West Africa Conference of 1884–1885 at which Europeans, supposedly, carved up Africa (Abraham, 2007; Appiah & Gates, 2010; Christensen & Laitin, 2019; French, 2021). News outlets make similar claims, such as "In 1885 European leaders met at the infamous Berlin Conference to divide Africa and arbitrarily draw up [*sic*] borders that exist to this day" (Fischer, 2015). In the 1990s, Rwandan President Pasteur Bizimungu publicly suggested the need for a "Berlin II, so that we can reflect on the disorders created by Berlin I" (quoted in French, 1997).

This conventional wisdom constitutes the myth of border formation in colonial Africa. In this chapter, we dispel this myth. Greedy European statesmen rarely regarded the well-being of those affected by their colonial decisions; this contention is well-established and uncontroversial. Nonetheless, Europeans had powerful, self-interested motives to learn about Africa and its territory because such knowledge enabled them to expand their territorial claims. The effect of the Berlin Conference on border formation was minimal besides creating the Congo Free State (modern-day Democratic Republic of the Congo, or DRC). The Conference even failed to establish clear rules for claiming territory. The General Act that concluded the conference invoked a vague notion of effective occupation that applied only to coastal claims. In fact, many historians have established that the Berlin Conference was relatively

DOI: 10.4324/9781003519775-10

unimportant for border formation (Boilley, 2019; Crowe, 1942; Katzenellenbogen, 1996; Wesseling, 1996; also see the statistical evidence we present in Paine et al., 2025).

Instead, Europeans needed to learn about facts on the ground to make concrete territorial claims. In addition to geographic features, local political realities mattered as well. In practice, the informal principle of suzerainty was more important than the ineffective formal rules laid out at Berlin. Prime Minister Salisbury clearly expressed this norm amid a territorial dispute with France in 1896:

> We could not abandon the principle of suzerainty. This principle was recognized in all international negotiations, and we held that, in treating with a suzerain, the rights conferred . . . extended to the whole of the territory under his dominion.
>
> *quoted in Anene, 1970, p. 220*

In lieu of the myth, we contend that African borders tend to follow a conscientious design based on local features (for complementary theses, see Asiwaju, 1993; Foucher, 1991, 2020; Nugent, 2019). We support this overarching thesis with three specific findings. Firstly, we show that borders were typically drawn around rather than through precolonial states. Using an original data set that maps the location of African precolonial states, we provide statistical evidence that (a) borders are commonly located along the frontiers of precolonial states, whereas (b) borders are rarely drawn inside precolonial states. We then examine all 107 bilateral borders. In over half of all borders, we find evidence that a historical political frontier – usually the frontier of a precolonial state – directly affected the location of the border. This evidence rejects the common assertion that Europeans ignored (or otherwise knew nothing about) the location of precolonial states and that such entities were routinely partitioned across colonial borders.

Secondly, rivers and lakes were objects of European strategic interest and became pivotal elements of border formation. Areas with major rivers or major lakes are highly likely to have colonial borders, compared to areas without either feature. The finding extends to areas with smaller rivers or lakes. A water body is the primary feature of almost two-thirds of all 107 bilateral borders, and major rivers or major lakes are the primary feature of nearly one-quarter of all borders.

Thirdly, straight-line borders are less common than thought. Widely cited scholarship asserts that nearly 80% of Africa's borders are straight lines (Barbour, 1961; Alesina et al., 2011). We assess, for all 107 bilateral borders, whether a straight line is the primary feature of the border. This is true for slightly over one-third of the borders. This figure, although non-trivial, highlights that straight lines are in fact a less common component of African borders than either water bodies or historical political frontiers. Moreover, straight-line borders are neither randomly located (most are confined to desert areas) nor are they always entirely arbitrary with regard to realities on the ground.

To build intuition, we first discuss the "hard case" of the Congo Free State – a direct product of the Berlin Conference and the paradigm of arbitrary borders. We demonstrate that the Congo's borders were heavily revised in the following decades to incorporate local features, which reflected intensive European bargaining. Then, we introduce our methodological approach based on quantitative analyses of square grid cells and a qualitative coding exercise for all 107 bilateral borders. We then provide statistical and historical evidence for each of our three headline claims: (1) borders were drawn around rather than through

precolonial states, (2) most borders encompassed water bodies, and (3) straight-line borders were less frequent and less arbitrary than commonly thought.

We illustrate the results from our systematic analysis of grid cells and bilateral borders by discussing cases from regions across the continent. The Niger–Nigeria border began as an arbitrary line upon a map. But revisions in subsequent decades incorporated the frontiers of the Sokoto Caliphate. The Congo, the Niger, and the Great Lakes region each illustrate the importance of water bodies in territorial claims and border formation, as well as why such borders were not orthogonal to African experiences on the ground. In North Africa, despite its pronounced straight-line borders, many of the borders intentionally incorporated historical political frontiers.

The notion that African borders are entirely arbitrary creations is a simple, albeit incorrect, way to summarise the pathologies of European-imposed state formation in Africa. These pathologies are manifold: Europeans imposed borders in areas characterised by territorial fluidity, routinely partitioned decentralised groups, and created new and artificially large states with fixed borders. These claims, which we do not discuss in depth here, are undeniably true. However, despite the numerous pathologies of European-imposed state formation in Africa, the borders that divided newly invented states were neither random nor haphazard.

A least likely case: the Congo Free State

Contrary to widespread belief, few borders were determined at the famed Berlin Conference of 1884–1885. The main exception was Belgian King Leopold II's vanity project, the Congo Free State. At the Conference, Leopold gained agreements from other statesmen to carve out a broad swath of territory in Central Africa for a supposedly philanthropic free-trade project. The origins of the Congo Free State make this a "least likely" or "hard" case: its exceptional origins suggest we should not find evidence that local features mattered. Indeed, its *initial* borders consisted mainly of parallel and meridian lines. Nonetheless, like many early borders drawn in ignorance, the original boundaries were heavily revised in the ensuing decades. The final Congo borders do, in fact, support our key observations: most coincided with the frontiers of precolonial states or major water bodies. Figure 8.1 illustrates the major border revisions.

Precolonial states and border revisions

Four of the Congo's contemporary bilateral borders (Rwanda, Burundi, Zambia, Angola) were revised after the Berlin Conference to reflect the limits of historical states. Europeans did not preserve historical states to enhance African welfare. Rather, they did so because gaining treaties with rulers and proclaiming the principle of suzerainty (whomever gained a treaty with a specific ruler could claim all the territory included within his domain) allowed them to extend their imperial claims.

The Congo–German border was not finally settled until 1910, when Germany secured control for German East Africa over the entire historical homelands of Rwanda and Burundi, two ancient kingdoms. North of Lake Tanganyika, the Congo's original eastern frontier consisted of straight lines located east of Lake Kivu. When German Chancellor Bismarck agreed to the Congo's original frontiers in 1885, Germany had minimal strategic interests in the area.

> German colonialism in east Africa had hardly begun; only the most rapid imperialists could foresee the possibility that one day German East Africa [which was originally

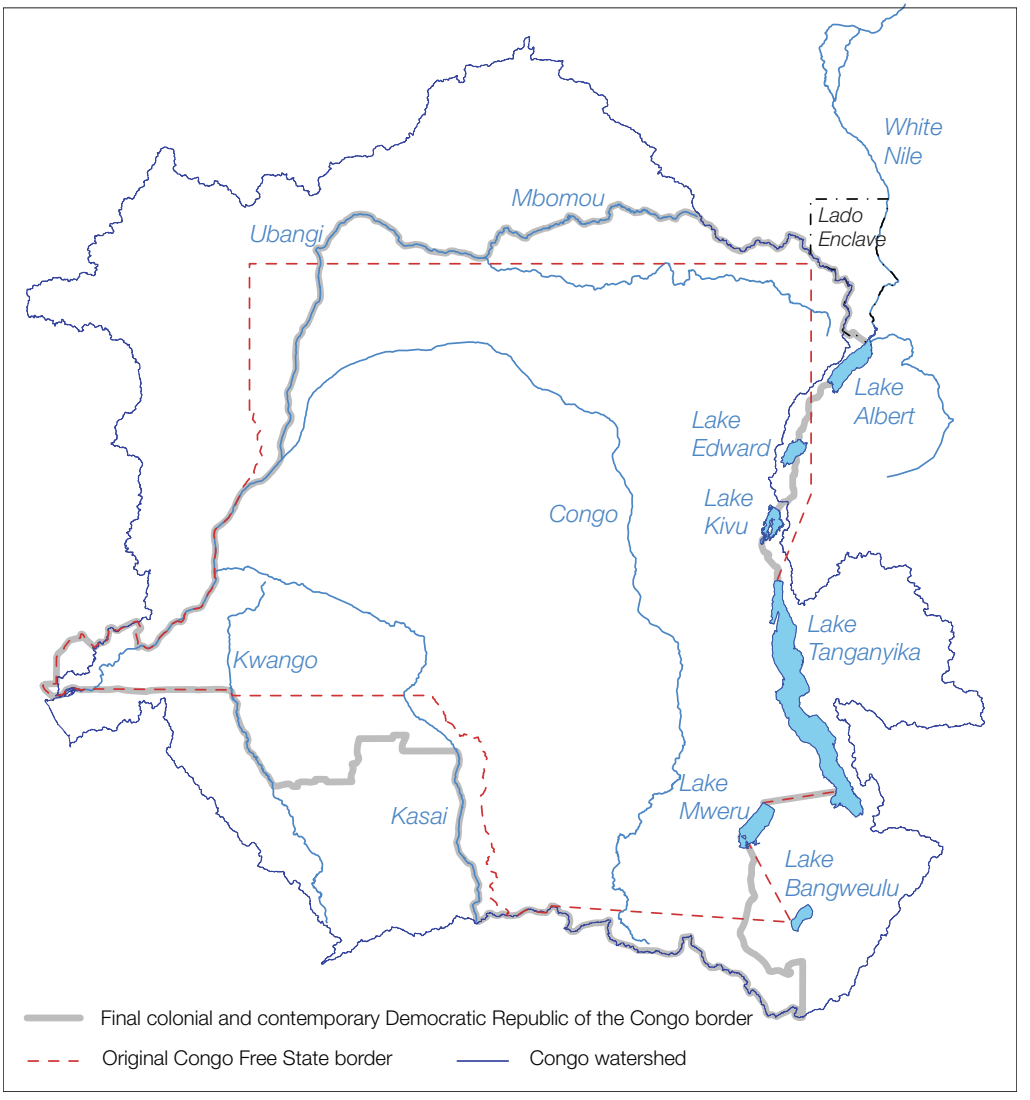

Figure 8.1 Evolving borders of the Congo Free State.

Source: Authors

> established on the coast] might border the Congo. One arbitrary line was as good as another; in any case the boundaries did not directly affect German claims.
>
> *Louis, 1963, p. 7*

Thus, the original straight-line border reflected ignorance. But this changed in the 1890s after Anglo–German treaties expanded German East Africa inland from the coast. German explorers and administrators reached the kingdoms of Rwanda and Burundi and realised that parts of their historical territory lay west of the German protectorate, within the Congo's boundaries. In subsequent diplomatic negotiations lasting over a decade, Germany agitated for a westward shift to

realign the border along Lake Kivu and the Ruzizi River, which German intelligence identified (correctly, based on the most credible anthropological evidence) as Rwanda's and Burundi's historical frontiers. In 1910, Belgium agreed to replace the original straight lines with these waterbody frontiers. This revision preserved each historical state entirely within the German sphere.

Revisions to the Congo's southern frontiers (with Zambia and Angola) also reflected the limits of historical states. The original boundaries established in 1885 consisted mainly of parallels and other straight lines. Nonetheless, seeking more territory, rival European powers continued to push to establish relations with local rulers. In the Katanga region in the southeast Congo, Belgian agents gained a treaty with Msiri whereas British agents secured affiliation with Kazembe. The common frontier between these two kingdoms as of the 1880s was the Luapula River. An 1894 Anglo–Congo treaty incorporated this local feature into the colonial border. Farther west, Portugal had relatively strong claims to the potentially vast expanse of territory associated with the Lunda Kingdom. However, this state was moribund by the late 1880s, following decades of civil war. When Portugal and the Congo formally revised the border with Angola in 1891, it incorporated the Kasai River. This choice reflected an on-the-ground reality: Lunda authority had collapsed west of the Kasai.

Strategic interest in major water bodies

The Congo River is a clear example of a water body that drove Europeans' strategic political considerations. Exaggerated reports of the untapped potential of the Congo region abounded in Europe in the 1870s and 1880s, to which various powers responded by seeking to control the mouth of the Congo River. Disputes among France, Portugal, and King Leopold prompted the convening of the Berlin Conference. The original 1885 borders of the Congo Free State followed only a short tract of the Congo River near the Atlantic, the small portion they had explored to date. However, the Congo–French border with Republic of Congo and Central African Republic (CAR) was later revised to follow the Congo River and its tributaries, the Ubangui and Mbomou rivers, for hundreds of kilometres (see Figure 8.1).

The Congo Free State was also intertwined with disputes over the control of the Nile valley in the 1890s, which is not at all obvious from either its initial or final frontiers. The avaricious King Leopold dreamt of a Nile empire. His 1894 treaty with Britain partially achieved these ambitions by allowing the Congo to lease territory along the Nile, which created the Lado Enclave. The British, who also sought paramountcy along the Nile, conceded these leases to undercut French influence. Nonetheless, Anglo–French competition over the Nile persisted, culminating in the Fashoda Crisis of 1898 that ended with British control over the region. Leopold's subsequent attempts to gain more territory along the Nile were in vain, and the leases lapsed after his death. The Lado Enclave reverted to British control in 1910, at which point the Nile–Congo watershed replaced the Nile as a feature of the Congo's border. The Nile River, despite its ultimate non-usage as a border, was clearly an object of intense strategic interest that affected the border formation process throughout Central and Northeast Africa.

This brief case study shows that precolonial states and water bodies influenced borders even in the case of the Congo Free State; the Berlin Conference had initiated *but not finalised* these boundaries. Ultimately, however, we want to know whether the insights suggested by a particular case generalise. This requires developing a systematic empirical approach to test our core hypotheses that precolonial states (and historical political frontiers more generally)

as well as water bodies (and other salient topographic features) systematically explain the location of borders. The following section describes this approach.

Methodological approach

Are most African borders arbitrary, or are they generally located near specific local features? If so, what are those features? No data sets were readily available to answer our research questions, so we compiled two original data sets. Our mixed-methods approach combines the strengths of quantitative and qualitative methods for social-scientific analysis. In Paine et al. (2024, 2025), we provide supporting technical details for our quantitative measures and results, as well as extensive details and citations for our qualitative material. Here we provide only the information most pertinent for understanding our main results.

Qualitative data using bilateral borders

We studied all 107 bilateral borders in Africa based on the "final" colonial borders around 1960. We coded two specific variables that we use in the following analysis. Firstly, we determined the primary and secondary physical features of the border. This exercise enabled us to measure the frequency with which borders incorporated water bodies, straight lines, or other local features. Secondly, we assessed whether a historical political frontier as of the late 19th century *directly affected* the border. The most common historical political frontiers were those of indigenous African states, but other frontiers included non-indigenous states such as the Ottoman Empire, the homelands of decentralised groups, and white settlements. Our main sources that cover the entire continent are Brownlie's (1979) encyclopaedia of bilateral borders and Hertslet's (1909) presentation of the source text for treaties. We also consulted hundreds of additional sources on specific regions, countries, and time periods.

To determine whether a historical political frontier directly affected a border, we assessed for each case whether the location of a border would likely have differed had a particular historical political frontier been absent; our approach is inspired by process tracing and *causal process observations* (Brady et al., 2006; Collier, 2011). To judge a *direct effect*, we require evidence not only that the colonial border lay near a particular historical political frontier but also that statesmen were aware of this frontier and deliberately took it into account when they determined the location of the border. Historical sources on diplomatic communications were crucial for making these assessments.

A key advantage of our qualitative approach is that we examine *all* bilateral borders rather than only a subset. This guards against a common critique that small-N qualitative analysis enables researchers to "cherry pick" a particular set of cases that fit their hypothesis. Instead, for any specific examples we discuss, we can assess whether it is unusual or representative of a broader pattern. This chapter does not allow us to present the extensive historical details we compiled about every border (although see Paine et al., 2024), but we provide examples throughout.

Quantitative data using square grid cells

Quantitatively, we compare the frequency with which colonial borders appear in areas with and without local characteristics, such as precolonial states, rivers, and lakes. If areas near, say, a river are substantially more likely than areas far from any rivers to contain a colonial border,

then this constitutes evidence that statesmen tended to take rivers into account when determining the placement of colonial borders. Evidence of systematic correlates would counter the conventional wisdom that local features tended not to affect border location, as suggested by many qualitative discussions as well as existing statistical evidence that almost no local features are systematically correlated with the partition of ethnic homelands (Michalopoulos & Papaioannou, 2016).

Assessing correlates of colonial borders entailed two distinct challenges. Firstly, although existing Geographic Information Systems (GIS) data sets measure the location of colonial borders and geographic features, we lack an adequate spatial data set on precolonial states. No single accepted list of precolonial states exists, and their frontiers are difficult to assess because the edges of African states consisted of broader "frontier zones" rather than precise lines. Although there is no silver-bullet solution to these issues, we identified a list of precolonial states and their boundaries using systematic criteria for inclusion and exclusion. Ajayi and Crowder's (1985) atlas provides the most extensive and detailed maps of which we are aware containing the territorial location of precolonial polities on the eve of European colonisation.

However, not every polity depicted in Ajayi and Crowder (1985) met basic attributes of statehood. We therefore conducted further analysis to assess which candidates met Fortes and Evans-Pritchard's (1940, p. 5) criteria for *Group A* societies, meaning they have "centralized authority, administrative machinery, and judicial institutions – in short, a government." Leaders of states exerted political authority that extended over a broader area corresponding with the territory in Ajayi and Crowder's (1985) maps, whereas leaders of smaller-scale entities did not. Non-state polities include highly geographically circumscribed chieftaincies; numerous types of decentralised entities that pervaded precolonial Africa such as village councils, age-grade societies, and kinship groups; and non-independent polities. After determining which polygons in Ajayi and Crowder (1985) constituted states, we digitised the maps to create new GIS data. Figure 8.2 depicts every *precolonial state (PCS) polygon* in our data set.

The second challenge in assessing which local features correlate with the location of colonial borders is identifying which comparisons should be made. Even after mapping the location of precolonial states and various geographic features, we still need to determine the set of "control" observations that facilitate comparisons. Social scientists often compare outcomes across different countries to answer questions such as whether democracy promotes economic development. In such a study, countries are the unit of analysis, and the comparison is between countries with democratic regimes and countries with non-democratic regimes – the "control" observations. However, for our research question, the location of country borders is precisely the outcome we seek to explain. We cannot take countries as given and use them as our unit of analysis.

Our approach is to define "local" areas in terms of square grid cells, with each edge measuring 0.5 decimal degrees (approximately 55 km when measured at the equator). These cells, which number over 10,000 across the continent, are our unit of analysis.

These cells are constructed independently of any explanatory variables that could be related to our outcomes and therefore allow us to examine whether cells with a particular attribute are more or less likely to contain a country border than cells lacking that attribute. Thus, for each cell, we measured the presence of a country border as well as local characteristics. Our main variables are the following: a *Colonial border* cell contains any segment of a

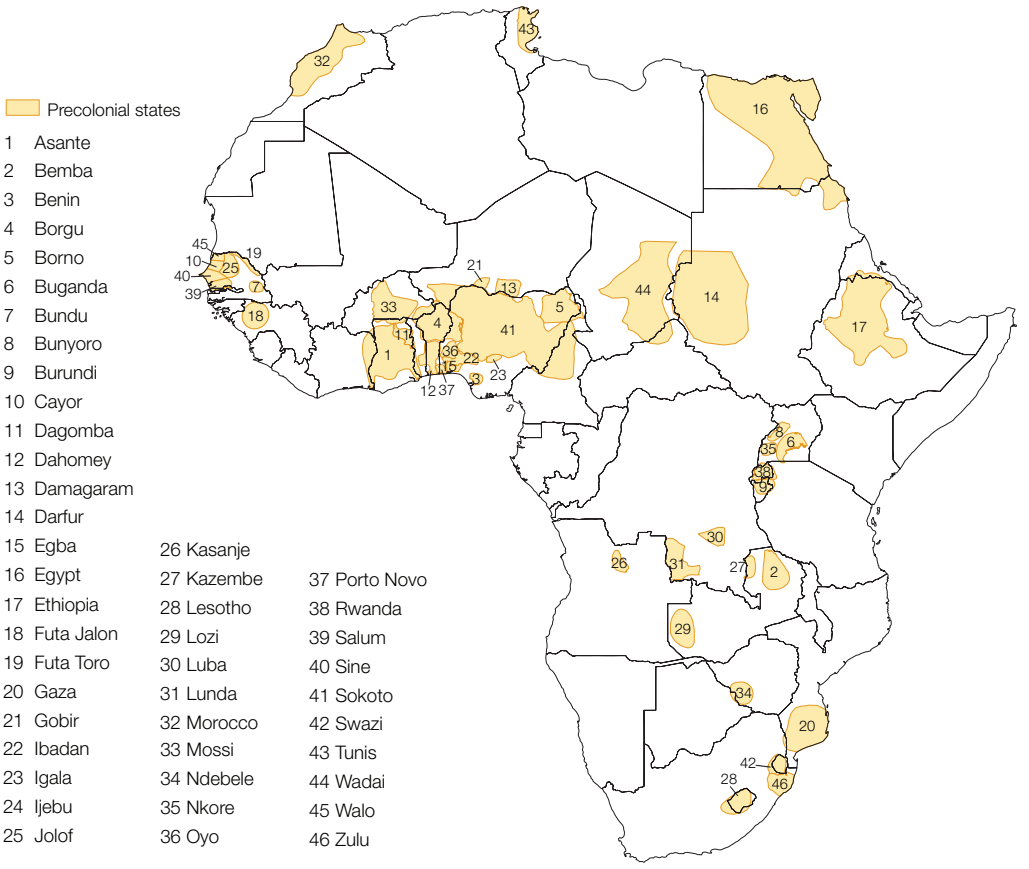

Figure 8.2 Map of precolonial states and boundaries.

Source: Authors

Notes: We exclude states that formed after 1850 to guard against the concern that such states arose in response to encroaching European colonisation (e.g. the Mahdist state in present-day Sudan). We also exclude non-African states, such as Ottoman territories. In black, the map depicts borders from the "final" colonial map around 1960

colonial border. By contrast, a *Non-colonial border* cell does not contain any border segment. Across the entire sample, 15% of cells contain a colonial border. A *River* cell contains (part of) a river, whereas a *Non-river cell* does not. The same applies to *Lake* and *Non-lake* cells. We primarily focus on the ten longest rivers and the ten largest lakes, although we also measure these features for all rivers and lakes.

For precolonial states, we consider two attributes. A cell containing the edge of a PCS polygon (i.e. the cell is partially but not entirely within a PCS polygon) is a *PCS frontier* cell. A cell entirely within a PCS polygon is a *PCS interior* cell. By contrast, *Non-PCS* cells are those fully outside of a PCS polygon.

Figure 8.3 uses the Nigeria–Niger border to visualise our procedure for coding precolonial states and colonial borders for each grid cell, a procedure we automated using ArcGIS (we omit water bodies from this figure for simplicity).

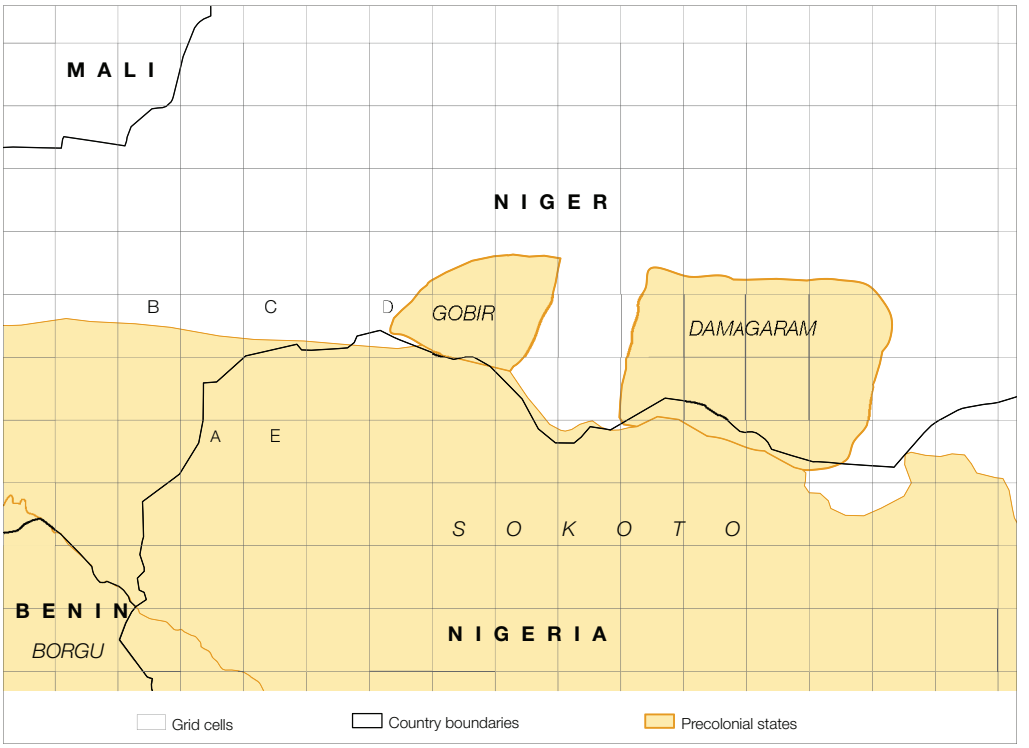

Figure 8.3 Niger–Nigeria border with overlaid 0.5° × 0.5° grid cells.

Source: Authors

Notes: The map shows parts of the Niger–Nigeria border (and small segments of their respective borders with Benin) in black (dependent variable), precolonial states in light grey (explanatory variable), and grid lines in grey (unit of analysis). The letters provide examples of cells with different values of the variables; A, *Colonial border* cell. B, *PCS frontier* cell. C and D, *Colonial border* and *PCS frontier* cells. A and E, *PCS interior* cells

Borders were drawn around rather than through precolonial states

The present consensus is that existing political realities on the ground were of little relevance to the partition of Africa. We demonstrate instead that borders were routinely drawn around rather than through precolonial states.

We begin by comparing the relative frequency with which different types of grid cells contained a colonial border (Figure 8.4). The left bar presents the baseline frequency of colonial borders: 14% of grid cells that do not contain a precolonial state have a colonial border. By contrast, 26% of grid cells containing the frontier of a precolonial state have a colonial border, indicating that colonial borders were often drawn around precolonial states. Conversely, only 7% of grid cells containing an interior region of a precolonial state have a colonial border. This tells us that colonial borders rarely partitioned precolonial states.

In our qualitative exercise of assessing features of bilateral borders, we find that historical political frontiers directly affected 66 of 107 bilateral borders (62%). This is a strikingly large number given standard claims that political realities mattered little. In 47 of the 66, one or more African precolonial states from our data set constituted a historical political frontier that shaped a border.

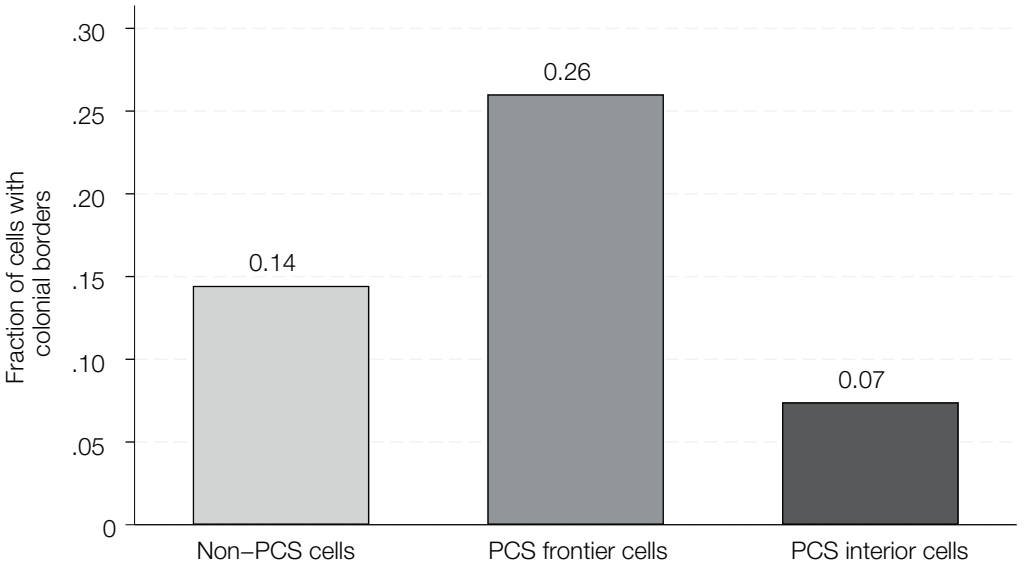

Figure 8.4 Frequency of colonial borders by precolonial state (PCS).

Notes: Unit of analysis is grid cells. In supplementary analyses, we demonstrate that the discrepancies in frequency of colonial borders among PCS frontier, PCS interior, and non-PCS cells are qualitatively unaltered when accounting for alternative geographic, climatic, or other political factors (see Paine et al., 2025)

Nigeria's northwestern borders (with Niger and northern Benin) exemplify our contention that precolonial states influenced negotiations over territorial spheres and the resultant borders (Anene, 1970; Thom, 1975; Miles, 1994; Lefebvre, 2019). Figure 8.5 depicts the border and Hertslet (1909) provides the full text of the treaties referenced below. An Anglo–French treaty in 1890 formed the initial division between their spheres by establishing a boundary line between Say, a town on the Niger River, and Barruwa, a town on the western side of Lake Chad. The treaty also stated that Britain's corporate agent, the Royal Niger Company (RNC), would retain "all that fairly belongs to the Kingdom of Sokoto." The initial border partially reflected claims over precolonial states. The stipulation about the Sokoto Caliphate reflected the Royal Niger Company's 1885 treaty with the Caliph. Furthermore, the town of Say was located far enough to the west to incorporate all of Borguland into the British sphere, which reflected a treaty that the Company had gained with the ruler of Bussa, also in 1885.

Despite invoking some local conditions, the initial border delineation was mostly arbitrary. The RNC's trading agents and stations were located hundreds of kilometres from either Sokoto or Bussa, and neither Britain nor France had reliable intelligence about these states' suzerain relations or boundaries. Following the conclusion of this 1890 treaty, British Prime Minister Salisbury offered his famous quip,

> We have been engaged in drawing lines upon maps where no white man's foot ever trod; we have been giving away mountains and rivers and lakes to each other, only hindered by the small impediment that we never knew exactly where the mountains and rivers were.

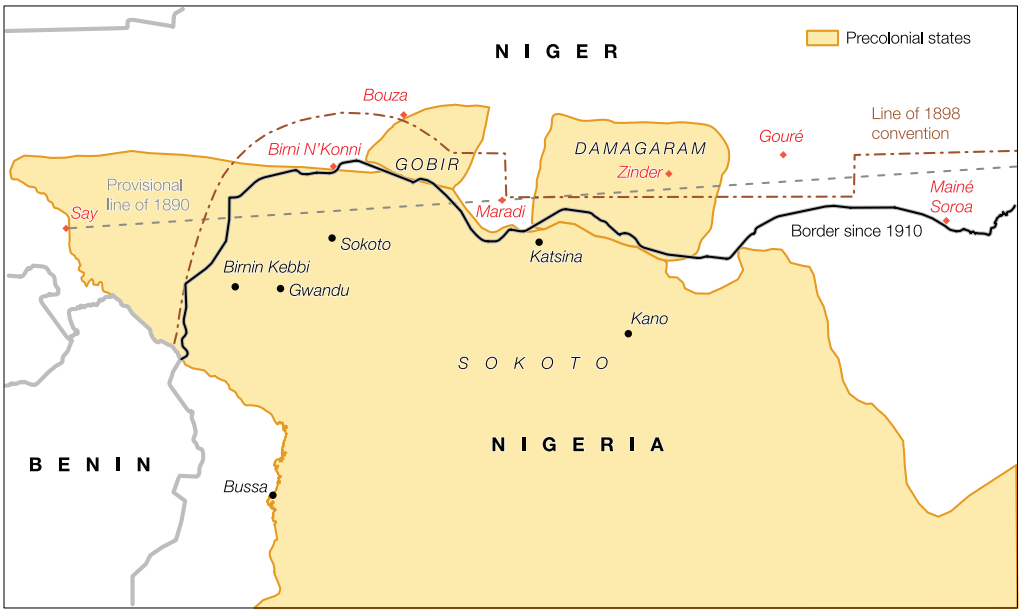

Figure 8.5 Nigeria's northwestern borders.

Source: Authors. The various versions of the border are the authors' digitisation of the map from Brownlie (1979)
Notes: Polygons for Sokoto, Gobir, and Damagaram from the authors' GIS data set of PCS polygons

Many scholars extrapolate from Salisbury's quote to substantiate Europeans' general ignorance of local conditions when determining African borders (e.g. Herbst, 1989; Michalopoulos & Papaioannou, 2016). However, Salisbury's claim was specific to a particular place and time. The Sahel region was the last part of Africa that Europeans explored, and they knew very little about it in 1890. Moreover, the ill-informed Say–Barruwa border produced by "drawing lines upon maps where no white man's foot ever trod" was the *initial*, rather than *final*, border that separated what became Nigeria from what became each of Niger and Benin. Precisely because Europeans were so ignorant of local conditions in this area in 1890, they subsequently found the first border unsatisfactory and thoroughly revised it over the next two decades.

The French, motivated by their desire to gain access to the navigable portion of the Niger River, contested the limits of the British sphere by invoking the principle of suzerainty. This challenge prompted a major revision to the border in 1898. During the preceding two decades, the RNC had established a trading monopoly over the navigable part of the lower Niger, spanning from the Niger Delta to the Bussa rapids (located in contemporary northwestern Nigeria and also adjacent to the site of the eponymous precolonial state). The Say–Barruwa line was located northwest of the rapids, thereby excluding France from the navigable part of the Niger. France, who sought access to the navigable Niger, contested this division. Bussa was not, France claimed, suzerain over all of Borguland. Consequently, in their view, the RNC's treaty with Bussa constituted only a small sphere of influence.

An initial diplomatic impasse in 1894 led to a military standoff in 1898, prompted by France sending troops to occupy Bussa. In the 1898 border revision, the powers agreed to partition Borguland. Britain retained control over Bussa (and thus over the navigable

Niger), whereas France gained the neighbouring Borgu state of Nikki. This division reflected not only raw power politics but also intelligence gathered in the meantime, suggesting that Nikki was indeed independent of Bussa (which subsequent historical research validates; see Crowder, 1973). Thus, the new border divided the Borguland cultural area but did not sever any suzerain from its vassals.

Even after the 1898 revision, the border remained problematic for the French. They lacked a viable route between their major towns of Niamey in the west and Zinder in the east. Both the 1890 and 1898 borders assigned populated areas to Britain and vast expanses of desert to France. Once again, France invoked the principle of suzerainty to prompt a major border revision. They claimed that the extant border was located far north of the true northern frontiers of the Sokoto Caliphate, the historical state assigned to the British sphere in the original 1890 Anglo–French treaty.

The French contention had a strong historical basis, which reflected their intelligence collection over the preceding decade. Earlier in the 19th century, flag bearers from the Caliphate had conquered traditional Hausa states and established Fulani-ruled emirates, which prompted some Hausa dynasties to flee northward. For example, Sokoto flag bearers conquered the town of Katsina, which became the capital of the Sokoto-affiliated Katsina emirate. But the Hausa ruling family relocated north to the town of Maradi, which tenaciously preserved its independence amid persistent wars with the Caliphate. Whereas the 1890 and 1898 borders contained Maradi within the British sphere, the new border in 1904 properly reflected the distinction between Sokoto and Maradi. The Anglo–French treaty explicitly assigned to France "the tribes belonging to the territories of Tessaoua–Maradi." As was true throughout the continent, self-interested European powers invoked the principle of suzerainty to gain more favourable territorial divisions – which, in turn, aligned borders with local political realities.

Most borders encompassed water bodies

Conventional claims about arbitrary borders go beyond assertions that historical political frontiers were unimportant. A strong version of the arbitrary-borders thesis asserts that any local features, including geographic ones, tended not to matter when determining borders. A weaker version of the arbitrary-borders thesis acknowledges that features such as water bodies were often used to form borders but were mere technical markers orthogonal to existing political realities. Both claims are false.

We again compare the relative frequency with which different types of grid cells contained a colonial border (Panel A of Figure 8.6). The left bar presents the baseline frequency of colonial borders: 14% of grid cells that do not contain either a major river or major lake have a colonial border (by *major* we mean the ten longest rivers and ten largest lakes). By contrast, 31% of grid cells containing a major river and 50% of grid cells containing a major lake have a colonial border. These discrepancies show that these features often coincided with borders. We find similar differences if we consider cells with any river or any lake (Panel B of Figure 8.6). Whereas only 12% of cells without a river or lake have a colonial border, 23% of cells with any river have a colonial border as do 24% of cells with any lake.

Analysing the features of every bilateral border similarly showcases the importance of water bodies, as summarised in Table 8.1. In 63% of Africa's bilateral borders, water bodies (rivers and lakes) or their watersheds comprise the primary feature, by which we mean the feature that comprises the plurality (and usually the majority) of the length of the border. If

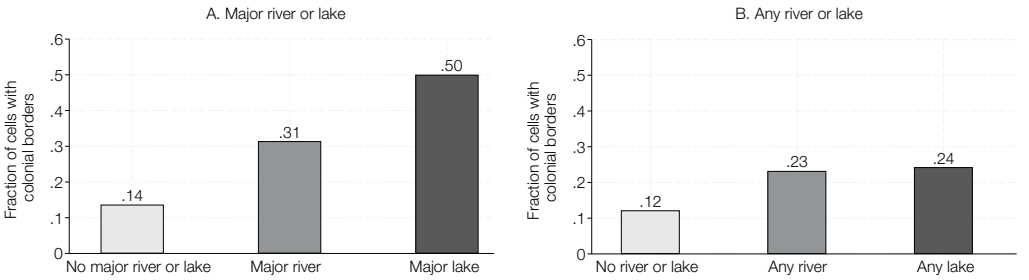

Figure 8.6 Frequency of colonial borders by geographic feature.

Source: Authors

Notes: Unit of analysis is grid cells

Table 8.1 Features of African bilateral borders

Category	*Feature*	*Primary feature, %*	*Any feature, %*
Water bodies	Any river	49	79
	Major river	10	17
	Any lake	7	22
	Major lake	7	19
	Any watershed	8	21
	Major watershed	6	9
	Other water bodies	2	11
	Total: any water body	**63**	**92**
	Total: major water body	**23**	**37**
Other local features	Topography	5	39
	Towns/villages	3	24
	Infrastructure	1	18
	Total	**8**	**54**
Straight lines	Parallels/meridians	18	34
	Non-astronomical	20	46
	Total	**37**	**66**

Source: Authors

Notes: Unit of analysis is the 107 bilateral borders. "Other water bodies" include wells, oases, and water holes. "Topography" encompasses not only mountains but also hills, valleys, plateaus, passes, rock formations, and dunes. "Infrastructure" concerns roads, caravan routes, or forts. The sum of primary features for the main categories exceeds 100% because some borders are coded as having two co-primary features

we include secondary features (i.e. they delineate part of the border but are not the primary feature), water bodies feature in 92% of borders. *Major* water bodies specifically are the primary feature of 23% of all borders and are used in some form (including secondary features) in 37% of all borders. Other common secondary features, which we do not discuss here, are mountains and hills (39% of borders), towns and villages (24%), and infrastructure such as local paths and roads (18%).

These findings about water bodies clearly defy a strong version of the arbitrary-borders thesis. If Europeans systematically incorporated local features, then the borders are not random. But the weaker version of the arbitrary-borders thesis is also unfounded. Europeans

frequently competed to control major water bodies, and these geographic features were rarely orthogonal to human experiences on the ground.

Consider the case of Pool Malebo (formerly known as Stanley Pool), at which rival French and Congolese agents established Brazzaville and Leopoldville (now Kinshasa), respectively. When the powers formed borders in 1885, they used the pool to divide imperial spheres. This division had some basis in precolonial realities. The Tyo (Teke) Kingdom was a loosely organised confederation of chiefdoms located on the right bank of the Congo River, who traded on the Congo River and at Pool Malebo (Vansina, 1966). The Tyo King's jurisdiction reached but did not extend into the left bank, even though other Tyo peoples lived there. In 1880, King Iloo of the Tyo signed the foundational French treaty that established Brazzaville. Although the French subsequently made claims over territory on the left bank, other European powers rebuffed these claims (Crowe, 1942). This case, therefore, illustrates how rivers could create natural political divisions for both precolonial and colonial states, even if broader ethnic or cultural areas transcended these geographic boundaries.

The Great Lakes region also exemplifies the interplay of major water bodies, precolonial political communities, and European claims. Economic transformation through farming and agriculture in the region's fertile forests began centuries before European colonisation because of favourable altitudes, adequate rainfall, and water bodies. Lake Victoria was "crisscrossed by a network of trade ties" (Curtin et al., 1995), and the most important node in the network was arguably the Kingdom of Buganda. Reid (2002, p. 227) discusses "the enormous significance of Buganda's lakeside location," including the invention of sophisticated canoes in the 19th century to foster trade and, with it, economic and political development. As discussed earlier, Lake Kivu was the traditional western border of the Kingdom of Rwanda, and Lake Tanganyika played a similar role for the Kingdom of Burundi located farther south. As Figure 8.7 shows, every major historical state in the region was adjacent to a Great Lake.

The Great Lakes created the basis for European borders in the region. Lake Tanganyika was an element of the Congo's original 1885 borders, and Lake Kivu featured in the revised German–Congo border. Early treaties between Britain and Germany used Lake Victoria to divide their spheres, and later, Britain leveraged its treaties with the Kingdom of Buganda to gain territory northwest of the lake.

Straight-lines borders were less frequent and less arbitrary than commonly thought

A final key piece of the conventional wisdom is that Africa's borders primarily consist of straight lines, a corollary of the claim that Europeans did not use local features to determine borders. However, existing scholarship overstates the prevalence of straight-line borders in Africa. A widely cited estimate is that 44% of African borders are parallel/meridian lines, 30% are non-astronomical lines, and 26% relate to geographic features (Barbour, 1961). Our estimates differ substantially. We code the primary feature of all 107 bilateral borders and find that straight lines are the primary feature of 37% of bilateral borders (Table 8.1). Of those, 18% concern latitude/longitude lines and 20% non-astronomical straight lines. These percentages, although not trivial, are appreciably smaller than Barbour's estimate.

Two additional observations further revise the conventional wisdom about straight-line borders in Africa. Firstly, the *decision* to draw a straight-line border is not random; only desert areas are highly likely to have straight-line borders. Desert territories have low population density, fewer local features to use in the borders, and were of lesser strategic interest

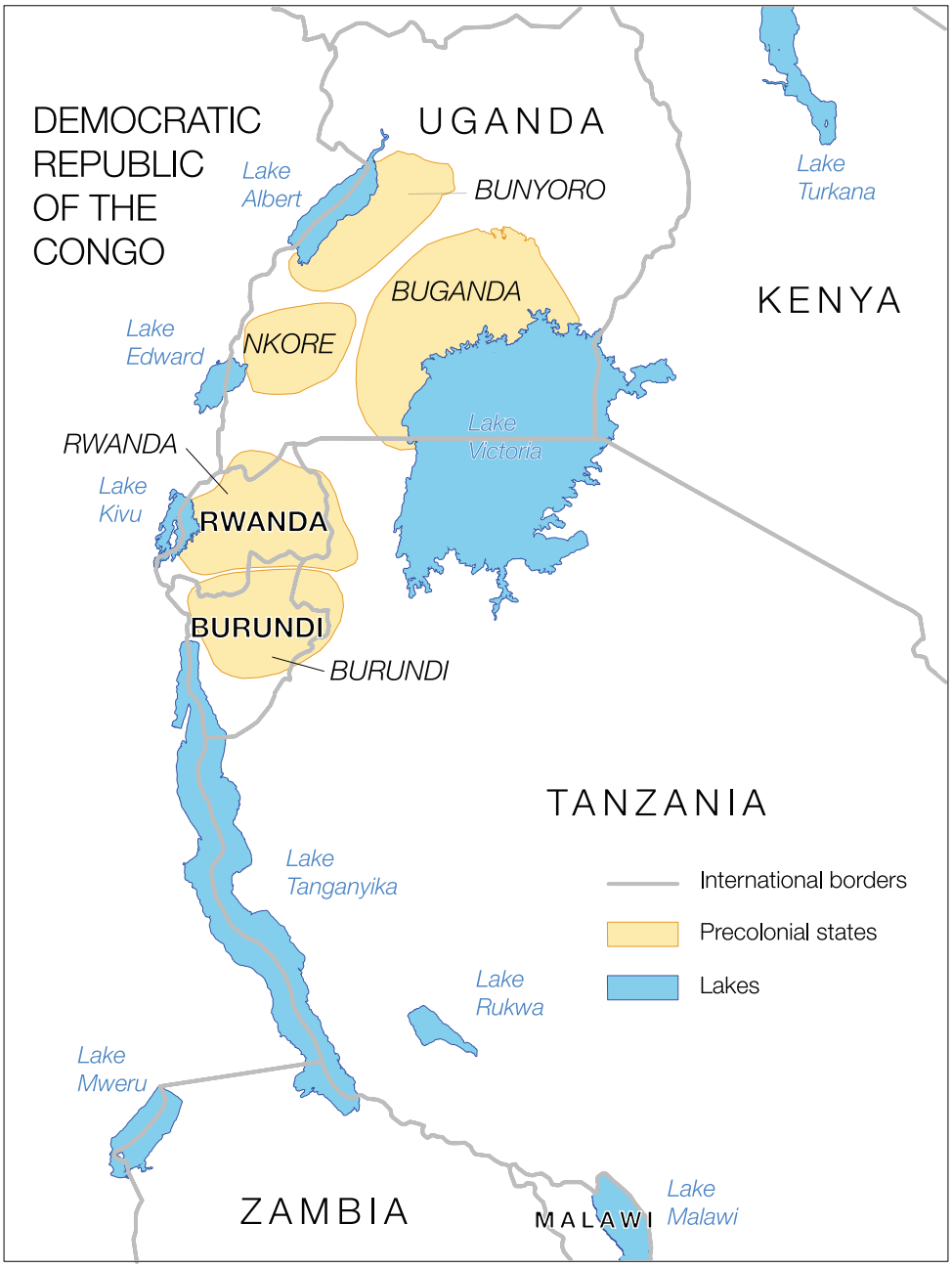

Figure 8.7 Borders in the Great Lakes region.

Source: Authors

Note: Polygons for precolonial states from the authors' GIS data set of PCS polygons

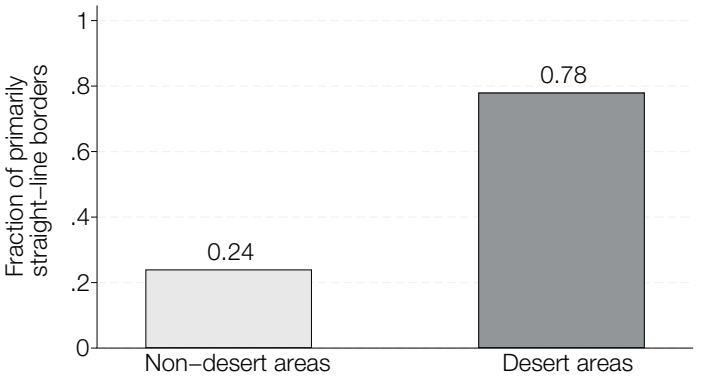

Figure 8.8 Location of straight-line African borders.

Source: Authors

Note: The unit of analysis is the bilateral border

to Europeans. As Figure 8.8 shows, straight lines are the primary feature in 78% of borders located largely within deserts (21 of 27) but in only 24% of borders located outside deserts (19 of 80). The corresponding figures are 41% and 10% for borders comprised specifically of parallel/meridian lines.

Secondly, the exact *placement* of straight-line borders is often not arbitrary, as non-astronomical lines are usually specified in relation to local features. Excepting desert areas, *every* bilateral border for which the primary feature is a non-astronomical straight line incorporated at least one local feature as a secondary element (e.g. minor rivers, towns, roads). Historical political frontiers also influenced the placement of straight-line borders, either the location of the line itself or other parts of the border connected to the major straight-line segment. Of the 40 borders whose primary or co-primary feature is a straight line, 13 (33%) were directly affected by the frontiers of African precolonial states and 27 (68%) by any historical political frontier.

North Africa provides a hard case for identifying the importance of local features. This region, and in particular the Sahara, contains the most pronounced straight-line borders on the map of Africa. Nonetheless, many of these borders were conscientiously designed to incorporate historical political frontiers and local features. Thus, contrary to the conventional wisdom on African borders, many of these borders do not constitute entirely artificial divisions.

North African colonies had historical precedents prior to the Scramble in the 1880s. The Ottoman Empire exercised at least nominal sovereignty over administrative divisions centred at Cairo, Tripoli, Tunis, and Algiers; and Morocco existed as an independent entity beyond the domain of permanent Ottoman conquests. Like African states south of the Sahara, these states and provinces lacked firm territorial borders. Instead, frontier regions beyond the territorial core created the broad outline of distinct states. Illustrating another type of historical political frontier, the French created settlements across Algeria's coast in the decades before the Scramble. During the 1830s, the French conquered and settled *colons* not only in Algiers but also in coastal sites ranging from Mers El Kebir and Oran in the west to Bône (modern-day Annaba) and El Kala in the east.

These historical political frontiers shaped European-imposed borders near the coast. Algeria's borders with both Morocco and Tunisia incorporated all the aforementioned towns into Algeria. The French colony of Algeria was artificially large relative to precolonial precedents,

combining territory not only from the former Algiers Regency but also more minor states, in particular the Beylik of Oran and the Beylik of Constantine. Nonetheless, this reflected the political realities of the 1880s, shaped by expansive French settlement along the coast. France, following a military victory, forced independent Morocco to sign a border treaty in 1845. The border "effectively codified the traditional division between the Moroccan sultanate and the Beylik of Oran" (Joffé, 2023, p. 144), which dated back to the 16th century. Shortly after capturing Tunis in 1881, France formed a border between Algeria and Tunisia. The northern two-thirds of the border reflected the "French interpretation of customary precolonial usage" (Joffé, 2023, p. 141) based on the division between the Beylik of Tunis and the Beylik of Constantine.

The Libya–Tunisia border replicated the long-standing political separation between Tripoli and Tunis. Finally, a delineated territorial division between Egypt and Libya dated back to an Ottoman decree in 1841 that circumscribed the frontiers of Egypt, its rebellious vassal state. The colonial border formed in 1925 added substantial territory in the desert to Egypt, but this change reflected new political realities. During Italy's invasion of and war against Ottoman Tripolitania in 1911–1912, the Egyptian military moved westward to occupy the coastal town of As Sallum, which lies just east of the Egyptian side of the subsequent colonial border.

Farther south into the Sahara, low population density and the concomitant limited reach of precolonial states created fewer political precedents or even local features that Europeans could incorporate. Consequently, many of the borders consist of long straight lines. Nonetheless, even some of these borders are not completely arbitrary.

France deliberately set borders between its territories to divide nomadic peoples among their rough traditional homelands. Boilley (2019, pp. 7–8) argues that "the [French] colonial logic [in the Sahel] was to preserve the old limits in order to manage the conquered territories more easily. . . . Lines replaced zones, but these zones were effectively old borders." The border between Algeria and French West Africa (specifically, Mali) was deliberately placed to encompass distinct Tuareg subgroups (Kel Ahaggar and Kel Adagh) within a single colony. This border reflected the division between competing Tuareg political communities, which on occasion engaged in armed combat against each other. Similarly, the border between Mali and Niger deliberately separated two other Tuareg subgroups (Kel Ataram or "people of the west" in Mali and Kel Denneg or "people of the east" in Niger). Although local features were scarce, the French used wells to determine the exact location of borders while attempting to preserve the rough areas of influence of each nomadic group. Imposing fixed territorial divisions where they had not previously existed disrupted local migration patterns. But this observation does not imply that these territorial divisions were randomly located.

Conclusion

Academic accounts, high-school textbooks, and media articles routinely proclaim that Africa's international borders – primarily drawn during the colonial era – are largely arbitrary with regard to realities on the ground. This myth persists despite numerous studies by historians on specific colonial borders that reveal conscientious designs. In this chapter, we provide systematic evidence across the full set of cases (all 107 bilateral borders and over 10,000 square grid cells) to dispel the myth of arbitrary border formation in Africa.

Firstly, we find that African borders were typically drawn around rather than through precolonial states, and historical political frontiers directly affected the majority of these borders.

Secondly, most borders incorporate water bodies, and these choices often reflected political realities on the ground. Thirdly, straight-line borders are less frequent than commonly assumed, are primarily located in desert areas, and are not always sited haphazardly.

Colonial borders undeniably created deleterious human consequences, including the imposition of fixed boundaries on a continent historically characterised by territorial fluidity. These borders not only split decentralised groups but also created the outlines of artificial states that combined disparate populations lacking a shared political foundation. However, acknowledging these harms does not imply the borders are arbitrary.

Existing accounts rarely distinguish border formation from state formation. European powers created *states* that were undoubtedly artificial with regard to historical antecedents, even though the *borders* between these states were usually designed conscientiously and reflected local political and geographic features. Shedding the "stubborn myth" of arbitrary borders will allow us to more productively study the pathologies of colonial state formation in Africa and related outcomes, such as economies in the borderlands and the political management of borders in contemporary Africa.

References

Abraham, G. (2007). "Lines upon maps": Africa and the sanctity of African boundaries. *African Journal of International and Comparative Law*, *15*(1), 61–84.

Ajayi, J. F. A., & Crowder, M. (1985). *Historical atlas of Africa*. Longman.

Alesina, A., Easterly, W., & Matuszeski, J. (2011). Artificial states. *Journal of the European Economic Association*, *9*(2), 246–277.

Anene, J. C. (1970). *The international boundaries of Nigeria, 1885–1960: The framework of an emergent African nation*. Humanities Press.

Appiah, A., & Gates, H. L. (Eds.). (2010). *Encyclopedia of Africa*. Oxford University Press.

Asiwaju, A. I. (1993). Borders and borderlands as linchpins for regional integration in Africa: Lessons of the European experience. *Journal of Borderlands Studies*, *8*(1), 1–20.

Barbour, K. M. (1961). A geographical analysis of boundaries in inter-tropical Africa. In *Essays on African population* (pp. 303–324). Routledge.

Boilley, P. (2019). Nord–Mali: les frontières coloniales de l'Azawad. *Canadian Journal of African Studies/Revue canadienne des études africaines*, *53*(3), 469–484.

Brady, H. E., Collier, D., & Seawright, J. (2006). Toward a pluralistic vision of methodology. *Political Analysis*, *14*(3), 353–368.

Brownlie, I. (1979). *African boundaries: A legal and diplomatic Encyclopaedia*. Hurst.

Christensen, D., & Laitin, D. D. (2019). *African states since independence: Order, development, and democracy*. Yale University Press.

Collier, D. (2011). Understanding process tracing. *PS: Political Science & Politics*, *44*(4), 823–830.

Crowder, M. (1973). *Revolt in Bussa: A study of British "native administration" in Nigerian Borgu, 1902–1935*. Faber and Faber Limited.

Crowe, S. E. (1942). *The Berlin West African Conference 1884–1885*. Negro Universities Press.

Curtin, P., Feierman, S., Thompson, L., & Vansina, J. (1995). *African history: From earliest times to independence*. Pearson.

Englebert, P. (2000). *State legitimacy and development in Africa*. Lynne Rienner.

Fischer, H. (2015, February 25). 130 years ago: Carving up Africa in Berlin. *Deutsche Welle*.

Fortes, M., & Evans-Pritchard, E. E. (1940). *African political systems*. Oxford University Press.

Foucher, M. (1991). *Fronts et frontières: Un tour du monde géopolitique*. Fayard.

Foucher, M. (2020). African borders: Putting paid to a myth. *Journal of Borderlands Studies*, *35*(2), 287–306.

French, H. W. (1997, November 23). The world; A century later, letting Africans draw their own map. *The New York Times*.

French, H. W. (2021). *Born in blackness: Africa, Africans, and the making of the modern world, 1471 to the Second World War*. Liveright Publishing.

Herbst, J. (1989). The creation and maintenance of national boundaries in Africa. *International Organization*, *43*(4), 673–692.
Herbst, J. (2000). *States and power in Africa: Comparative lessons in authority and control.* Princeton University Press.
Hertslet, E. (1909). *The map of Africa by treaty.* His Majesty's Stationery Office.
Hiribarren, V. (2018). Scramble for and partition of West Africa. In *History textbook* (pp. 112–120). The Gambia National Library.
Joffé, G. (2023). Regional borders and the modern state in North Africa. In *Routledge handbook on the modern Maghrib* (pp. 125–160). Routledge.
Katzenellenbogen, S. (1996). It didn't happen at Berlin: Politics, economics and ignorance in the setting of Africa's colonial boundaries. In *African boundaries: Barriers, conduits and opportunities* (pp. 21–34). Pinter.
Lefebvre, C. (2019). *Frontières de sable, frontières de papier: Histoire de territoires et de frontières, du jihad de Sokoto à la colonisation française du Niger, XIXe–XXe siècles.* Éditions de la Sorbonne.
Louis, W. R. (1963). *Ruanda–Urundi, 1884–1919.* Clarendon Press.
Michalopoulos, S., & Papaioannou, E. (2016). The long-run effects of the scramble for Africa. *American Economic Review*, *106*(7), 1802–1848.
Miles, W. F. (1994). *Hausaland divided: Colonialism and independence in Nigeria and Niger.* Cornell University Press.
Nugent, P. (2019). *Boundaries, communities and state-making in West Africa: The centrality of the margins.* Cambridge University Press.
Paine, J., Qiu, X., & Ricart-Huguet, J. (2024). Replication data for Endogenous colonial borders: Precolonial states and geography in the partition of Africa. *Harvard Dataverse*. https://dataverse.harvard.edu/dataset.xhtml?persistentId=https://doi.org/10.7910/DVN/9QJVJ1
Paine, J., Qiu, X., & Ricart-Huguet, J. (2025). Endogenous colonial borders: Precolonial states and geography in the partition of Africa. *American Political Science Review*, *119*(1), 1–20.
Reid, R. (2002). *Political power in pre-colonial Buganda: Economy, society and warfare in the nineteenth century.* James Currey.
Thom, D. J. (1975). *The Niger–Nigeria boundary 1890–1906: A study of ethnic frontiers and a colonial boundary.* Ohio University Press.
Vansina, J. (1966). *Kingdoms of the savannah.* University of Wisconsin Press.
Wesseling, H. L. (1996). *Divide and rule: The partition of Africa, 1880–1914.* Praeger.
Yakemtchouk, R. (1971). *L'Afrique en droit international*. Librairie générale de droit et de jurisprudence.