Introduction

The Modern History of Gondwana/Land

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The southern hemisphere of planet Earth was once territorially connected, a prehuman Global South. Earth scientists know a great deal about its dynamic breakup, eventually creating present-day Africa, Australia, New Zealand, South America, South Asia, and Antarctica. That fracturing commenced two hundred million years ago (Ma), and yet Gondwanaland retains a rich and unexpected modern history too. This book analyzes Gondwanaland's history over the nineteenth, twentieth, and twenty-first centuries, addressing its significance across science, culture, and politics. What new possibilities emerge when we consider this part of the Earth's past not just geologically but also geopolitically? How is Gondwanaland part of modern environmental and energy history, a colonial, neocolonial, and postcolonial history, and a cultural history in which the deep past folds into the present? We explore Gondwanaland's strange resonances, as well as material connections, across time and across national and continental contexts that are now separated. In doing so we bring Gondwanaland back together again, so to speak, to consider the ancient supercontinent's *modern* history in southern Africa, South America, Australasia, South Asia, and Antarctica.

The conceptualization and naming of this southern supercontinent unfolded in the late nineteenth century, in the context of European

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colonization of major parts of the southern hemisphere. Gondwanaland is named for the Gond region of central India, once the kingdom of Gondwana, the ancient and present homeland of the *Adivasi* Gond people.[1] When European geologists dug into the hills of Gondwana during the 1870s and 1880s in search of coal, the most significant paleontological find was the ancient flora of the *Glossopteris* genus. They were surprised at its similarity to other specimens that had accumulated across the southern hemisphere: the fossil fern had also been found in the coal mines of the Cape Colony, for example, and was soon confirmed in the Australian colonies, in South America, and finally in Antarctica. Were these continents once connected? It was the Viennese geologist Eduard Suess who named a possible great southern "Gondwána-Land" in 1885, and it would be difficult to think of a more literally and locally grounded term for a hemispheric phenomenon.[2] Indeed Gondwanaland is the only ancient geological formation that is named for a particular region and its Aboriginal people. Most other deep-time territories or seas are drawn from Greek, Roman, and Celtic mythology: the Tethys Sea, the Poseidon Ocean, Avalonia, Laurasia, Pangaea.

In imagining and naming "Gondwanaland" from an existing region in central India, a long-standing debate was provoked among earth scientists. First it prompted a historical sojourn by geologists into the eighteenth century, when the Gonds were under Maratha rule, and then into the nineteenth century when Gondwana was renamed the Central Provinces of British India. Reappraising this inheritance in the mid-twentieth century, geologists wondered about the appropriateness of using the term *Gondwana* (land of the Gonds) as a geological category for the Paleozoic supercontinent of the southern hemisphere, which seemed minimally related to the Gond people. Eventually consensus emerged among geologists that the two terms should signify two different entities. Gondwana should refer to the historical region of India while Gondwanaland to the ancient continent.[3] Yet we shall see how often a revealing slippage between the two emerges, sometimes manifesting simply as an abbreviation to "Gondwana," while at other times enacting a total erasure of Gondwanaland's modern Gond origin.

In this book we intermittently deploy the construction "Gondwana/Land" to highlight this slippage between local and hemispheric, and to analyze the land politics at stake, from high-level geopolitics and

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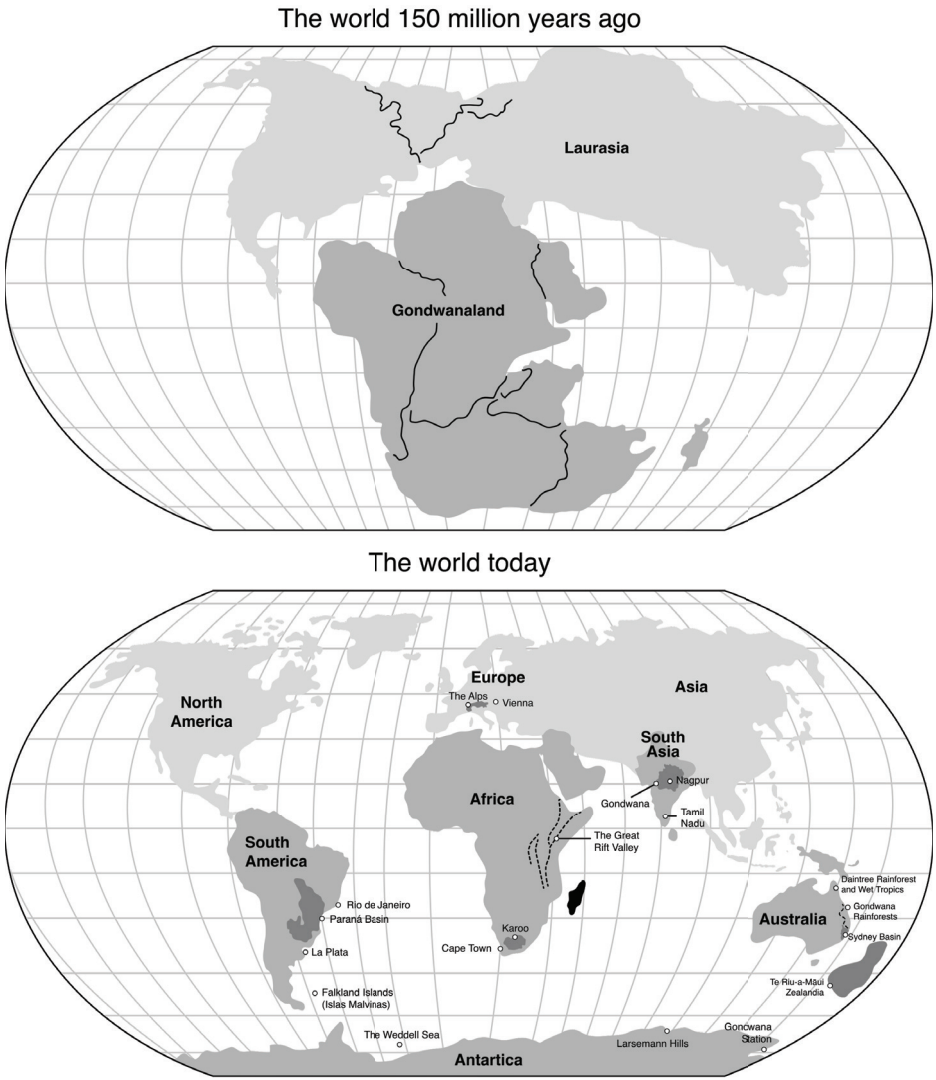


Figure I.1. Map of the continents ca. 150 Ma and a map of the continents today, featuring key sites addressed in this book. With permission from Ivory Media, 2025.

neocolonial bids for territory, to remnant rainforest protection, to land claims by Indigenous people, to the extraction of coal. This modern history of Gondwana/Land is unusual and polyvalent. It is at once entirely prehuman and deeply human; at once Indigenous, nationalist, and neocolonial; at once environmentalist and extractive (fig. I.1).

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Historicizing Gondwana/Land, modern and ancient, is an idiosyncratic, even counterintuitive "area studies" venture, requiring expertise from what are (only now) five different continents. To tell Gondwanaland's modern history, contributors to this book chart flows both deep and shallow, and consider how global circulations of people, materials, and ideas sometimes defied conventional models of connection. Put another way, Gondwana/Land challenges now-orthodox transnational methodologies, including transnational Indigenous histories, by exploring the ways that knowledge about the Earth has remained highly and inventively situated.[4] Bringing scholars together from the diversity that was once a unified ancient continent, this book explains and fills the strange gap between national understandings of Gondwana/Land in the past and present. It offers a substantive case for critical contemplation of the Earth's past, with and without humans. The ancient history of the southern supercontinent as studied by geoscientists is transformed by recognition that it has a modern political and cultural history and present too.

Gondwana/Land as a Geological Global South

Before Gondwanaland was named in 1885, geologists had already perceived apparent similarities between southern fauna, and sometimes people, fueling fanciful speculation regarding lost land bridges, ancient migrations, and sunken continents.[5] Ideas about land bridges and Indo-Africa emerged *before* the idea of Gondwanaland. One of the earliest references was in Edward Forbes's 1846 essay on the relationship between the distribution of British fauna and flora and past geological changes. Forbes postulated the existence of five land bridges, mostly between Europe and North America.[6] Although the nature and location of these geological formations were heavily debated, land bridges became a critical component in the thesis of the permanence of the continents and of global biogeography. The idea of Indo-African connections through a landmass developed in conjunction with the British imperial presence in the Indian Ocean. In 1864 English zoologist Philip Sclater, observing shared mammalian traits between Madagascar, Africa, and Asia, theorized a lost continent, "Lemuria," submerged in the Indian Ocean, as Sumathi Ramaswamy documents in chapter 9.[7] On an expedition to Abyssinia in 1867, W. T. Blanford found that Indian fauna resembled African species, and Abyssinian basalt formations

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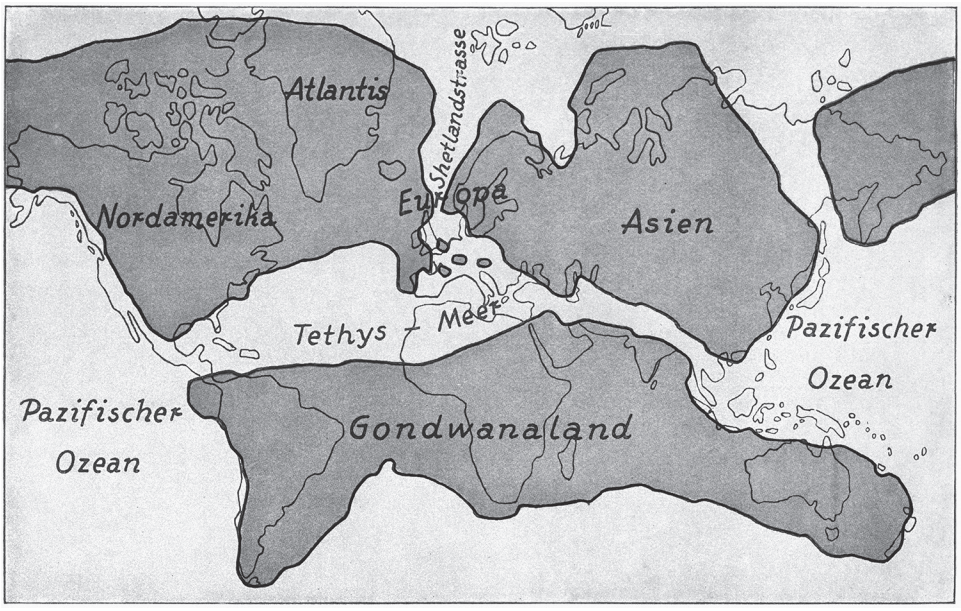


Figure I.2. Map of the continents and seas in the Upper Triassic period: North America, Atlantis, Europe, Asia, Gondwanaland. *Source*: Wilhelm Bölsche, *Das Leben der Urwelt aus den Tagen der großen Saurier* [Life in the prehistoric world from the days of the great dinosaurs] (Leipzig: G. Dollheimer, 1931), plate 25, https://www.projekt-gutenberg.org/boelsche/urwelt/chap005.html, public domain.

mirrored the Deccan Traps in the subcontinent. In 1875 his brother, Henry F. Blanford, referenced an "Indo-Oceanic" continent, suggesting that peninsular India shared more geological similarities with Australia and southern Africa than with northern India.[8] In this concept it was a continent, not just a bridge, that played a formative role in the early configuration of Gondwanaland. Suess's Gondwanaland was conceived as one of a network of land bridges (fig. I.2). Such continental connections were globally mapped as late as 1932 (fig. I.3).

Suess himself also imagined continental connection between India, Madagascar, and South Africa via a collapsed "table-land" that linked all three sites.[9] This not only extended prior ideas about land bridges between continents but also served as a precursor to the early twentieth-century idea of continental drift proposed by the German Alfred Wegener and the South African Alexander L. du Toit. They suggested that the southern continent had split into several different territories, rather than simply being connected (fig. I.4). By the 1960s the idea of

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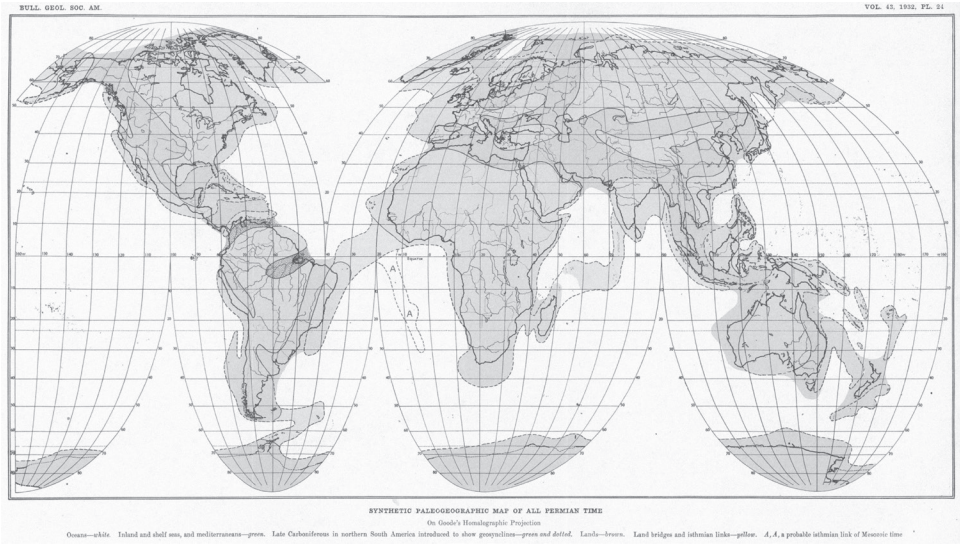


Figure I.3. Continental land bridges mapped in 1932. *Source*: Charles Schuchert, "Gondwana Land Bridges," *Bulletin of the Geological Society of America* 43, no. 4 (1932): plate 24. Geological Society of America, 1932, public domain.

"wandering continents" morphed into plate tectonics theory, the late arrival of a foundational explanation of the Earth's deep past, its dynamic present, and its future.[10] Continents continue to move. On the substantive foundation of Gondwanaland therefore, continental drift and plate tectonics developed successively over time, based originally on shared southern hemisphere exploration of the Earth's stratigraphic archive, its ocean floor, and occasionally the people who lived on its surface.

The history of Gondwana/Land unfolded in two distinct phases, both of which overlap into the present. The first was in the nineteenth-century imagination of the simultaneity of geological deep time and human aboriginality in the Gondwana region in India, supplemented with similar experiences in southern Africa. This developed into the idea of an ancient primitive southern land, which British Indian geologists named Gondwanaland at the end of the nineteenth century. This Gondwanaland was both distant and intimate. Distant because it belonged to deep time, intimate as these geologists found here the living "relics" of that time among the local tribal population and the volcanic surface soil of the land.[11] Suess's conception of Gondwanaland stood at the turn of the nineteenth- and twentieth-century imaginations of the supercontinent

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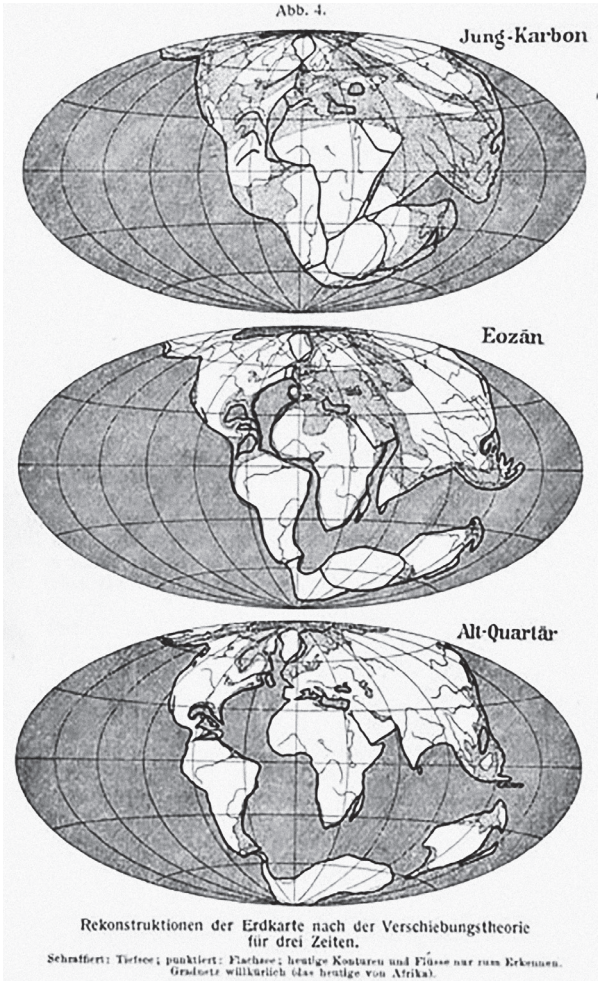


Figure I.4. Alfred Wegener's reconstructions of continental drift, depicting the late Carboniferous, the Eocene, and the early Quaternary. *Source*: Wegener, *Die Entstehung der Kontinente und Ozeane* [The origins of continents and oceans], 4th ed. (Braunschweig: Friedrich Vieweg & Sohn, 1929), 18. Robarts Library, University of Toronto/ OL24589016M, public domain.

and therefore emerged out of these colonial perspectives on deep time and human aboriginality. On one hand, it was built upon the empirical experiences of the nineteenth century, leading, on the other, to the metropolitan theoretical articulation made from Europe at the start of the twentieth century.

The second phase was in the twentieth-century deliberations of modern earth science and continental drift. In this phase the nineteenth-century primitive Gondwanaland was overlaid on the contemporary continents of the southern hemisphere, as evidence of a once-connected entity now dispersed into modern regions. Defined by an enduring proximity of deep time and the modern present, Gondwanaland is connected to but also distinct from other sacred, mythical, or lost places such as Lemuria, Atlantis, or Indo-Africa. In our modern history of Gondwanaland, we identify how nineteenth-century ideas of deep time, colonial extraction, and aboriginality became interspersed with twentieth-century preoccupations with postcolonial geopolitics, movement (of both humans and land), and Indigenous senses of belonging.

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Using Gondwana/Land to think through these two phases suggests both a new chronology and a new antipodean orientation for the history of modern geosciences. Suess perceived "a very sharply marked line of separation" running all the way from the European Alps, through the eastern Mediterranean, along the mountains bordering the Persian Gulf, into the Himalayas, across the Bay of Bengal, and all the way to Java. South of this great planetary spine of folded strata were the fragments of "Gondwána-Land" (Indo-Africa) and north of it was "Eurasia."[12] Subsequent research has suggested that the separation between Gondwanaland and Laurasian species as the "ancient vicariance" can still be identified.[13] But can we use this geospatial and later biogeographical division to conceive of a geological "Global South"? It is plain that the remnants of Gondwanaland do not map readily onto the economic Global South of high modernity. It does not fit into the genealogy of Vishay Prashad's "poorer nations" of a "Third World" that was under construction at the same time as plate tectonic theories.[14] The polities of Australia and India, Chile and South Africa, for example, then stood—and perhaps still stand—in completely different relation to one another, and to both development economics and anticolonialism. So, what is this geological Global South, or antipodean geology, which we seek to track via Gondwana/Land?

At its most straightforward, analysis of Gondwanaland research from botany, geology, and physics to anthropology, geography, petrology, and paleontology provides rich information about the creative syntheses of sciences in the southern continents. Thinking via Gondwana/Land thus helps us situate a southern hemisphere environment for the history of imperial geosciences, challenging a northern orientation within canonical histories of geology, mineralogy, and paleontology. It adds, for example, a north/south continental crease to the east/west line that sustained Martin Lewis and Kären Wigen's critique of metageography.[15] All kinds of stratigraphers, mineralogists, and paleontologists undertook fieldwork in multiple former Gondwanaland sites, creating a rich network of geoscientific researchers and environmental thinkers tracked in these chapters. W. T. Blanford, for example, was a long-standing member of the Geological Survey of India, geologist of Indian coalfields, and student of *Glossopteris* subspecies in South Asia, who then traveled across Africa, developing a proto-theory of the southern continent with Indo-African connection at its heart. Edward John Dunn was a mining geologist, surveyor, and anthropologist charting

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Figure I.5. Martin Land, *Glossopteris* fossils from New South Wales, Australia. With permission from Science Photo Library, E440/0045.

coal reserves in southern Australia; gold, diamond, and coal deposits in the Cape Colony; and Gondwanaland rocks in Victoria. Alexander du Toit, South African geologist and continental drift theorist, stratigrapher, and diamond-mining consultant, mapped the Karoo region, and undertook fieldwork in Paraguay, India, and Brazil as well as visiting Australia in 1914 to study the Gondwanaland beds and the Great Artesian Basin.[16] The imperial geologist, Lewis Leigh Fermor was director of the Geological Survey of India and spent his entire career over the first half of the twentieth century exploring the mines of Indian Gondwana and of Kenya, South Africa, and Malaya. And to take a final example, Israel Charles White was involved with the expeditions leading up to the first Geological Survey of Brazil (1907) identifying the *Glossopteris* flora within Brazilian coal beds in 1908. *Glossopteris* was then found in Antarctica in 1912 during the expedition led by Robert Falcon Scott.

This network continued to confirm and extend knowledge of ancient Gondwanaland through paleontological specimens and was key to the many geological surveys that established and developed coal deposits, which are in many sites mined to this day. Linked to the distinct *Glossopteris* fossil leaf (fig. I.5), southern coal deposits stretch right across

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former Gondwanaland, across the Global South, from the Paraná basin in Brazil, to the Bowen basin of Queensland, through the Karoo basin of South Africa. Searching for coal and petroleum drove the establishment of many mineralogical and geological surveys both before Gondwanaland's "discovery" in 1885 and in light of it: in Brazil (1818, 1876, 1907), Colombia (1822, 1887, 1916), Argentina (1823, 1904), Peru (1827, 1876, 1924), India (1851), Tasmania (1859), Victoria (1861), North and South Queensland (1868), New South Wales (1875), the Western Cape in South Africa (1895), the Transvaal (1897), and the Cape of Good Hope (1889). In Antarctica too there were surveys to look for Gondwana coal, the Chilean Antarctic Expedition (1947) and the British Antarctic Survey (1962), for example. Such early economic geology continued and continues in commercial coal and petroleum exploration and extraction, through Cerro Corporation and ExxonMobil in South America, for example, and through the state-owned Brazilian oil giant Petrobras.[17]

In short, Gondwana/Land was and is about coal, oil, and petroleum and everything they mean, not just to modernity but also to the Anthropocene. Put another way, Gondwanaland folds together the truly ancient Earth world—prehuman to the order of hundreds of millions of years—with the fossil-fueled world of industrialization. Here, Waligora (chap. 6) focuses on South American coal basins, analyzing the intimate relation between the study of fossils and the study of fossil fuels. Bashford (chap. 2) and Antonello (chap. 3) track Gondwanaland coal in Australia and Antarctica, respectively, in the former vigorously extracted, in the latter tenuously safeguarded. Bashford, Chakrabarti, and Hore return to the materiality and significance of these fossil fuels—those "gifts of Gondwana"—in the epilogue.[18] And Zahirovic and Hore (chap. 12) consider what it means to conduct research into the supercontinent in the present. Approaching the subject of Gondwanaland from the perspective of a geoscientist and a historian, their conversation explores expanding frontiers in Gondwanaland research, past and present, and addresses the role of plate tectonic modeling in the Anthropocene.

Southern Connections and Disconnections

Gondwana/Land reveals how a north/south hemispheric geography emerged, and differently from the geopolitical eastern and western hemispheres. It therefore also expands our knowledge of the genealogy

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