

A black and white photograph of a man in a desert landscape. He is wearing a headband and has a bone or staff resting on his shoulder. He is holding a small, shallow dish or bowl in his hand. The background shows a vast, arid landscape with some low-lying vegetation.

**A RITUAL
GEOLOGY**

**GOLD AND
SUBTERRANEAN
KNOWLEDGE
IN SAVANNA
WEST AFRICA**

Robyn d'Avignon

A RITUAL GEOLOGY

BUY

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DUKE UNIVERSITY PRESS

Durham and London 2022

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Printed in the United States of America on acid-free paper ∞

Designed by A. Mattson Gallagher

Typeset in Garamond Premier Pro

by Westchester Publishing Services

Library of Congress Cataloging-in-Publication Data

Names: d'Avignon, Robyn, [date] author.

Title: A ritual geology : gold and subterranean knowledge in

Savanna West Africa / Robyn d'Avignon.

Description: Durham : Duke University Press, 2022. | Includes bibliographical references and index.

Identifiers: LCCN 2021049254 (print)

LCCN 2021049255 (ebook)

ISBN 9781478015833 (hardcover)

ISBN 9781478018476 (paperback)

ISBN 9781478023074 (ebook)

ISBN 9781478092674 (ebook other)

Subjects: LCSH: Gold mines and mining—Africa, French-

speaking West. | Gold miners—Africa, French-speaking West. |

Geology—Africa, French-speaking West. | Mines and mineral

resources—Africa, French-speaking West. | Ethnology—Africa,

French-speaking West. | BISAC: SOCIAL SCIENCE /

Anthropology / Cultural & Social

Classification: LCC HD8039.M732 A3545 2022 (print) |

LCC HD8039.M732 (ebook) | DDC 338.2/741096—dc23/

eng/20220110

LC record available at <https://lcn.loc.gov/2021049254>

LC ebook record available at <https://lcn.loc.gov/2021049255>

Cover art: “Miner descending to the bottom of the placer.”

Bambala, Sigui, Guinea, 1953. Photograph by Savonnet.

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*This book is dedicated to my parents,
Linda Pegg d'Avignon and Dana André d'Avignon*

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ACKNOWLEDGMENTS

It is an honor to thank the people, institutions, and places that have nurtured my scholarship, and my soul, in a journey that has spanned three continents and fifteen years.

My deepest gratitude extends to the people of Kédougou. In many ways, I became an adult in this place, forged by the grace and humor of friends and strangers. For countless meals, for teaching me Pular, and for caring for me when I was ill, I thank my family in Togué: Manga and Aliou Kamara and their children, Ndiogou, Fatoumata, Mamadou, Mawdo, Dienabou, and Sanoumou. I have been enriched by the friendships of Idi Diallo, Mamadou Diallo, Balaal Kamara, Malaal Kamara, Khalifa Kébé, Aissatou Keita, and Sokhana Keita. In Kédougou town, I cannot adequately express my gratitude to the generosity of Pape Mamadou Aliou Diallo and Adj Marieme Seck. For hosting me in their home, I thank Baba Amadou Woury and Nene Fatoumata Bineta Diallo, and their children, Mamadou Kaninou, Petit Amadou, Papa Hamidu, Elhaj Abdourahmane, Ibrahima, Sophie, Awa, and Nenegale. Doba and Harouna Diallo welcomed me into their families in Kédougou and Daandé. Over the years, I have learned much about the history of Kédougou and Senegal in conversation with Aliou Bakhoun, Abdoulaye Balde, Bocar Diallo, Mamadou Diallo, Modou Khouma, Aliou Monékheta, Filé Sadikaho, Khalidou Cissokho, Yousseph Diallo, Aruna Diop, and Abdoul Karim Keita. From Antwerp to Toronto, my friend El Hadj Mamadou Cissé showed me how transnational business, and politics, are made. I have sharpened my thinking in dialogue with the work of the Kédougou-based journalists Famakhan Dembélé, Adama Diaby, Pape Diallo, and Adama Diop. I write in the memory of two dear friends who passed during the writing of this book: Djiba Diallo and Manga Kamara.

Many of the individuals I interviewed are acknowledged in the text and in the endnotes; others requested anonymity. I thank them all for sharing their time and stories. Families in the following villages hosted and humored me: Bambaya, Bambaraya, Bantaco Dimboli, Duuta, Fongolimbi, Kanoumering, Kerekonko, Linguekoto, Kharakhena, Mako, Mamakono, Niéménéké, Sabodala, Sambaranbugu, Saraya, Tambanoumoya, Tinkoto, and Tomboroncoto. I thank Bambo Cissokho for a permanent entryway to Tinkoto. Elements of this project emerged in conversation with Gassimou Cissokho, Mamadou N'Dionge, Mamadou Dramé, Bliesse Kamara, Yonko Camara, Diba Felix Keita, Salioum Soaré, Soriba Keita, and El Hadji Alpha Diby Souaré. Alex MacKenzie generously invited me to Bassari Resources, in Dakar and in Duuta, and shared his personal history in gold exploration.

I benefited from the expertise and friendship of several research assistants in Senegal. Maciré Diallo and Khouddouse Diallo assisted me in archival research in Dakar. Pape “Dayo” Diallo made crucial introductions in Kédougou town, the Jakha, and in Niokolo. Madi Camara generously shared his knowledge of the juura and his family’s rich history. I cannot adequately express my gratitude for the friendship and intellectual companionship of Falaye Danfakha during field research in Kédougou and in the years that have followed. Falaye’s intellectual curiosity and commitment to social justice shaped every facet of the research and writing of this book. Falaye, thank you for enduring hardships of the heart and body to bring this history to light.

Senegal’s Ministère de l’Education et de la Recherche and the Gouvernance de Kédougou authorized my research in Senegal. Mariane Yade and Professor Ousmane Séne of the West African Research Association assisted with visas and gave me an intellectual home in Dakar. Ousmane Cissé and Diene Rokhaya Samba facilitated my access to the archives of Senegal’s Direction des Mines et de la Géologie. For their expertise at every turn, I thank the staff of the Archives Nationales du Sénégal, and in particular Boubacar Ndiaye. Saokho Mame Diarra shared her lunch tickets and time at the Service d’Archives et de Documentation du Soleil. I thank Anta Demba Thiam of the audiovisual division of the Institut Fondamental d’Afrique Noire. At the Université de Cheikh Anta Diop in Dakar, I thank the staff and faculty of the Département de Géologie and the Institut des Sciences de la Terre. I am grateful to the many earth scientists in Senegal who shared their time and experience with me, including Mababa Diagne, Dina Pathe Diallo, Moussa Diba, Cheikh Diop, Babacar Diouf, Abdoulaye Aziz Ndiaye, Hamidou Sow, and Lamine Sy. In Guinea, I thank Abdoulaye Diallo; the staff at the Archives

Nationales de la Guinée, Mörike Sidibé at the Université de Kankan; Djiba Kaba in Kankan; and Khalifa Diallo in Labé. In Barcelona, I thank Taouda Djiguiba and Younkoun Kamara. In Paris, Cheikhou Saouré and Siré Danfakha opened their homes to me and shared insights about Kédougou's diaspora. For hosting me in Dakar and Paris, I thank my friends Cara Haberman, Jedidiah Fix, John Paul Fortney, and Julie Roddier.

This project grew up in a special place: the Interdepartmental Program in Anthropology and History at the University of Michigan. I could not have asked for a more fearless adviser and friend than Gabrielle Hecht. At a key moment, she told me to trust myself and never look back. I took her advice and crossed a border. In ways you will never know, Gabrielle, you helped me bring this project, and my career, to fruition. Stuart Kirsch tirelessly supported this project and gently guided it back to where it belonged: in the agrarian world. He models engaged anthropology at its very finest. Nancy Rose Hunt, one of the most elegant historical thinkers and writers I know pushed me to think comparatively and to take joy in the creativity of this path. Rudolph Ware III understood this as a spiritual as much as an intellectual pursuit. Friday afternoons with Butch and Amir Syed on North Campus transformed my understanding of Islam and West Africa. Mike McGovern's feedback on my dissertation, and my ongoing engagement with his work, guided key revisions on the road to a book. Derek Peterson's generous reading and mentorship have shaped my practice as a historian and my ethics as a historian of Africa.

Judith Irvine introduced me to the study of language as social action in Africa. Thanks also to Howard Brick, David William Cohen, Alaina Lemon, Matthew Hull, Paul Johnson, and Elisha Renne. I was surrounded by incredible colleagues at Michigan, including Cameron Gokee, Sara Katz, Doreen Kembabazi, Adam Fulton Johnson, Amanda Logan, Benedicto Machava, Lamin Manneh, Pedro Monaville, Davide Orsini, Tasha Rijke-Epstein, Jonathan Shaw, Nafisa Essop Sheik, Stephen Sparks, Amir Syed, Edgar Taylor, Christopher Tounsel, and Daniel Williford. Liz Harmon shared Cornwell Place, laughter, and long walks. I am not at all sure where I would be without the brilliance and friendship of Adriana Chira.

New York University (NYU) brought wonderful new people into my life and sharpened my mind. Jane Burbank and Fred Cooper have shared meals, conversation, and a commitment to intellectual community. Julie Livingston models everything I aspire to become as a scholar. Thank you, Julie, for showing me how to bridge Africa and New York, and anthropology and history. I am grateful to Michael Gomez for his support, mentorship, and commitment to African history. This manuscript was greatly improved by

a workshop with Fred, Mike, Julie, and Andrew Sartori. For supporting my scholarship in myriad ways, I thank Karl Appuhn, Edward Berenson, Karin Burrell, Liz Ellis, Ada Ferrer, Rozy Fredericks, Rebecca Goetz, Stefanous Geroulanos, Yanni Kotsonis, David Ludden, Jennifer Morgan, Andrew Needham, Guy Ortolano, and Chelsea Rhodes. I have learned from a talented group of graduate students at NYU, including Folarin Ajibade, Danielle Beaujon, Brendan Collins Jordan, Daniel Cumming, Zachary Cuyler Davis, Tanvi Kapoor, and Melissa Levkowitz. Hannah Leffingwell's deft eye saw this manuscript through final revisions. Mamadou Diouf, Gregory Mann, and Rhiannon Stephens welcomed me at Columbia. Ananda Burra and Ashley Rockenbach shared a move from Michigan to Manhattan. New York gave me the artist and historian Kamau Ware and the rich community of the Black Gotham Experience. Anoordha Siddiqi, Asif Siddiqi, and Betty Banks taught me the joy of collaboration. I have shared book writing, and worries of the heart, with Monica Kim and Anne O'Donnell. Cecilia Márquez transformed New York, disarmed me with laughter, and gave me Annise Weaver.

Glenn Davis Stone knows that the questions animating this book began with contract chicken farming in southern Missouri. Glenn, thank you. I hope you find merit in this work and see the signature of your mentorship in the career I have made. Ongoing conversations with my friends Jeremy Dell, Kevin Donovan, Emma Park, and Nikolas Sweet have sharpened my thinking about African history, writing, and ethics. For reading portions of this manuscript with great care, I am deeply grateful to Robert Blunt, Coleman Donaldson, Cameron Gokee, Jeremy Dell, Emily Riley, and Daniel Williford. Peter Andrew Kannam read this manuscript with an eye to geology. Thanks to my Peace Corps family: Cameron Fink, Jedidiah Fix, Cara Haberman, Erin Hayward, Andrew Jondahl, Sarah Lee, Ashleigh Lovett, Matthew McLaughlin, Kay Stones, Nikolas Sweet, Amy Truong, and Jordan Welty. The wise Sasha Dimant helped untether my past from my future. From Togué to New Haven, I have been sustained by the friendship of Stephen Wood, and now Jillian Bell and Henry. To the crew, I thank Animale, Pierreba, Al, Benjy Bunnoit, Charles, Frankie, Martino, M. Eloise, Marcos, and ever Tuna and Larry. Some of my oldest friends—Lindsay Brill, Maya Buchanan, Alexandra Reisman, and Emily Warming—supported this book, against their better judgment.

This research was made possible by generous funding from the National Science Foundation, the Wenner-Gren Foundation, and the Social Science Research Council. At the University of Michigan, I received financial

support from the College of Literature, Science, and the Arts, the Eisenberg Institute for Historical Studies, the African Studies Center, the International Institute, the Department of Afroamerican and African Studies, the Department of Anthropology, Rackham Graduate School, the Sweetland Writing Center, and the Graham Sustainability Institute. The NYU Department of History and the Center for the Humanities contributed to book production costs. I am appreciative of the Leonard Hastings Schoff and Suzanne Levick Schoff Memorial Fund at the University Seminars at Columbia University for their help in publication. The ideas presented here benefited from discussions in the University Seminar on Studies in Contemporary Africa.

I presented early drafts of this work at the Colorado School of Mines, Columbia University, the École Normale Supérieure, the University of Edinburgh, Emory University, the University of Florida, Harvard University, New York University, Northwestern University, the Block Museum at Northwestern University, Yale University, and the Mellon-funded Michigan-Wits collaborative. Many ideas in this book were generated in dialogue with scholars at these institutions and other workshops and conferences. Thank you to Emmanuel Akyeampong, Jody Benjamin, Keith Breckenridge, Emily Brownell, Brenda Chalfin, Barbara Cooper, Jean Comaroff, David Conrad, Clifton Crais, Joshua Grace, Kathryn de Luna, Maria Pia Donato, Barbara E. Frank, Mary E. Hicks, David Kneas, Abby J. Kinchy, Roderick McIntosh, Fiona McLaughlin, George Paul Meiu, Emily Lynn Osborn, Abena Dove Osseo-Asare, Tom Özden-Schilling, Roopali Phadke, James Scott, Jessica M. Smith, Benjamin Soares, Alioune Sow, Helen Tiley, Pablo D. Herrera Veitia, Luise White, Martha Wilfahrt, Alden Young, and the Mande Studies Association listserv. A W. E. B. Du Bois Research Institute McMillan-Stewart Fellowship at the Hutchins Center for African and African American Studies at Harvard gave me the time and resources to finish a draft of this book. I thank Henry Louis Gates Jr., Krishna Lewis, and Cornel West and the 2018–19 fellows.

I am fortunate for the collaboration with Duke University Press and its immensely skilled editorial team. Elizabeth Ault deftly guided me through each stage of publishing. I thank Benjamin Kossak and Susan Albury for close reading and timely feedback. It was a true gift to work with Tim Stallman, who designed the maps that grace these pages. Two anonymous reviewers, who read the manuscript during the height of the COVID-19 pandemic, helped make this a far better, and shorter, book.

No one has sacrificed more to see this book to completion than my family: the McNairs-Shermans, Oforis, Quarshies, and d'Avignon-Kriegs. I

thank Matekwor Ofori for inviting me into her family in the United States and Ghana and for investing her time and resources in helping our family grow and flourish. I am grateful for James Quarshie's curiosity, sense of humor, and warm welcome in Ghana. My desire to explore the world took root in the modest central Illinois ranch house of my late maternal grandmother, Ruthellen Kettler Pegg. In their own ways, Deborah d'Avignon and Sue d'Avignon modeled a life that traversed continents but always returned to the Adirondacks. Every day, I strive to be more like my sister, Sonya Kannam, and brother, Peter Kannam. Thank you for your love and energy and for reminding me of the ways of the Booble. Peter Andrew, Zachary, and Cole Kannam grew up alongside this book, happily diverting me to trails, ice-cream stands, and soccer games. This book is dedicated to my parents, Linda Pegg and Dana André d'Avignon, who have enriched my life beyond measure. They traveled half-way around the world to meet new friends and encouraged a life of the mind even when it took me far from them. As an artist and a scientist, my dad taught me to see research as a creative pursuit on a journey for knowledge that will span my lifetime. I would never have completed this book without my best friend and my editor, my mom. She read, and reread, every page of this book, every grant proposal, and every paper along the way. She taught me to listen to the quiet voice of my soul and to keep an eye upward, on the skies. This book was forged in the grace of her boundless love.

Nana Osei Quarshie, how many nights have I sat down to thank you? But the words fail me, so inseparable is this journey from your love. On laptops and crumpled papers, this book has traveled with us to Accra, Dakar, Marseilles, New York, and New Haven. From rat park to the crew, you made me laugh and helped me to see this project, and the world, anew. I thank you from the bottom of my heart for sharing Jude Tawia, our greatest pride and joy. You two have brought me more happiness than I ever thought possible. As I close this book, I am overwhelmed with gratitude and awe for what I have learned. Those I have mentioned briefly, or not at all, I thank you. In closing, my recourse is to a Pular tradition of leave-taking: please forgive me (*accanan hakke*).

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ORTHOGRAPHIC NOTES

Maninka and Pular are the language varieties most commonly spoken on the goldfields of Senegal, Mali, and Guinea. *Maninka* (Malinké in French) is the Manding dialect spoken in eastern Senegal, western Mali, and Guinea. *Maninka* is also an ethnonym used by speakers of this variety, many of whom claim heritage from the thirteenth-century Malian empire. Manding is a language continuum of the Mande language family spoken by more than thirty million people in West Africa, from Senegal to Burkina Faso. I use the term *Pular* to refer to the dialect of Fula spoken in southern Senegal and northern Guinea. Fula (Fulfulde, Fula, Fulani, Pular or Peul) is a language continuum of the West Atlantic branch of the Niger-Congo language family spoken by more than fifteen million people from the Atlantic coast in Senegal to the savannas of East Africa.

I have italicized non-English-language words in their initial usage in the book. Italicized words are in Maninka unless indicated (by context or explicitly) as Arabic, French, Pular, or Wolof. For words derived from Arabic commonly used in English, such as *jihad*, I use established Latin spellings without italics. I worked with Falaye Danfakha to translate interviews from Maninka into French. Falaye and Mohamadou “Pape” Diallo helped with some translations in Pular, and I completed others independently. French translations are my own. Any consistent approach to orthography in this book proved elusive due to the diversity of languages, time periods, and national alphabetic conventions at play. This heterogeneity reflects the linguistic diversity of the region and the uneven legacies of colonial languages, and Arabic language instruction, on linguistic norms. In transcribing African languages, I use a combination of simple phonetic and the official orthography of Senegal, where I conducted most of my interviews. For

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ease of reading, I do not use special characters or tonal diacritics. Whenever possible, I have avoided the use of plurals.

For the names of people and places, I generally followed French spellings and accents according to common usage in the West African country in question or as spelled by individuals and published authors. I have chosen to use the phonetic spellings of common words that begin with the sound “j,” such as juura and jalan. I retain the French spelling of “dia” for patronyms, such as Diallo and Diaby. When writing on the colonial era, I have kept the French names of colonies, such as “Soudan.”

All dates are Common Era (CE).

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ABBREVIATIONS

AOF	Afrique-Occidentale Française/French West Africa
BPS	Bloc Populaire Sénégalais
BRGM	Bureau de Recherches Géologiques et Minières
BRP	Bureau de Recherche de Pétrole
BUMIFOM	Bureau Minier de la France d’Outre-mer
CEA	Commissariat à l’Énergie Atomique
CFA	Communauté Financière Africaine
CSR	Corporate Social Responsibility
DFMG	Direction Fédérale des Mines et de la Géologie (French West Africa)
DMG	Direction des Mines et de la Géologie (Senegal)
FAC	Fonds d’Aide et de Coopération
IFAN	Institut Fondamental d’Afrique Noire
ILO	International Labour Organization
IST	Institut des Sciences de la Terre
KKI	Kédougou-Kéniéba Inlier
MDL	Mineral Deposits Limited
NGO	non-governmental organization
OECD	Organization for Economic Cooperation and Development
RDA	Rassemblement Démocratique Africain
SAP	structural adjustment program

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SEIS	social and environmental impact studies
UCAD	Université de Cheikh Anta Diop
UDRSO	Union Démocratique des Ressortissants du Sénégal Oriental
UN	United Nations

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Introduction

Geology and West African History

On a cloudless afternoon in June 2017, three Senegalese geologists visit the edge of the exploration permit of their employer, the small Australian gold-mining firm Bassari Resources.¹ The permit sits in the region of Kédougou, in southeastern Senegal, bordering Guinea and Mali. More than three-quarters of the region's surface area, which stands at over 16,000 square kilometers, is covered by gold-exploration permits and mining concessions. These geologists spent nearly a decade modeling the scope and concentration of gold within a dense basalt rock gold deposit known as Makabingui. Formerly a Maninka place name for a small stream, Makabingui now names a roughly one-million-ounce gold deposit lying directly underfoot. The geologists oversee the work of a Canadian firm subcontracted to diamond-drill core samples to reveal the mineral profile of soils hundreds of feet underground. The field is ochre red from iron-laden soils oxidizing in the savanna heat. Stripped of all foliage, the earth looks exposed and moonlike.

The muddy field is all that remained of the “battle for Makabingui,” a conflict that waxed and waned between the Australian firm and so-called artisanal miners—known as *orpailleurs* in Francophone West Africa—for several years.² The battle reached a crescendo in 2011 as the firm intensified its exploration of Makabingui. At the time, orpaillage was expanding to unprecedented scales in Kédougou. The region has a history of seasonal gold mining, excavating shallow pits with iron picks, dating to the medieval period. In the 2000s, orpaillage in Senegal was becoming more capitalized and mechanized. Emigrants from Senegal living in Spain and France sent gold detectors and hydraulic drills to brothers back home. With mortar pickers and dynamite, multiethnic teams of *orpailleurs* excavated deposits, such as Makabingui, that were impervious to hand tools. Bassari Resources lobbied the Senegalese state to expel the *orpailleurs* from their permit, claiming



Figure 1.1 A portion of Makabingui after it was bulldozed. Sambaranbugu, Senegal, 2014. Photograph by the author.

that “illegal miners” were “eating away” at its mining prospect. In late 2012, the Senegalese army bulldozed Makabingui (figure 1.1). Months later, *orpailleurs* reoccupied the deposit. In 2014, the state directed a second fleet of bulldozers to Makabingui and installed a gendarmerie post in a shipping container to guard the field.³ As of this writing, the Senegalese state has approved a concession to exploit Makabingui as an open-pit mine, the third of its kind in Senegal. Meanwhile, *orpailleurs* have turned to other deposits in Kédougou.

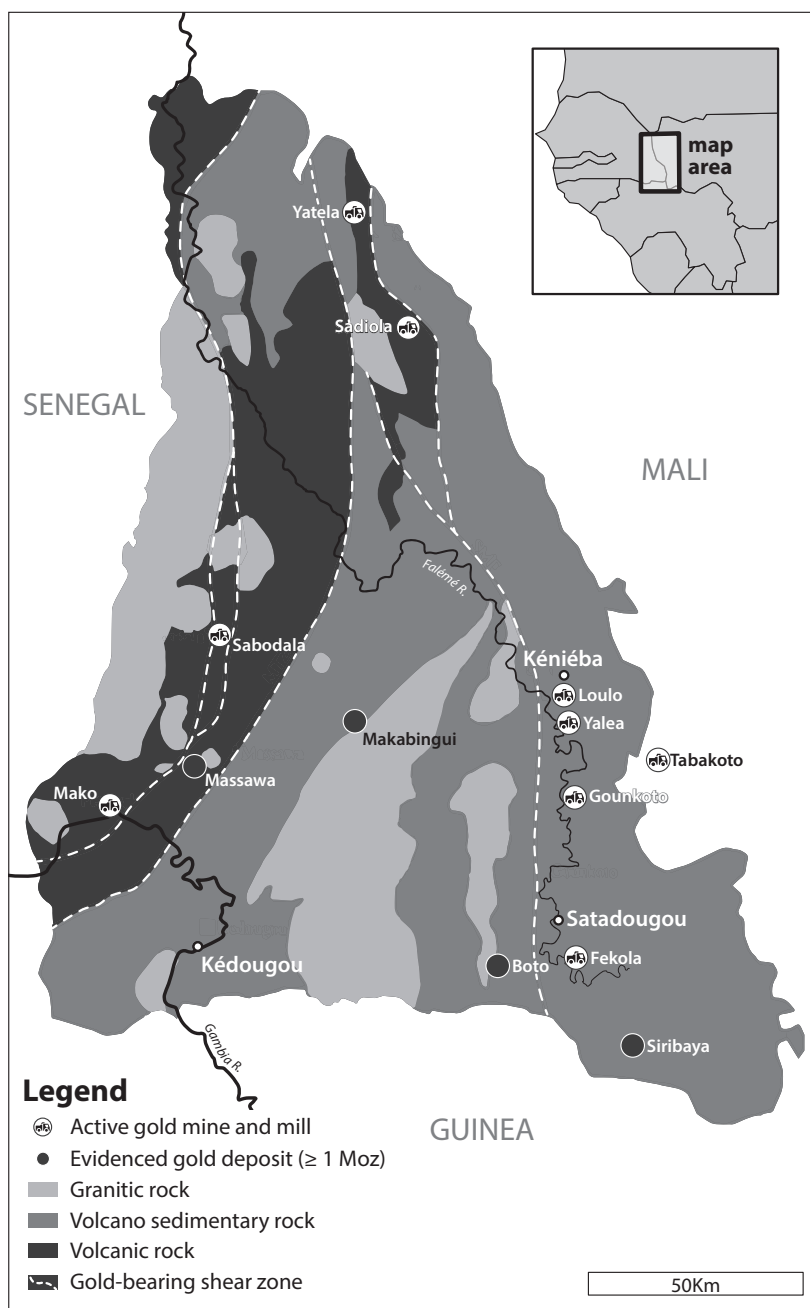
The Australian firm won the battle for Makabingui, but the war for the future of hundreds of goldfields in West Africa is ongoing. Senegal sits on the western edge of a geological formation known as the Birimian Greenstone Belt. Created between 2.2 billion and 2.1 billion years ago, Birimian rocks contain many of the region’s gold, iron, and diamond deposits. Since the late 1990s, a gold-mining boom has been gaining speed across West Africa’s Birimian rocks. It was born of a conjuncture of rising gold prices, the widespread adoption of pro-market mining codes, and new mining technologies that reduced reliance on local labor and infrastructure. Mining firms based in former British settler colonies—the United States, Canada, Australia, and

South Africa—sought new outlets for their skills and capital in Africa. By the early 2000s, Guinea and Mali were among Africa's top gold producers, with Burkina Faso close behind. Senegal opened its first open-pit mine in 2008.

In promotional films targeted to investors, exploration firms and mining companies promote savanna West Africa as an “emergent” and “virtually underexplored” gold belt. Such phrases are paired with descriptions of the region as “sparsely populated,” suggesting the possibility of extraction with minimal human interference. This is an aspiration to removal from the social world in which these gold deposits are embedded.⁴ But talk of undiscovered riches lying in wait maps poorly onto a region where men and women have been mining, processing, and trading gold for more than a millennium. Kédougou occupies a Birimian formation that geologists call the Kédougou-Kéniéba Inlier (KKI).⁵ The KKI aligns with an ancient gold-producing province known in medieval Arabic chronicles as Bambuk (map I.1). By the ninth century, gold from Bambuk was sold to camel caravans across the Sahara Desert, fueling the rise of West African empires and furnishing the mints of Mediterranean city-states until the European encounter with the Americas in the fifteenth century.

Gold is also integral to the histories of lineages and clans that settled Bambuk in search of fresh gold deposits of their own. When famine and war depleted granaries, gold was bartered for grain. In the fifteenth century, hope of accessing the fabled goldfields of Bambuk enticed Portuguese sailors to navigate down the West African coast. Decades later, this seaborne encounter set the transatlantic slave trade in motion. In the nineteenth century, the French empire united the goldfields of the West African savanna under a new foreign power. French ambitions to transform Bambuk into the “Californie” of France motivated conquest campaigns and shaped imperial mining policies. This is not a new mining frontier. It is a very old one, carved open by generations of West Africans.

A Ritual Geology situates what economists have coined the “twenty-first century scramble for Africa's resources” within two intertwined histories.⁶ The first thread documents how the French colonial state, and its postcolonial successors, regulated orpaillage while also profiting from the gold discoveries of West African miners. African mining economies, I argue, were central to the emergence of modern exploration geology in West Africa. This claim inserts struggles over mineral discovery into the history of mining capitalism in Africa, a field that has studied African miners as laborers and victims of land alienation, but rarely as intellectual actors. The second thread of this book concerns how West African societies have cultivated



Map I.1 Major gold mines and prospects on the Kédougou-Kéniéba Inlier, which aligns with the historical gold-producing region of Bambuk.

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knowledge about the underground, made claims to mineralized land, and managed gold mining and trade. By the time of French colonial conquest, *orpailleurs* elaborated a “ritual geology” across the Birimian rocks of savanna West Africa. I define a ritual geology as a set of practices, prohibitions, and cosmological engagements with the earth that are widely shared and cultivated across a regional geological formation. I draw my concept of “ritual” from the work of the late religious studies scholar Catherine Bell, who understood ritual as a category of practice that can be sacred or nonsacred in form. Orpillage shares a number of attributes that Bell identified for rituals in other contexts. They include an organized set of expressions or gestures or a code of communication; the attempt to demarcate, and to make activities consistent with, preceding cultural practices; rules that are imposed on, and meant to restrict, human action and interaction; and shared symbolism that is sacred in nature.⁷

West Africa’s ritual geology is neither monolithic nor static. It is similar to a language family with many varieties: some are mutually intelligible, others share only core vocabularies and grammatical forms. Languages shift over time from the innovations of their speakers, encounters with new languages and ecological change, among other factors. West Africa’s ritual geology has also evolved and adapted to different corridors in response to shifts in regional markets, migration, and the arrival of tools from elsewhere on the globe.⁸ In its various iterations, this ritual geology has shaped how Africans governed mineralized land and people, including miners, traders, state makers, and earth scientists. Scholars have glimpsed the edges of this ritual geology. But studies bound by region, colony, ethnic group, or nation-state have failed to capture the spatial and temporal breadth of this regional phenomenon. By placing data from my research in dialogue with historical, archeological, and ethnographic studies from across the Sahel and savanna, this book models a new regional approach to African history: one centered on geology.

I also explore how different groups in West Africa mobilize the past to make claims to gold-bearing land to the state, to one another, and to corporate capital. To demonstrate precisely how the past resonates in the present, I move across several temporal and geographic scales. My account begins and ends on the goldfields of Kédougou in the 2010s, when I carried out ethnography, oral histories, and archival research. I weave these sources together to explore the history and active life of orpillage in southeastern Senegal, a region that is central to the history of gold in West Africa.⁹ The book’s middle chapters open onto the goldfields of modern Guinea, Mali,

and Senegal from the medieval period to the Atlantic age through the French occupation of the western savanna in the late nineteenth century. I then track attempts by the French colonial state, and independent West African states, to profit from orpillage as a source of revenue and subterranean knowledge, while excluding agrarian residents from durable rights to minerals.¹⁰ This project is framed by the ongoing corporate enclosure of West Africa's goldfields, which threatens the future of one of the world's oldest indigenous gold-mining economies. Thus, this book is also an account of the meaning of history in an urgent present.

Making “Artisanal Miners”

For centuries, orpillage has been an engine of trade, a famine resource, and the platform for a multiethnic, seasonal urban form in agrarian West Africa. Orpillage was also the largest mining industry of France's West African empire until the 1950s. Yet until recently, it was the subject of only a handful of articles.¹¹ Orpillage has been occluded from the historical record by enduring representations of African-controlled mining economies—by states, international agencies, and the media—as backward, primitive, and criminal. This problem has long haunted the study of technology in Africa. Two decades ago, it was possible to claim that Africa had been excluded from global histories of technology except as a victim of European technological imperialism or as a recipient of technology “transfers” from elsewhere.¹² Fortunately, this is no longer the case. Studies of uranium mining, oncology, car repair, moneylending platforms, firearms, hunting, and healing plants have placed Africa at the center of global networks of innovation.¹³ This scholarship resonates with decades of archeological research documenting the sophistication of African metallurgy, plant domestication, and food processing over the past two millennia.¹⁴ While scholars have refuted assumptions of primitivism in African technological practice, we have only begun to interrogate how “technical” categories themselves may perpetuate these characterizations. It is precisely because technical categories appear natural—and thus beyond the realm of public debate—that they are such powerful instruments for shaping the world in their image.¹⁵ “Artisanal mining” is one such category.

What is artisanal mining? States, international agencies, and mining firms define the term according to different characteristics: techniques (“low tech”), labor requirements (“no mechanization” or “labor-intensive”), or legal status (“absence of formalization,” “illegal,” or “lack of adequate reg-

ulatory framework”).¹⁶ A World Bank report released in 2009 describes it as mining that relies on “low investment, labor intensive local production, informality, as well as no or low levels of mechanization.”¹⁷ These reports are not transparent accounts of technological practice. Rather, they define the artisanal miner in relationship to an implied counterpart: the industrial miner. In colonial Africa, the industrial miner was racialized as a white European and gendered as male. This colonial binary is perpetuated in contemporary policies and descriptions of mining practices around the globe.

artisanal miner = third world, illegal, primitive, local, customary, Black/
Brown

industrial miner = first world, legal, technologically advanced, global,
modern, white

The precise terms attached to these categories have shifted across time, inflected by new laws and linguistic norms. In much of Africa, the category of the artisanal miner emerged from colonial-era laws regulating “customary mining,” a racialized legal framework applied only to the extractive activities of African subjects.¹⁸ In the mid-twentieth century, as African states were gaining independence, the term *artisanal* replaced *customary* in mining. Many twenty-first century media and policy reports still describe artisanal mining as “primitive” and “simple,” evoking tired colonial tropes of technological backwardness and primordialism. This is not a coincidence. Artisanal mining remains concentrated in the formerly colonized world: Africa, Southeast Asia, the Eurasian Steppe, Oceania, and Latin America. While artisanal mining is certainly associated with enduring agrarian poverty in these regions, it is also the outgrowth of an unfinished struggle over mineral rights that began with the colonial enclosures of mineralized land. Similar to poaching, artisanal mining is a category of technological practice produced by property laws that sought to legitimize certain uses of nature and to criminalize others.¹⁹

Artisanal mining forces difficult questions onto the table. Unregulated labor-intensive mining contributes to deforestation in the Amazon; child trafficking in coltan mines in the Democratic Republic of Congo; and the methylmercury contamination of groundwater around the globe.²⁰ At the same time, artisanal mining offers a pathway out of poverty for many rural citizens, an alternative to soil-depleting cash cropping or migration to megacities (figure I.2).²¹ Artisanal mining is unlikely to go away anytime soon, a fact recognized by the World Bank and the United Nations. After decades of



Figure 1.2 Orpaillage team in Tinkoto, Senegal, 2014. Photograph by the author.

funding programs designed to discourage or to create alternatives to artisanal mining, these organizations now pledge millions of dollars to formalize the sector in the global South.²² In a sign of just how far the negative media image of artisanal mining has come, in 2017 *The Economist* published the article “In Praise of Small Miners,” which celebrated artisanal mining for creating jobs in “some of the poorest places on earth” at a pace that far outstripped jobs generated by corporate mines.²³ Some scholars even suggest that artisanal mining, as a citizen-led counterpart to corporate mining, is a democratizing political force.²⁴

Reassessments of artisanal mining as democratic and innovative—in contrast to the destructive forces of corporate mining—reverse the values of the artisanal-versus-industrial binary while leaving the binary itself intact. This binary is reinforced by scholars who tend to study either industrial or artisanal mining. Ethnographies of extraction in twenty-first-century Africa illustrate this point. On one hand, there is a rich stream of ethnographic literature on the technical, fiscal, and moral arrangements of corporate mining in Africa.²⁵ Meanwhile, a separate group of ethnographers examine forms of economic subjectivity, consumption, and masculinity in unregulated mining sites.²⁶ However, beyond a handful of articles on conflicts between artisanal and corporate gold miners, these studies do not address the historical rela-

tionship between artisanal and industrial mining.²⁷ The result is a problem of representation, to extend a critique the historian Steven Feierman once waged against studies of capitalism and Christianity in Africa.²⁸ Studies of corporate and artisanal mining in one African locale or another are often aggregated only on the basis of their shared relationship to neoliberal market reforms, a rise in global consumer demand for minerals used in smartphone manufacture, or the vertical integration of multinational mining corporations. The “African” side of the equation remains local and fragmented: a case study, but not the heart, of a global story.

This book challenges the reification of industrial and artisanal mining through the work of history. It does so by situating colonial and contemporary Euro-American mining ventures within the unfolding cultural and technical practices of *orpaillage*, a regional mining tradition that has flourished on the West African savanna for two millennia. The term *tradition* is a contested one in African history. Colonial officials often described African traditions, more often glossed as “customs,” as static practices tied to rural, ethnic spaces. I draw on a very different concept of tradition, defined by the historian Jan Vansina as “a collective body of cognitive and physical representations shared by their members.”²⁹ Drawing on a deep time study of the “Rainforest Tradition” of Bantu-speakers in the Congo basin, Vansina argued that traditions are a dynamic constellation of practices and beliefs inherited and transmitted from one generation to the next through narratives, political institutions, rituals, and bodily praxis. Far from preserving a set of timeless or rote practices, traditions require autonomy and the capacity to change. Once born, traditions can endure for millennia. But they can also die when the fundamental principles of the tradition are abandoned by its carriers in favor of another one.³⁰ Vansina’s formulation provides a framework to compare traditions from around the globe in a meaningful, nonhierarchical fashion. We can, for example, compare elements of the Abrahamic religious traditions to those of Congo’s Rainforest Tradition, which flourished from 500 to 1900, when the cumulative effects of the Atlantic slave trade and colonialism led to its demise.

While Vansina’s Rainforest Tradition incorporated many dimensions of productive and ritual communal life, my notion of a mining tradition is more constrained in scope. It refers to the collective body of cosmological engagements, epistemic orientations, and physical practices tied to prospecting, extracting, and processing minerals. A mining tradition is a scientific tradition—one that entails, as all historical scientific traditions do, distinctive ritual and cognitive engagements with the physical world.³¹ I have chosen the

French word *orpaillage* to describe this West African mining tradition despite the term's colonial origins. In the eighteenth and nineteenth centuries, French explorers and traders plying the Senegal River used the term to gloss the diverse activities relating to prospecting, excavating, and processing gold carried about by African miners in Bambuk. By the beginning of the twentieth century in metropolitan France, the term *orpailleur* referred to what is known as gold panning in English: the separation of gold flakes from soil by hand.³² In French West Africa, however, the term was racialized. Colonial officials called Africans *orpailleurs* and Europeans miners (*mineurs*), even when Africans excavated underground tunnels and Europeans panned for gold. However, in recent decades in Francophone West Africa, the valence of the term has shifted as men and women have adopted it to describe their work. Today, the male-gendered term *orpailleur* is used by men (and many women) who consider *orpaillage* their occupation. Following their lead, I use the term *orpaillage* to refer to the dynamic West African mining histories of which these individuals are part.³³

I have identified five broad characteristics that constitute the mining tradition of *orpaillage* in West Africa as it has been practiced over the past several centuries. First, *orpaillage* is carried out geographically on gold-bearing Birimian rocks on the savanna, a bioclimatic zone to the south of the Sahel. Much of this region came under French colonial rule in the late nineteenth century. Second, *orpaillage* is organized around a loose set of political and ritual organizations that are understood by its practitioners as ethnic Maninka in origin. Maninka is a language variety of Manding, a language continuum spoken by upward of thirty million people in West Africa that includes Bambara, Maninka, Mandinka, and Jula.³⁴ *Maninka* is also an ethnonym used by speakers of this variety, most of whom claim heritage from the thirteenth-century Malian empire. By the eighteenth century, Maninka was a lingua franca in gold-bearing regions of Senegal, Mali, and Guinea.³⁵ Third, gold is considered the property of underground spirits. This is a central tenet of West Africa's ritual geology, which I return to later. Fourth, *orpaillage* is a spatially extensive mining tradition based on seasonal mobility. Archeological evidence of alluvial gold mining confirms that contemporary spatial practices of *orpaillage* are of some antiquity.³⁶ Communities of miners have tended to mine a given deposit for several weeks, or months, before moving to a new goldfield. *Orpailleurs* often returned to abandoned deposits in later years after heavy rains redistributed gold flakes in the substrata. This practice mirrors the logic of shifting cultivation, an agricultural system practiced widely on the savanna, whereby

farmers clear forest and cultivate a plot of land for several years before leaving it fallow for seven years or more.³⁷ The extensive character of orpaillage contrasts with capital-intensive mining, which aims to deplete gold entirely from a parcel of the earth.

Fifth, orpaillage is an incorporative institution adapted to cyclical drought. Mining sites across the savanna have long welcomed strangers, and hosting was a reciprocal expectation. Many West African societies place a high value on strangers, one ideological repercussion of the fact that labor, rather than land, was often the limiting factor to production.³⁸ But hospitality on the goldfields was also tied to the importance of gold as an agrarian resource during times of drought and famine.³⁹ Gold was an open resource, available to anyone willing to mine it. If goldfields near home became depleted, one could migrate to a distant goldfield and expect to be welcomed. While some lineages specialized in orpaillage, it was never the exclusive purview of a single craft, ethnic, or religious group.⁴⁰ This distinguishes orpaillage from iron smelting, wood carving, and leather-working: occupations carried out exclusively by craft specialists in savanna West Africa since the medieval period. Orpaillage did attract particular segments of the population and not others. It was, and remains, physically arduous and dangerous labor performed during the hottest time of the year, when temperatures can reach 120 degrees Fahrenheit. Elites opted out of mining, and so did Muslims, for reasons elaborated later. The poor, practitioners of African religions, and the formerly enslaved dominated orpaillage because they lacked the capital to pursue other activities. The importance of orpaillage to agrarian life in West Africa has waxed and waned with shifting regional ecological circumstances and fluctuating prices for gold on global markets (figure I.3).

Neither orpaillage nor the mining techniques of visitors to West Africa's goldfields were a hermetically sealed system. For centuries, orpailleurs have incorporated efficacious techniques from other global mining traditions they encountered. These include metal balances and numismatic systems from medieval North Africa; river-damming techniques from colonial-era French prospectors; and cyanide heap leaching from chemists working for multinational mining operations in the early 2000s. West African miners have also exchanged techniques with one another across vast geographies. During the Atlantic period, mining techniques from the southern forests of modern Ghana spread into parts of Burkina Faso, just as Muslim measuring systems for gold dust and Manding-derived mining vocabulary appeared in Akan language varieties spoken in Ghana's gold-rich southern forests.

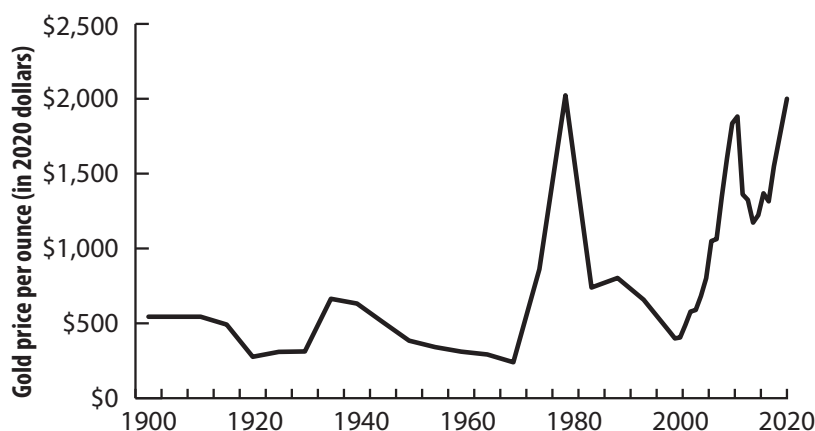


Figure 1.3 Gold prices, ca. 1900–2020.

Scholars tend to frame mining corporations as transnational, operating at a more encompassing spatial scale than artisanal mining, which is described as community-based, grassroots, and local.⁴¹ But the technological and financial networks of *orpailleurs* span the globe, similar to those of corporate miners. Since the ninth century, West Africa’s gold has reached across the Sahara and into the Arabian Peninsula. Today, *orpaillage* is supported by manufacturing hubs and trading diasporas in Dubai, Delhi, and Amsterdam.

Much of the knowledge produced and transmitted by *orpailleurs* is embodied. This includes techniques of digging, winnowing, and smelling the earth for gold. It also entails embodied philosophies of human-spirit interactions, such as stories of the bones of suffocated miners turning to gold underground (chapter 7). *Orpaillage* invites comparisons with modes of knowledge embedded in African art—the subject of a rich scholarship in its attention to skill, form, and knowledge transmission.⁴² Approaching *orpaillage* as both an economy and an art allows us to see how *orpailleurs* creatively combined dynamic West African techniques and ritual complexes tied to Birimian rocks with innovations from elsewhere. The result, to quote the art historian Chika Okeke-Agulu, are “messy, fraught, and inevitably distinctive” forms of extractive practice and political subjectivity.⁴³

The material distribution of gold in West Africa has facilitated the emergence of widespread ritual and social institutions tied to *orpaillage*.⁴⁴ In Birimian rocks, gold is found in either secondary or primary deposits. In primary deposits, gold is amalgamated to other minerals in lode ore. The

weathering of primary deposits creates secondary ones as gold flakes are dislodged from ores, transported through the water table, and redistributed as “free” particles among sands, silts, and sediments. African farmers and hunters glimpsed gold flakes in plant roots and along streams after a hard rain. For much of the past millennium, orpailleurs excavated placer deposits on riverways or desiccated paleo-channels covered by a few meters of sterile rock and sand. Mining alluvial gold requires minimal processing, making the activity accessible to men and women, the elderly, the young, and the disabled. The ubiquity of gold prevented a single sovereign or state from monopolizing this resource. Control over goldfields was decentralized, and gold was incorporated into the aesthetics and cosmologies of diverse West African societies.

My approach to orpillage—as a regional mining tradition with considerable historical continuity—is not one-size-fits-all for studies of artisanal mining economies. In India and Mongolia, for example, most artisanal mining is recent, with few linkages to historical modes of income generation.⁴⁵ There are important distinctions within Africa, as well. In South Africa and Central Africa, where industrial-scale mines have operated for over a century, scholars have analyzed the recent growth of artisanal mining through the lens of postindustrial ruination and post-wage work.⁴⁶ By contrast, there was very little capital-intensive mining in savanna West Africa until two decades ago. Wage work has always been the exception, not the norm. African-controlled orpillage was the dominant mode of extraction. Such divergent historical trajectories require different genres of narration. Indeed, any activity that more than one hundred million people around the globe rely on as their primary source of income has many stories to tell. This book is not a universal tale; it is a regional one grounded in West Africa’s Birimian rocks.

Searching for Subterranean Knowledge

A Ritual Geology trains its focus on the decades—centuries, in some cases—of mineral exploration that precede the opening of a mine, whether corporate or artisanal in scope. This approach departs from most scholarship on mining in the global South, which examines the extractive process itself or the social life of decline “after the rush.”⁴⁷ It is during exploration, I argue, that the expectations and grievances for future extractive projects take shape in the political imagination and in modes of storytelling.⁴⁸ Resource exploration is uneven and time-consuming, contingent on capricious

market conditions and luck. Geologists can spend decades studying a zone before a mine is established, and most exploration projects never identify a mine-worthy prospect. This uncertainty, paired with the latent potential of discovery, shapes the sociology of the spaces where mineral research is concentrated.

Southeastern Senegal is a place where histories of mineral research have accumulated on the landscape, in individual biographies, and in the settlement narratives of villages. The search for gold in this region has unfolded on multiple temporal horizons. Maninka lineages have searched for gold for generations, transmitting techniques for gold prospecting to their children. Knowledge of surface and subsurface gold mineralization is recorded through bodily praxis, the deft manufacture and use of locally forged tools, and storytelling embedded in features of the landscape and family genealogies. As early as the seventeenth century, European explorers traveled to Bambuk to document the location of “native mines” and observe the techniques of African miners. During French colonialism, and after West African states gained independence, geologists hired by states and private companies continued to shadow *orpailleurs* to generate baseline data for geological maps (see chapters 4 and 5). Shadowing rarely produced immediate discoveries. Resource exploration was slow and cumulative. Rising metal prices attracted new generations of geologists who updated old maps with geochemical and aeromagnetic techniques. Some villages in Kédougou have hosted mineral exploration camps for six decades. While the personnel and names of firms have changed, exploration has continued, animating expectations for a future mine.

This book is one of the first sustained accounts of the central role of African mining expertise in geological exploration in colonial and postcolonial Africa (figure I.4).⁴⁹ In recent years, the history of science has expanded beyond its conventional geographic focus of Europe and North America to document the contribution of non-Western experts to scientific discoveries formerly credited to the “West.” We have learned that many technical innovations passed off as European were, in fact, the hybrid product of cosmopolitan “contact zones” populated by Asian, Indigenous North American, Caribbean, and African healers, traders, farmers, and blacksmiths.⁵⁰ For colonial Africa, it is now well established that European agronomists, ethnographers, botanists, and cartographers garnered methodological and conceptual insights from African healers, assistants, hunters, and translators “in the field.”⁵¹ In a parallel vein, scholars of the Atlantic world have documented that Africans contributed not only brute labor to plantations

Figure I.4 Moussa Diba, geologist-engineer and exploration manager of Bassari Resources, examining a rock specimen. Duuta, Senegal, 2017. Photograph by the author.



in the Americas but also expertise in pharmacotherapies, rice farming, and animal pasturage.⁵² A similar consensus is emerging in studies of how African healers shaped medical practice on a global scale through their work on slave ships and in ports across the Atlantic world.⁵³

While historians have shown that Africans were always part of global scientific production, they have attended less to how laws determined the benefactors of epistemic exchange under conditions of sustained inequality.⁵⁴ An exception to this in African history are studies of the exchange and appropriation of botanical knowledge, or “bioprospecting.” Patents have enabled some scientists and corporations, including African ones, to claim ownership over healing formulas to the exclusion of others.⁵⁵ Questions of discovery are rarely straightforward. For example, in tracing the journey of healing plants from Africa into pharmaceutical formulas, the historian Abena Dove Osseo-Asare contrasts the “fragmented, synchronous stories of shared creation” of plant knowledge produced through the interactions

of African healers, scientists, and corporations with narratives of “priority” that insist with certitude that “we know the time of each discovery.”⁵⁶

The parallels with mineral discovery in Africa are remarkable. Most European mining enterprises in colonial Africa began as “takeovers” of African mines, followed by an investment in capital. This was the case for gold-mining industries in nineteenth-century South Africa and Ghana and tin mining in the early twentieth century on the Jos Plateau of Nigeria.⁵⁷ Despite the ubiquity of these practices, political struggles over mineral discovery are largely absent from histories of mining in Africa, which are focused on capitalist expansion, the exploitation of land and labor, and the emergence of collective and ethnic politics in mining towns.⁵⁸ Of course, many Africans were exploited workers in colonial-era mines. But others generated scientific knowledge on which industrial mines depended—a fact elided in the historiography. Regional divergences in mining developments and mineral laws may account for this oversight. Many southern African colonies outlawed mining by Africans and alienated land, forcing Africans to labor on European-owned mines. But not all colonial regimes criminalized mining by Africans. Colonial officials in French West Africa encouraged orpillage, relied on African authorities to manage gold mining, and profited by taxing the gold trade and exports.

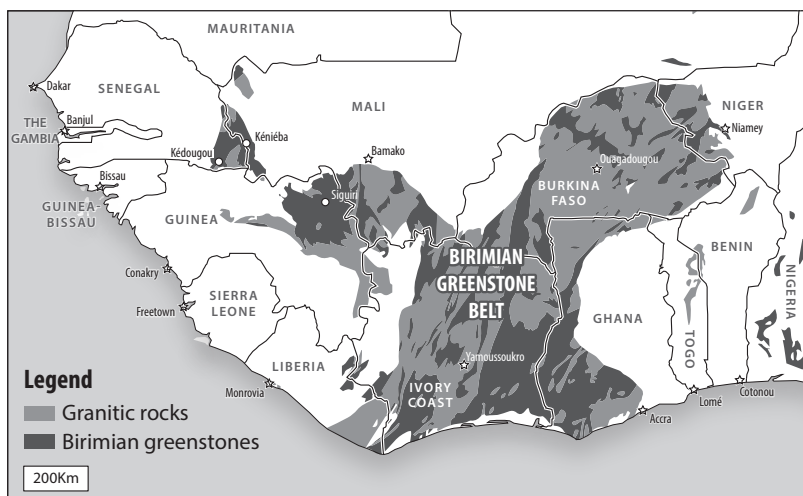
In tracking how orpillage shaped exploration geology, this book also examines how West African societies give political form to geological processes.⁵⁹ Historians and archeologists have shown how African societies managed two-dimensional geographic space. Examples include accounts of road making by the Asante kingdom and the organization of sacred space in the stone architecture of medieval Zimbabwe.⁶⁰ Studies of cartography reveal how colonial and postcolonial African states used maps to rationalize landscapes for taxation, to segregate European settlers from Black Africans, and to fix pastoralists and mobile agriculturalists into place-bound “ethnic groups.”⁶¹ By contrast, there are few accounts of how African polities, lineages, or individuals managed three-dimensional resources, such as water, mineral reserves, and airspace. Historians of Africa could benefit from engaging with an emergent literature in critical geography on “vertical geopolitics.”⁶² Research on “volumetric” qualities of state territory—the management of aquifers and underground tunnels; the mapping of subterranean minerals—challenges the horizontal orientation of most theories of state and corporate power.⁶³ These issues are of particular interest in Africa, where the capacity of the state to conduct geological surveys was historically weak. At the same time, the continent is home to rich regional traditions of

mining and well digging that have rendered the subsoil knowable, calculable, and subject to competing use rights. The history of how African societies have come to know the underground remains to be written.

I use the term *geology* in this book in two registers. For one, I discuss geology as a scientific discipline and geologists as trained professionals in this field. As an academic field that coalesced in Europe in the eighteenth and nineteenth centuries, geology deals with the history of the earth and its life, especially as recorded in rocks and sedimentary strata. Second, I use the terms *geology*, *geologic*, and *geological* to describe the actual physical formations and processes of the earth. Examples includes the “geology of Senegal” or the “geologic maps of West Africa.” The concept of a ritual geology falls into this category. Of course, the two meanings of *geology* are interrelated. As the geographer Kathryn Yusoff argues, the nomenclature used by the discipline and practice of “White geology,” as Yusoff calls it, took shape in racist imperial formations, where geology was built on the idea of the inhuman that “doubled as a notion of property.” Yusoff calls on scholars to develop a “different economy of description that might give rise to a less deadly understanding of materiality.”⁶⁴ I heeded this call by centering how West African orpailleurs themselves named and modeled the underground. In so doing, they shaped the methods of what became known as the discipline of geology, though often not on terms of their own choosing.

Pagans, Muslims, and Birimian Rocks

Another conceptual thread of this book concerns the sacred engagement of West African societies with geological formations—in this case, Birimian rocks (map I.2). Despite a renewed interest in the role of West Africa’s gold in early globalization and trade, we have few accounts of what gold and gold-bearing land meant to the region’s miners.⁶⁵ The diverse communities who mined gold over the past two millennia practiced ancestral religions, Islam, and blended religious traditions. But by the eighteenth and nineteenth centuries, a set of practices, prohibitions, and cosmological notions were shared broadly by gold miners that formed a regional “ritual geology.” Since the medieval period, there is evidence that orpillage was predicated on a sacrificial exchange relationship between orpailleurs and territorial spirits, considered the guardians of this metal (see chapter 2). Another tenet of the ritual geology of West Africa’s Birimian rocks is an ideological opposition between gold mining and Islam. By the eleventh century, many ruling dynasties on the Sahel had converted to Islam, strengthening bonds of trade,



Map 1.2 West Africa's Birimian Greenstone Belt.

scholarship, and law across the Sahara. However, for centuries—and well into the twentieth century in some corridors—gold miners on the savanna resisted Islam and overrule by Muslims. This earned orpailleurs a reputation as *pagans*, a term I use in this book to gloss the views of African and non-African Muslims toward practitioners of *ancestral religious traditions*.⁶⁶

Geology played a role in the religious history of gold-producing zones. The same geological processes that injected gold veins into quartz rock generated rocky soils and rock escarpments. This land was undesirable to centralized states that relied on agricultural surplus. Birimian formations resembled what the political scientist James Scott calls “shatter zones:” isolated and hostile terrain settled by people fleeing state-making projects.⁶⁷ Goldfields became dominions of ancestral religious traditions and spaces of ritual innovation as refugees fleeing Muslim overrule settled on Birimian rocks, intermingled, and created new religious traditions.⁶⁸ Opposition to Islam on the goldfields may have been grounded in a desire for religious autonomy, a mode of resistance to becoming an economic subject of the state, or both. While the ritual cosmology of orpillage was marked by opposition to Islam, the two deeply influenced each other.

Attention to the dialogical relationship between geology and religious practice generates new spatial units of analysis for environmental history.⁶⁹ Oceans, archipelagos, and river basins feature prominently in the subfield.⁷⁰

But historians of the environment have yet to explore how geological formations shape political and religious life. Scholars of mining have long documented the saturation of mining tunnels and quarries with ritual protocols.⁷¹ For much of recorded history, mining has been associated with risk, luck, and proximity to the underworld of the Abrahamic tradition and other “earth-beings” who occupy mineral-rich mountains.⁷² But studies of mining have tended to center on a single mining site, ethnic group, or urban center. A focus on narrow spatial corridors can miss broader regional patterns. Do geological formations generate a material platform for the exchange of sacred engagements with the earth? Are some ritual practices tied to mining shared across geological belts as ideas and practices are passed from one mineral deposit to another? I address these questions by framing orpillage as a regional institution that developed in dialogue with Birimian rock formations.

In narrating this history, I draw inspiration from Walter Rodney’s work on the Upper Guinea Coast and Boubacar Barry’s on Greater Senegambia. These historians pioneered regional approaches to West African history by tracing the spatial connections forged by African traders, political and religious movements, and the social sinews formed across river basin ecology.⁷³ The scale of their work was political. It challenged the tendency of ethnographers to study individual “tribes” in relative isolation from one another and of historians to project the borders of colonial and independent African states onto the precolonial past. Following Rodney and Barry, the geographic scope of this book emerges from tracking the movements of orpailleurs, their rituals, and their techniques across the savanna.

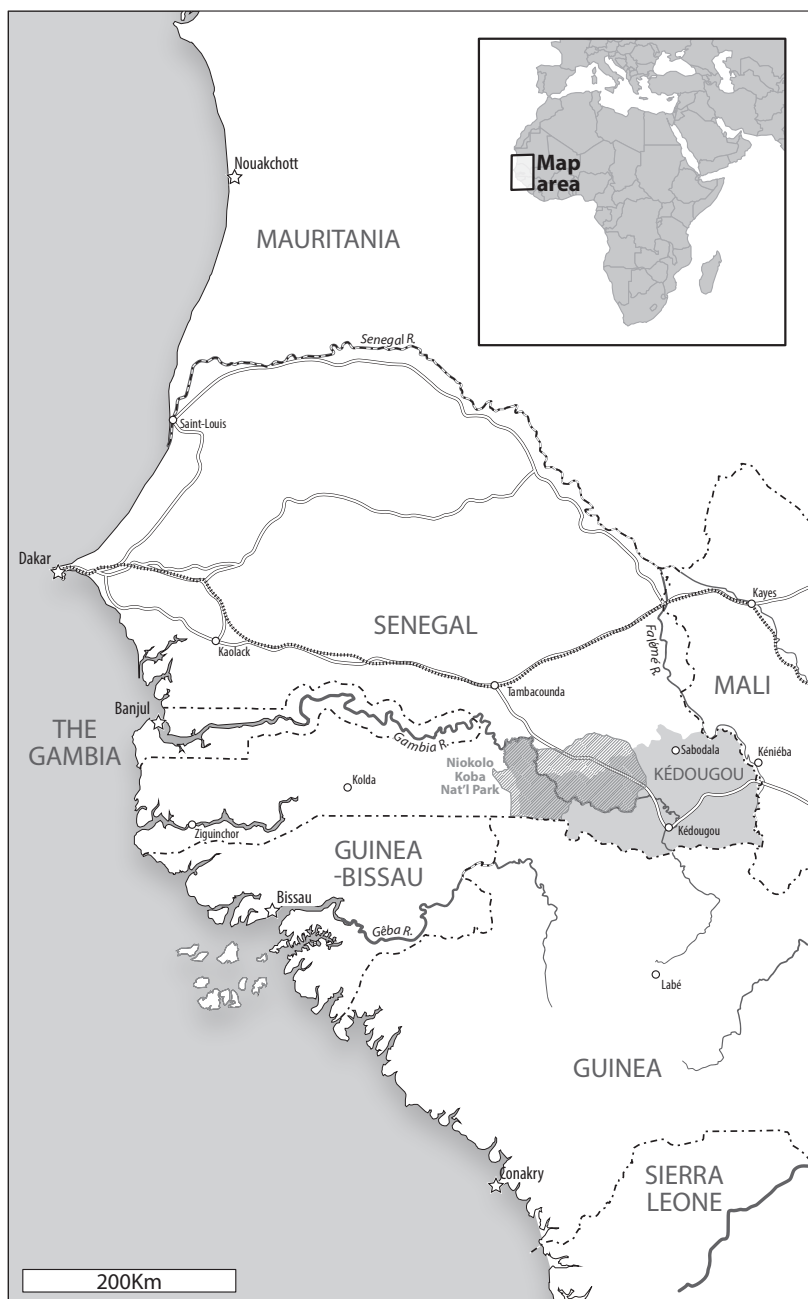
West Africa’s ritual geology challenges the common historiographical framing of ancestral religious practices in West Africa as more localized than their implicit counterparts: Islam and Christianity.⁷⁴ Over the past decade, scholars of Islam in West Africa have adopted broader regional and temporal scales to demonstrate how West African Muslim clerics, Qur’anic schoolteachers, and empire builders shaped the broader Islamic world and created expansive Islamic-based religious movements and forms of embodied knowledge.⁷⁵ But Islam was not the only religious tradition that traveled in medieval or Atlantic-era West Africa. By the Atlantic age, and likely earlier, ritual institutions tied to orpillage were spread along goldfields from Senegal in the east to Burkina Faso in the west. These ritual complexes were not “local,” even though local conditions shaped dimensions of their practice. Jean Allman and John Parker argue a similar point in their history of Tongnaab, an ancestor-deity of Tallensi origin. In the early twentieth century, Tongnaab spread southward from the savanna to the Akan forest

and trading towns of the Gold Coast, where it became a powerful witch-finding deity. As Allman and Parker argue, indigenous African gods and their congregations, far from being a “localized phenomenon rooted in a fixed ritual landscape,” evolved across “great distances and transcended a variety of political, cultural, and ecological frontiers,” as did Christianity and Islam.⁷⁶ A similar dynamic of “trans-regional ritual dialogue” was at play on the goldfields. However, in contrast to Tongnaab’s spread over several decades, this ritual geology spread piecemeal across centuries and left sparse records. West Africa’s ritual geology fell short of constituting a “religion” in its own right, as it was never united by a single prophet, medium, shrine, or liturgical tradition. Orpailleurs, blacksmiths, and traders participated in it, but they did not identify with gold mining as a religious category of belonging. The ritual geology of the savanna was eclectic, adapted to different gods and social circumstances.

Kédougou, Senegal

The goldfields of Kédougou, Senegal, are the vantage point from which I narrate this regional history of struggles over mineralized land.⁷⁷ Situated in the country’s southeastern corner, Kédougou is a geological and cultural anomaly within modern Senegal. Much of Senegal sits less than three hundred feet above sea level. Senegal’s landscape is sparse and flat, covered in young sedimentary depositions of silty gray soils spread from the Atlantic coast across the middle belt of the country, known as the peanut basins. These silts supported the peanut export economy of colonial Senegal and make up the cultural heartland of Wolof-speakers and the Muslim Sufi order of the Muridiyya, or “Mourides.”⁷⁸ By contrast, Kédougou occupies ancient gold-bearing Birimian rocks and is bordered to the south by the foothills of the Fouta Djallon mountains. It also occupies the headwaters of the river basins of the Gambia and the Falémé, a tributary of the Senegal River that marks Senegal’s border with Mali (map I.3).

Though Kédougou is Senegal’s most sparsely populated region, its population is as diverse as the most vibrant multiethnic neighborhoods of the cosmopolitan capital of Dakar. It is home to speakers of Pular, Jakhanke, Soninke, and Maninka and to several of the country’s smallest ethnic groups, including the Beliyan-Bassari, Bedik, and Jallonke.⁷⁹ This diversity is a legacy of Kédougou’s position as a crossroads between Guinea and Mali and its Atlantic-era history as a refuge for ethnic and religious minorities who sought cover from slave raiders in the region’s rock escarpments, thick bam-



Map I.3 Senegal and Kédougou region, ca. 2020.

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boo forests, and maze of rainy season rivers. Senegal's population is overwhelmingly Muslim, with some estimates running as high as 95 percent. While Muslims have lived and traded in Kédougou for centuries, Islam did not become widely adopted in the region until the second half of the twentieth century, late compared with the rest of Senegal. In the 1960s and 1970s, a number of Beliyan-Bassari, Bedik, and Maninka converted to Christianity through a Catholic mission based in the region. Since the 1970s, conversion to Islam has expanded, even among former Christian converts. Today, most residents of Kédougou are Muslim, but outsiders still associate the region with ancestral religious traditions (see chapter 7).

Rooting this book within the histories of interethnic settlement that characterize Kédougou's agrarian landscape generates an alternative to what Mamadou Diouf calls the "Islam-Wolof" model of Senegalese civilization.⁸⁰ This model refers to the long-term cultural and economic processes that have privileged the coast and the peanut basin. These areas are dominated by ethnic Wolof and the Muridiyya, who are over-represented in the national media and in scholarship on Senegal. As Diouf argues, the Islam-Wolof model was built, in part, on the exclusion and marginalization of non-Muslim and non-Wolof groups from national narratives. Kédougou is one such exclusion. During French rule, Kédougou was weakly tethered to the economy and infrastructure of colonial Senegal. Young men from Kédougou engaged in annual rainy season migrations, known by French officials as the *navètane*, to cultivate peanuts in central-western Senegal. The *navètane* helped to spread the Wolof language to Kédougou, but Pular and Maninka remained the region's *lingua francas*. It was not until the late 1990s that Wolof became the preferred language of a younger generation in Kédougou, one expression of "Wolofization," the spread of Wolof language and cultural hegemony across regions of Senegal where Wolof was not historically dominant.⁸¹

Situated at the edge of Senegal and West Africa's gold-bearing rocks, Kédougou offers a critical, peripheral view of the region's ritual geology and of Senegal's history. It is also my personal entry into writing this history. I first moved to Kédougou in 2006 as a US Peace Corps volunteer. For one year, I lived in a small Pular village near the Guinea border. The next year I moved to Kédougou town, where I worked at a women's technical school and with urban gardeners. During this time, Senegal's budding mining industry was confined to a string of rudimentary exploration camps and a single mining concession, known as Sabodala, which was then under construction. Kédougou was a sleepy town, known for its relaxed and multiethnic

sensibility. The Gambia River wove through the heart of town, flanked by verdant green market gardens sprouting okra, cherry tomatoes, cabbage, and banana trees. Fishermen plied the Gambia in small dugout canoes that doubled as local ferries. Soaring dry season temperatures pushed people outside. Young men gathered under mango trees to drink sweet green tea over charcoal. At nightfall, families hauled foam mattresses outdoors, falling asleep to Argentinian soap operas dubbed in Wolof or Pular. Women sat in plastic chairs along the exterior walls of homes, selling fried balls of pounded river fish.

Kédougou's social energy gathered around the central market. Concrete stalls spilled their wares—aluminum marmites and cooking utensils, imported soap and lotions, and a spread of bright plastic basins—onto packed dirt walkways. A row of Guinean men sat under beach umbrellas, selling fresh kola nuts from rice sacks lined with banana leaves. Traveling Wolof merchants sold sunglasses displayed on cardboard planks. Across from the market sat a cluster of aging administrative buildings, a public radio station, and a crumbling colonial-era park. Kédougou's two oldest neighborhoods fanned outward from the marketplace, one dominated by ethnic Maninka and the other by ethnic Pular. Brick fences encircled single-story concrete buildings. Hand-dug wells supplement piped water from the municipal grid. The outskirts of town were dotted with piles of brick that demarcated the claims of their owners, awaiting funds to build exterior walls. Car ownership was rare. Bicycles and motorcycles were the primary mode of transit.

Toward the end of my stay in Kédougou in 2008, an Australian company completed construction of the Sabodala gold mine and mill. For several months I worked with an organization of Senegalese farmers who were trying to sell vegetables to Sabodala and several other gold exploration camps. I served as an interpreter with the catering managers of these camps, many of whom spoke only English, and farmers from Kédougou, who spoke French, Wolof, Pular, or Maninka. Companies were eager to purchase local produce, but they followed international food safety standards that regional farmers could not meet. The fragile supply chain fell apart, my first glimpse at how difficult it was, even when goodwill was ample, for residents to capture opportunities around the formal mining economy.

For several years after leaving the Peace Corps I returned annually to Kédougou for short visits. Each year, the impacts of Senegal's growing mining industry became more evident in Kédougou town and in the countryside. Truck traffic intensified along Kédougou's main roads, churning up clouds of dust that covered air-dried laundry and bowls of shared rice.

Men from across Senegal moved to Sabodala to seek work in the mine. Subcontracting services for the mining industry—chemical warehouses and diamond-drilling camps—multiplied in dusty workshops on the road linking Kédougou town to the Malian border. Local entrepreneurs began leasing secondhand dump trucks and bulldozers to exploration firms. Rates of HIV/AIDS rose as a result of increased trucking. The sharp influx of foreign capital led to inflation in prices for meat, vegetables, fish, and housing. Faced with growing costs, families who had once reserved rooms for relatives from remote villages to visit the hospital began leasing out spare bedrooms to strangers.

Meanwhile, the effects of Kédougou's growing orpaillage economy appeared in intimate realms among Senegalese friends and colleagues. Rural households expanded seemingly overnight with migrant orpailleurs from Mali and Guinea.⁸² Motorcycles multiplied in rural villages, purchased by young men who had struck it lucky in the mines, flush with cash to pay bridewealth, a goal that took their peers years of savings from modest bumper crops of peanuts. Others were less fortunate. A sixteen-year-old I knew from a Pular village joined an orpaillage team as a rope-pulley operator near the border with Mali. He returned home three months later severely ill with a bacterial infection, carried home on a lorry truck by a friend. His cousin returned from the mines having lost the use of three fingers, the nerves severed by the misplaced blow of an iron pick in a poorly lit mining shaft. The expansion of orpaillage also inspired concerns about the moral status of money produced by gold. Rumors circulated that successful orpailleurs conducted human sacrifices and trafficked with the devil to earn the favor of the territorial spirits who haunted underground mining shafts and the gold placers of riverbanks. Muslim clerics opined that orpaillage pulled the young from the path of Islam and Qur'anic school.

Many of the worries about gold mining relayed to me in household foyers resonated with those of mining frontiers around the globe. Other grievances were regional in scope. While corporate mining was new to Kédougou, geological exploration and gold prospecting had been ongoing in the region for decades. Some elderly men I knew worked as guides and laborers for Soviet and French geologists in the 1960s and 1970s (chapter 5). Time and again I was told by residents of Kédougou that they and their ancestors—not geologists—had discovered gold deposits slated to become open-pit mines. As I learned, competing historical claims to gold discovery generated expectations in rural communities for the returns they, and their children, should receive from corporate gold mines.

Anthropology and History

In January 2013, I returned to Senegal for eighteen months as a doctoral student in anthropology and history to conduct the intensive field research on which this book relies.⁸³ I divided my time among Kédougou (thirteen months), Dakar (four months), and France (one month). In Kédougou town I kept a room in the concession of a large Pular family I had known since the Peace Corps. I also lived intermittently in the household of Bambo Cissokho, the chief of Tinkoto, Kédougou's most celebrated orpaillage village (see chapter 1). I met Bambo Cissokho in 2008 while distributing bed nets for an antimalaria campaign. While living in Tinkoto, I accompanied orpailleurs as they prospected for gold with detectors and excavated gold-bearing rock from mining shafts. At night, I attended an extralegal "court" convened by Cissokho to mediate disputes that emerged by day on the goldfields. I conducted interviews in eighteen other villages in Kédougou, situated within and beyond the region's central gold-mining corridor. As the opportunity arose, I visited the camps of numerous exploration and mining firms.

Ethnography and oral history were my research methods in Kédougou, and the two frequently blended together. As a Peace Corps volunteer, I spent many days leisurely assisting farmers sowing cornfields and practicing Pular phrases with women as they prepared meals. As a researcher, I was in constant motion, tacking between orpaillage sites and agricultural villages on the back of motorcycles and pickup trucks. My movements mirrored the intensely busy lives of the men and women I sought to interview. They traveled to freshly discovered gold deposits; consulted with ritual practitioners in Mali and Gambia; and recruited workers for their mining teams. Whenever possible, I worked through my networks of friends and former colleagues in Kédougou to arrange interviews. In time, I adopted an informal snowball method that relied on serendipity and the generosity of near-strangers who afforded me their time. In total, I conducted more than 150 oral histories for this project with orpailleurs, farmers, historians, imams, healers, politicians, geologists, and gendarmes. I also initiated dozens of informal interviews with state bureaucrats, police officers, lawyers, and nongovernmental organization (NGO) workers. I traveled to Dakar to conduct interviews with geologists, mining company personnel, bureaucrats, and representatives of NGOs who worked in the mining sector.

I carried out interviews in Pular, French, and Maninka or a mixture of these languages. I speak Pular and French. I studied Maninka for six years through a combination of formal training and two summers in West Africa,

but I never gained conversational fluency in the language. In southeastern Senegal, many Maninka-speakers are also fluent in Pular or French. To bypass my halting Maninka, they would frequently switch to a language we both spoke with ease. It was to address my limitations in Maninka that I sought out a research assistant in Senegal, which led me to Falaye Danfakha. A talented teacher of Pular and Maninka, with deep personal connections to Kédougou, Falaye became a close intellectual partner and friend. We conducted dozens of interviews together, traveling by bush taxi and motorcycle to reach remote orpaillage villages. In the final month of my stay, we spent hours a day transcribing interviews from Maninka to French in a concrete room we rented as our office in Kédougou. We continued this work remotely over the course of several years. Many of the ideas in this book emerged from our conversations during a research period that cemented an ongoing transatlantic friendship and multiple visits—him to the United States and me to Senegal—as our families have grown and careers have taken new directions.

I complemented field research in Kédougou with archival research in Dakar, Conakry, and Paris, which I conducted during the summers of 2010 and 2011 and for two months in 2014. In Dakar, I consulted collections at the Archives Nationales du Sénégal, the Institut Fondamental d'Afrique Noire, and Senegal's state-sponsored *Le Soleil* newspaper. The geological maps featured in this book are drawn from the archives of Senegal's Direction des Mines et de la Géologie, which include those of the geological service of colonial Afrique-Occidentale Française (French West Africa). I took shorter research trips to the Archives Nationales de Guinée in Conakry, Guinea, and the Archives Nationales d'Outre-mer in Aix-en-Provence, France. These collections enabled me to tell a regional history of orpaillage under French colonial rule. I deepened my knowledge of the social and ritual worlds of orpaillage prior to colonialism by analyzing oral traditions; archeological reports; European travelogues; songs and chants; and published primary source materials on gold miners, traders, and dynasts who lived on the historical goldfields of Bambuk (western Mali and eastern Senegal), Buré (Guinea), Gaoua and Poura (Burkina Faso), Hiré and Yaouré (Côte d'Ivoire), and Akan (Côte d'Ivoire and Ghana).⁸⁴

A Ritual Geology is part history and part ethnography. This structure reflects my personal entry into this project, first as an observer of Kédougou's gold-mining boom and later as a scholar who inquired about the past. It also reflects my approach to history as a material set of structures and events that create conditions of possibility for the present—and as a resource for

contemporary claims making. Residents of the West African savanna are distinctively self-conscious about their region's historicity. Family genealogies and theories of ethnogenesis are common topics of everyday conversation. Many of my interlocutors traced their heritage to medieval empires and tested my credibility as a historian by quizzing me on the region's precolonial history. The same individuals draw on historical narratives to argue with neighbors, state officials, and mining firms over who has the right to mine regional gold deposits. For them, history is a polyvalent resource for asserting cultural belonging and ownership of natural resources.

My doctoral training in the Interdepartmental Program in Anthropology and History at the University of Michigan primed my attention to the political work of history in oral and written forms. I was immersed in a community of "anthro-historians" interested in how different societies produced history.⁸⁵ I also studied models of historical anthropology in African studies, a field that pioneered the use of oral and archeological sources as portals to the past where documents are sparse.⁸⁶ Methodologies for interpreting oral traditions, in particular, created an evidentiary base for African history, which became incorporated into the academy in the 1960s after most African states gained independence.⁸⁷ Oral sources, which could "talk back" in a way that documents do not, inspired rich reflections on African epistemologies of history and the ways in which "the past" became filtered through the politics and projects of the present day.⁸⁸ Several threads of this scholarship inspired my historical and ethnographic practice. First, I attended to how history was relayed through rumors of spirits, ritual practice, and the embodied praxis of gold mining.⁸⁹ I often gained access to these unconventional repositories of historical consciousness when I accompanied men and women through landscapes attached to spirits and departed relatives. They included abandoned mines, rock gullies, fallow millet fields, and the entryways to sacred groves.⁹⁰ Second, I noted how my interlocutors "assembled" histories in the space of formal interviews and in casual conversations. As the historians David William Cohen and E. S. Atieno Obhiambo observed in their research in Kenya, history does not exist out there to be collected by an impartial researcher. Rather, history is produced in dialogical settings.⁹¹ If the assemblage of history is particularly visible in the retelling of oral traditions and oral histories, this is true of all genres of historical production, anywhere in the world, in and beyond the academy.

Whenever possible, the chapters to follow weave oral and archival sources into a single narrative fabric. But this was not practical for the entire book. Some chapters rely largely on oral testimony and ethnography, while others

are drawn from archival data. The historical chapters present new empirical material on orpillage in West Africa. The ethnographic chapters do so as well, but they are more concerned with how different members of West African societies have debated and constructed “facts” about gold discoveries and claims to mineralized land. Thus, this book both tells a history of orpillage and interrogates how histories of orpillage are made in family genealogies, village settlement narratives, and state and corporate archives.

My status and privilege as a white woman from the United States shaped, at every turn, the questions I asked and my narrative choices. I am an outsider to West Africa who, through serendipity and choice, has made this part of the world central to my career and my family. While my subject position limited my access to some forms of knowledge, it facilitated my entry into other realms and sources of funding from which many of my African colleagues are excluded. At times, I found these inequities paralyzing. But they also motivated me to leverage my privilege to tell the history of a West African mining tradition that has been racialized, denigrated, and portrayed as static by powerful actors. The global hierarchies in which this subject and I are embedded were on glaring display when, at numerous times during my research, I was accused of covertly prospecting for gold. While I was not searching for minerals, I was seeking knowledge about the region’s past as generations of geologists had before me. I came to see these suspicions as evidence of the political economy of knowledge on a resource frontier, a central theme of this book. They remind us that seeking and producing subterranean knowledge is never neutral.

NOTES

Introduction

- 1 Many mining firms operating in West Africa name themselves after places, ethnic groups, or phrases in regional languages. Bassari is the name of a minority ethnic group, concentrated in Kédougou region, who self-identify as Beliyen. In this book, I use the term *Beliyen-Bassari* to both reference the preferred term of self-address of Beliyen people and to signal scholarship and policy documents in which they are referred to as the Bassari.
- 2 “Artisanal mining” is also referred to as “artisanal and small-scale mining” or by the acronym ASM or ASGM. I use *artisanal mining* to encompass these diverse terms.
- 3 There are two civilian armed forces in Senegal, modeled on the French system: the police and the gendarme. The police are a civilian force primarily responsible for urban areas in Senegal. The gendarmerie is a branch of the Senegalese military that police rural jurisdictions, military installations, ports, and highways. Until 2014, there were no police assigned to Kédougou, only gendarmes.
- 4 “Toro Gold Mako Project,” accessed October 1, 2018, <https://www.youtube.com/watch?v=9coHgg9NuvY>; “CNBC Africa: The Positive Impact of Teranga Gold’s Sabodala Mine in Senegal,” accessed October 1, 2018, <https://www.youtube.com/watch?v=aouwo7jAC-o>. On the fiscal, economic, and social work mining firms invest in distancing themselves from the sociopolitical worlds in which they operate, see Appel, *The Licit Life of Capitalism*, 25.
- 5 On the geology of the Kédougou-Kéniéba Inlier, see Gueye et al., “New Evidences for an Early Birimian.”
- 6 This phrase alludes to the nineteenth-century European “scramble” for Africa that led to the colonization of much of the continent. For academic perspectives on the twenty-first-century scramble for African land, fuel, and mineral resources, see Carmody, *The New Scramble for Africa*; Klare, *The Race for What’s Left*; Southall and Melber, *A New Scramble for Africa?* For policy approaches, see Africa Progress Panel, “Equity in Extractives”; “Africa Rising: A Hopeful Continent,” *The Economist*, March 2, 2013; “Africa’s Natural Resources: Blood Earth,” *The Economist*, April 11, 2015; Roxburgh et al., *Lions on the Move*.

- 7 Bell, *Ritual Theory*, 74, 89–90, 100.
- 8 I owe this metaphor to James Scott, who suggested it at the Yale Agrarian Studies Program Colloquium in February 2020.
- 9 Gold-bearing Birimian rocks in West Africa are primarily found in two climatological zones: the savanna and the forest. The history of gold mining in these two regions diverges sharply. Goldfields on the savanna were in production by the eighth or ninth century, whereas gold was not mined at scale in the forest until the fourteenth or fifteenth century. Divergent colonial experiences deepened socioeconomic divides between the two regions. In the 1870s, the British gained control over the goldfields of the Akan-speaking forests (of modern Ghana), while the French army claimed gold-bearing lands in the western savanna (and some forested areas in Côte d'Ivoire). Gold in Ghana is also found in Tarkwaian rocks, which do not derive from Birimian terranes. On gold mining in Ghana, see Dumett, *El Dorado in West Africa*; Garrad, *Akan Weights and the Gold Trade*; Wilks, *Forests of Gold*.
- 10 In this book, the “medieval period” refers to the ninth to the fourteenth century. “Atlantic period” refers to the era of Afro-European coastal trade from the fifteenth through the mid-nineteenth century. In much of West Africa, the “colonial period” stretches from the late nineteenth century until the 1950s, although there were small European colonies along the Atlantic coast as early as the fifteenth century.
- 11 Two books on orpaillage in Senegal have recently appeared in French: Doucouré, *Des pierres dans les mortiers et non du maïs!*; Niang, *Dans les mines d'or du Sénégal Oriental*. Articles include Curtin, “The Lure of Bambuk Gold”; Jansen, “What Gold Mining Means for the Malinke”; Luning et al., “The *Mise en Valeur* of the Gold Mines in the Haut-Niger”; Moussa, “L'or des régions de Poura et de Gaoua”; Panella, *Worlds of Debts* and “L'éthique sociale du Damansén”; Samson, “Les ‘trésors méconnus’ l'Afrique subsaharienne françaises”; Werthmann, “Dans un monde masculin.”

In reconstructing the history of orpaillage, I draw on a rich literature on West Africa's agrarian economies: Berry, *No Condition Is Permanent* and *Fathers Work for Their Sons*; Fairhead and Leach, *Misreading the African Landscape*; Lentz, *Land, Mobility, and Belonging in West Africa*; McGovern, *Unmasking the State*; Philip, *Les navétanes*; Richards, *Indigenous Agricultural Revolution*; Sarr, *Islam, Power, and Dependency in the Gambia River Basin*; Sarró, *The Politics of Religious Change on the Upper Guinea Coast*.
- 12 Mavhunga, *Transient Workspaces*, 9–17; Serlin, “Confronting African Histories of Technology”; Twagira, “Introduction.” On the role of technology in European imperialism, see Adas, *Machines as the Measure of Men*; Headrick, *The Tools of Empire*.
- 13 de Luna, *Collecting Food, Cultivating People*; Grace, *African Motors*; Hecht, *Being Nuclear*; Mike, *Africanizing Oncology*; Osseo-Asare, *Bitter Roots*; Park, “Human-ATMs”; Storey, *Guns, Race, and Power*.
- 14 Archeological work that shapes my approach to the history of technology in Africa includes Chirikure, *Indigenous Mining and Metallurgy in Africa*; Gokee,

- Assembling the Village in Medieval Bambuk*; Killick, “Iron Smelting Technology in the Middle Senegal Valley”; Logan, *The Scarcity Slot*; McIntosh, *Beyond Chiefdoms*; McIntosh, *Peoples of the Middle Niger*; Stahl, *African Archeology*; Thiaw, “Atlantic Impacts on Inland Senegambia.”
- 15 Ferguson, *The Anti-Politics Machine*, and Mitchell, *Rule of Experts*, write, respectively, on “development” and “the economy” as categories with similar qualities.
 - 16 Hilson and McQuilken, “Four Decades of Support for Artisanal and Small-scale Mining in Sub-Saharan Africa”; United Nations Economic Commission for Africa, *Artisanal and Small-scale Mining and Technology Challenges in Africa*; World Bank, *The Millennium Development Goals and Small-scale Mining*. The International Labour Organization (ILO), uses a scale-based nomenclature: ILO, “Social and Labour Issues in Small-scale Mines.”
 - 17 World Bank, *Mining Together*, 9. This definition was updated from a 1996 World Bank report that described artisanal mining as “the most primitive type of informal, small-scale mining, characterized by individuals or groups of individuals exploiting deposits—usually illegally—with the simplest equipment”: Barry, *Regularizing Informal Mining*, 1.
 - 18 d’Avignon, “Primitive Techniques.”
 - 19 On poaching as a form of criminality created by land enclosures, see Jacoby, *Crimes Against Nature*; Mavhunga, *Transient Workspaces*; Thompson, *Whigs and Hunters*.
 - 20 Amnesty International, *This Is What We Die For*; OECD, *Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*. Globally since 1998, ASM has been responsible for one-third of all mercury released into the environment: Hentschel et al., *Global Report on Artisanal and Small-scale Mining*; Pure Earth, “Global Mercury Program”; Steckling et al., “Global Burden of Disease of Mercury Used in Artisanal Small-scale Gold Mining.” On child labor in artisanal mines, see Human Rights Watch, “Precious Metals, Cheap Labor”; ILO, “Social and Labour Issues in Small-scale Mines.”
 - 21 Out of a vast literature, see Hilson, “Once a Miner, Always a Miner”; Hilson et al., “Going for Gold”; Maconachie, “Re-agrarianising Livelihoods in Post-conflict Sierra Leone?”
 - 22 United Nations Economic Commission for Africa, *Recommendations from Artisanal Mining Workshop*; United Nations Environmental Programme, *Final Report*; World Bank, *Mining Together*.
 - 23 “Jobs in Africa: In Praise of Small Miners,” *The Economist*, May 7, 2017, 45. See also World Bank, “Shining a Light on a Hidden Sector.”
 - 24 Bryceson et al., *Mining and Social Transformation in Africa*; Tschakert, “Digging Deep for Justice.”
 - 25 For example, see Adunbi, *Oil Wealth and Insurgency in Nigeria*; Appel, *The Licit Life of Capitalism*; Ferguson, *Global Shadows*; Rajak, *In Good Company*; Watts, “Petro-violence.”

- 26 De Boeck, "Domesticating Diamonds and Dollars"; Makori, "Mobilizing the Past"; Mantz, "Improvisational Economies"; Smith, "Tantalus in the Digital Age"; Smith and Mantz, "Do Cellular Phones Dream of Civil War?" 78; Walsh, "'Hot Money' and Daring Consumption in a Northern Malagasy Sapphire-Mining Town."
- 27 Lauren Coyle's *Fires of Gold* is an ethnographic exception to this rule. Also on Ghana, see Aubynn, "Sustainable Solution or Marriage of Inconvenience?"; Hilson and Yakovleva, "Strained Relations"; Luning and Pijpers, "Govern-ing Access to Gold in Ghana." On the Democratic Republic of Congo, see Geenen and Classens, "Disputed Access to the Gold Sites in Luhwindja." On Guinea, see Bolay, "Artisanal Gold Miners Encountering Large-Scale Mining in Guinea."
- 28 Feierman, "Colonizers, Scholars, and the Creation of Invisible Histories," 206–7.
- 29 Vansina, *Paths in the Rainforest*, 258–60.
- 30 Vansina, *Paths in the Rainforest*.
- 31 In a comparative vein, for an exploration of African-derived healing traditions as a scientific tradition constitutive of the emergence of Enlightenment-era evidence-based healing practices, see Gómez, *The Experiential Caribbean*.
- 32 *Le Dictionnaire de l'Académie Française*, 8th ed. (Paris, 1932), s.v. "orpailleur."
- 33 I did consider the use of other terms. Many contemporary Maninka speak-ers use the term *sano baara*—"the work of gold"—as a gloss for orpillage. However, they just as often referred to their work as orpillage. While some Maninka terms relating to gold mining are universally used on the goldfields of the savanna, *sano baara* was not one of them—speakers of other languages used the equivalent phrase in Wolof, Pular, and so forth. Thus, *orpillage* better captured the ethnic and linguistic heterogeneity of the goldfields, the regional legacy of French colonialism, and evolving linguistic norms. Many women re-ferred to their work as orpillage but rarely to themselves as *orpailleuses*. Some Maninka women referred to themselves as *sanukuula*—"washers of gold."

For the sake of consistency, I sometimes use the term *orpillage* anachronis-tically to refer to gold mining by West Africans prior to colonialism. The term *orpillage* is ubiquitous in French-language scholarship.
- 34 For a critical discussion of the classification of Manding language varieties, see Donaldson, "Orthography, Standardization, and Register" and "Clear Language."
- 35 The close association of Maninka institutions with gold mining in the Atlantic period is likely indicative of growing Maninka cultural hegemony after the sixteenth-century demise of the Malian empire rather than evidence that ethnic Maninka were the primary (or only) gold miners in earlier periods. For a detailed discussion, see chapter 2.
- 36 Devisse, "L'or"; Mauny, *Tableau géographique de l'Ouest africain au Moyen Age*, 293–306; Mayor et al., "Dynamiques techniques et environnementales dans la vallée de la Falémé (Sénégal)."
- 37 I thank Mike McGovern for underscoring the extensive character of orpillage.

- 38 On stranger-host relationships in West African societies, see Brooks, *Landlords and Strangers*; Geschiere, *The Perils of Belonging*; Jansen, "The Younger Brother and the Stranger"; Lentz, *Land, Mobility, and Belonging in West Africa*. The supposed abundance of land in much of precolonial Africa (compared with Europe) has given rise to the influential thesis that "wealth in people" was a widespread political ideology: Guyer, "Wealth in People"; Herbst, *States and Power in Africa*; Kopytoff, *The African Frontier*; Miers and Kopytoff, *Slavery in Africa*.
- 39 On the importance of hospitality in the context of seasonal, and cyclical, shortages of rain and food in this part of the world, see Togola, "Memories, Abstractions, and Conceptualizations of Ecological Crisis in the Mande World"; Twagira, *Embodied Engineering*.
- 40 The exception to the inclusivity of orpaillage was a ritual taboo against mining by leatherworkers (see chapters 1 and 2).
- 41 I detail these technological exchanges in chapters 2 and 4. On the claims of states and transnational organizations to "vertical encompassment," see Ferguson, *Global Shadows*, 94; Gupta and Ferguson, "Spatializing States."
- 42 My approach to embodied ritual knowledge on the West African savanna and Sahel draws inspiration from Diagne, *The Ink of the Scholars*, and Ware, *The Walking Qur'an*.
- 43 Okeke-Agulu, *Postcolonial Modernism*, 15.
- 44 On how labor regimes and political claims making are shaped by the different material qualities of minerals see Barry, *Material Politics*; Hecht, *Being Nuclear*; Mitchell, *Carbon Democracy*; Rolston, "The Politics of the Pits and the Materiality of Mine Labor."
- 45 On global divergences in artisanal mining economies, see Lahiri-Dutt, *Between the Plough and the Pick*. On Indonesia, see Peluso, "Entangled Territories in Small-scale Gold Mining Frontiers." On Mongolia, see High, *Fear and Fortune*.
- 46 Makori, "Mobilizing the Past"; Morris, "Shadow and Impress," esp. 112, 117. Jaramillo, "Mining Leftovers," uses similar language in studies of postindustrial mining landscapes in South America.
- 47 On the latter in Africa, see Ferguson, *Expectations of Modernity*; Walsh, "After the Rush."
- 48 On the ethnography of mineral exploration, see d'Avignon, "Shelf Projects"; Kneas, "Subsoil Abundance and Surface Absence"; Özden-Schilling, "Trust in Ventures"; Weszkalnys, "Hope and Oil."
- 49 Dubow, "Earth History, Natural History, and Prehistory at the Cape," is an exception. On the relationship of geology to the production of historical knowledge in colonial India, see Chakrabarti, *Inscriptions of Nature* and "Gondwana and the Politics of Deep Past."
- 50 On "contact zones" in scientific encounters, see Raj, *Relocating Modern Science*, 10–13. See also Gómez, *The Experiential Caribbean*; Mukharji, *Doctoring Traditions*.

- 51 Harries, “Field Sciences in Scientific Fields”; Jacobs, “The Intimate Politics of Ornithology in Colonial Africa”; Jézéquel, “Voices of Their Own?”; MacArthur, *Cartography and the Political Imagination*, 17, 19–20; Osseo-Asare, *Bitter Roots*; Schumaker, *Africanizing Anthropology*; Tilley, *Africa as a Living Laboratory*, 117.

On the occluded contributions of women and Black assistants to scientific authorship in Western contexts, see Des Jardins, *The Madame Curie Complex*; Lerman, “Categories of Difference, Categories of Power”; Timmermans, “A Black Technician and Blue Babies.” On the uncredited contributions of local residents and assistants to field research in the United States, see Kohler, *All Creatures*, 156–62, 184–85; Schneider, “Local Knowledge, Environmental Politics, and the Founding of Ecology in the United States”; Vetter, “Cowboys, Scientists, and Fossils” and *Knowing Global Environments*.

- 52 Carney, *Black Rice*; Carney and Rosomoff, *In the Shadow of Slavery*; Fields-Black, *Deep Roots*; La Fleur, *Fusion Foodways of Africa’s Gold Coast in the Atlantic Era*; Logan, *The Scarcity Slot*; Sluyter, *Black Ranching Frontiers*.
- 53 Gómez, *The Experiential Caribbean*; Hicks, *Captive Cosmopolitans*; Kananaja, “Infected by the Devil, Cured by Calundu”; Roberts, “To Heal and to Harm”; Sweet, *Domingos Álvares, African Healing, and the Intellectual History of the Atlantic World*.
- 54 Helen Tilley’s 2021 edited volume in *Osiris*, “Therapeutic Properties: Global Medical Cultures, Knowledge, and the Law,” asks this question for the history of medicine: Tilley, “Medical Cultures, Therapeutic Properties, and Laws in Global History.”
- 55 Grove, *Green Imperialism*; Langwick, “Properties of (Dis)Possessions,” Osseo-Asare, *Bitter Roots*; Schiebinger, *Plants and Empire*; Tilley, “Traditional Medicine Goes Global.”
- 56 Osseo-Asare, *Bitter Roots*, 110.
- 57 For brief discussions of European “takeovers” of African mines, see Dumett, *El Dorado in West Africa*; Freund, *Capital and Labour in the Nigerian Tin Mines*, esp. 47; Van Onselen, *Chibaro*, 11–12.
- 58 On labor, land alienation, and migration to South Africa’s gold mines, see Crush et al., *South Africa’s Labor Empire*; Gordon, *Mines, Masters, and Migrants*; Harries, *Work, Culture, and Identity*; Moodie and Ndatshe, *Going for Gold*; Van Onselen, *Chibaro*; Wolpe, *Race, Class, and the Apartheid State*. On Nigeria, see Brown, “We Were All Slaves”; Freund, *Capital and Labour in the Nigerian Tin Mines*. On the Copperbelt of southeastern Africa, see Bates, *Rural Responses to Industrialization*; Buroway, *The Colour of Class on the Copper Mines*; Epstein, *Politics in an Urban African Community*; Ferguson, *Expectations of Modernity*, chap. 1; Gluckman, “Anthropological Problems Arising from the African Industrial Revolution”; Powdermaker, *Copper Town*.
- 59 See also d’Avignon, “Spirited Geobodies.”
- 60 Huffman, “Snakes and Birds”; Wilks, *Forests of Gold*, chap. 6.

- 61 On cartography in Africa, see Gray, *Colonial Rule and Crisis in Equatorial Africa*; MacArthur, *Cartography and the Political Imagination*, 17, 19–20; Scott, *Seeing like a State*, chap. 7. On the role of borders in African political formations, see Boone, *Property and Political Order in Africa*; Herbst, *States and Power in Africa*; Nugent, *Boundaries, Communities, and State-Making in West Africa*.
- 62 Billé, *Voluminous States*; Bridge, “Territory, Now in 3D!”; Elden, “Secure the Volume”; Oguz, “Theorizing the Contemporary”; Weizman, *Hollow Land*.
- 63 On the mapping of vertical territory, see Braun, “Producing Vertical Territory”; Oreskes, “A Context of Motivation”; Rozwadowski, *Fathoming the Ocean*.
- 64 Yusoff, *A Billion Black Anthropocenes or None*, 7, 10, 12.
- 65 Berzock, *Caravans of Gold, Fragments in Time*; Fauvelle, *The Golden Rhinoceros*; Gomez, *African Dominion*; Green, *A Fistful of Shells*.
- 66 I use “pagan” as a gloss for several words derived from Arabic: non-believer or infidel (*kaafir*), idolator (*wathani*), and polytheist (*musbrik*). I thank Jeremy Dell for pointing out distinctions across these terms. I follow the anthropologist Benjamin Soares’s definition of “religion” as “discourses and practices encompassing modalities of religious expression—as a heterogeneous field in which there is considerable debate, contestation, and transformation”: Soares, “‘Structural Adjustment Islam’ and the Religious Economy in Neoliberal Mali,” 138. This definition departs from outmoded notions of African “traditional” religion as a static system of thought. For critical discussions of the latter term, see Baum, “Indigenous African Religions”; Shaw, “The Invention of ‘African Traditional Religion.’” Asad, *Genealogies*, 55, argues against using the abstract category of “religion” for places that do not share the term’s discursive origins in Protestantism (see also Landau, “Religion,” 19–20, 29–30). I share this critique, and whenever possible I use terms from Arabic, Maninka, and Pular to describe ritual practices in different historical settings. However, I retain the glosses of *pagan* and *ancestral religions* as useful abstractions to track and compare shifting practices and ideologies across broad temporal and spatial units and in dialogue with other global developments. I thank Paul Johnson and Robert Blunt for guiding me through some of these debates in religious studies.
- 67 Scott, *The Art of Not Being Governed*, 8, 22. Scott builds on the concept of “shatter zone” from Wright, *Middle Ground*, 14.
- 68 Zobel, “Les génies du Kôma,” 628, makes this point for the Bandiagara massif in Mali. On Bedik settlements in southeastern Senegal, see Kroot and Gokee, “Histories and Material Manifestations of Slavery in the Upper Gambia River Region.”
- 69 Work that explores the relationship between religion and the environment in Africa includes Giles-Vernick, *Cutting the Vines of the Past*; Mavhunga, *Transient Workspaces*; Ranger, *Voices from the Rocks*; Shetler, *Imagining Serengeti*.
- 70 Examples include Amrith, *Unruly Water*; Demuth, *Floating Coast*; Pritchard, *Confluence*; Zhang, *The River, the Plain, and the State*. Urban environmental historians have innovated regional frameworks by following the materials—charcoal, timber, coal, concrete—from which cities are built and sustained:

Cronon, *Nature's Metropolis*; Brownell, *Going to Ground*; and Needham, *Power Lines*.

- 71 Classic ethnographies by Nash (*We Eat the Mines and the Mines Eat Us*) and Taussig (*The Devil and Commodity Fetishism in South America*) address rituals in capitalist mines in South America. On the ritual worlds of artisanal mining sites, see chapter 2 and 7.
- 72 On “earth beings” in Andean mining contexts, see de la Cadena, “Indigenous Cosmopolitics in the Andes.” In Western Europe, leprechauns (Ireland), gnomes (England), kobolds (Germany), and the petit mineur (France) are genres of earth beings that haunted subterranean mines. Resource extraction in high-risk environments—mining, deep-sea fishing, hunting large mammals—tends to be more ritualized than less risky activities such as farming. Bronislaw Malinowski, *Magic, Science and Religion, and Other Essays*, 30–31, famously compared the “extensive magical ritual” associated with deep-sea ocean fishing in the Trobriand Islands with the lack thereof in inland lagoon fishing.
- 73 Barry, *Senegambia and the Atlantic Slave Trade*; Rodney, *A History of the Upper Guinea Coast*. I am also inspired by the appeal to regional histories of Africa in Feierman, “African Histories and the Dissolution of World History,” 186.
- 74 On this debate in African studies, see Baum, “Indigenous African Religions”; Baum, *Shrines of the Slave Trade*; Horton, “Stateless Societies in the History of West Africa”; Shaw, *Memories of the Slave Trade*.
- 75 Gomez, *African Dominion*; Hall, *A History of Race in Muslim West Africa*; Kane, *Beyond Timbuktu*; Lydon, *On Trans-Saharan Trails*; Scheele, *Smugglers and Saints of the Sahara*; Ware, *The Walking Qur'an*.
- 76 Allman and Parker, *Tongnaab*, 6–7.
- 77 Senegal borrows from a French model of regional organization (région, département, commune). Kédougou has gone by many names. Prior to colonial rule, a number of small chiefdoms—such as Sirimana, Bélédougou, Niokolo, and Dantila—dotted the landscape (see map 2.1). In the late nineteenth century, the French army named this territory Haute-Gambie (Upper Gambia). Between the wars, Upper Gambia was reconstituted as an administrative circle and, after World War II, renamed Kédougou. In 1960, Kédougou became a department of the region of Sénégal Oriental, later renamed Tambacounda. In 2008, Kédougou became an independent region. To minimize confusion for the reader, I often refer to Kédougou as a region even when this is anachronistic.
- 78 Amadou Bamba, the celebrated Muslim cleric, founded the Muridiyya in the late nineteenth century. There are three major Muslim Sufi orders in Senegal: the Qadiriyya, the Tijaniyya, and the Muridiyya. The Muridiyya and the Layene originated in Senegal.
- 79 Based on calculations from 2013 census data, the projection of Senegal's population in 2019 stood at roughly seventeen million, with Kédougou's population at 200,000: Agence Nationale de la Statistique et de la Démographie,

- République du Sénégal, “Projections démographiques, 2019,” https://www.ansd.sn/index.php?option=com_ansd&view=titrepublication&id=30. Based on national census data from 1988—the last time Senegal collected ethnic data on a census—the reported ethnic breakdown of Kédougou’s 71,125 counted residents was 41 percent “Poular” (Pular), 34.2 percent “Mandingue” (Maninka), .8 percent “Bambara,” 1.8 percent “Sarakhole” (Soninke), 1.4 percent “Wolof,” .4 percent “Serer,” and 20.4 percent “Other.” The “Other” category included ethnic Jalllonke, Jakhanke, Bedik, and Beliyan-Bassari and several hundred ethnic Coniagui and Bandiaranke: quoted from République du Sénégal, *Recensement général de la population et de l’habitat de 1988*, 21.
- 80 Diouf, *Histoire du Sénégal*, 15.
 - 81 McLaughlin, “Dakar Wolof and the Configuration of an Urban Identity”; McLaughlin, “Senegal”; O’Brien, “The Shadow Politics of Wolofisation.”
 - 82 There is a growing literature on the impacts of orpillage and corporate gold mining on Kédougou’s economy and social and political life: Cartelli, “A Snake in the Hole”; Dia, “Activité minière et culture cotonnière”; Diallo, “Mine d’or et développement”; Diallo, “Mines et dynamiques spatiales dans le Sud-est du Sénégal”; Doucouré, *Des pierres dans les mortiers et non du maïs!*; Niang, “Mining as Development?”; Niang, *Dans les mines d’or du Sénégal Oriental*; Persaud et al., “Artisanal and Small-scale Gold Mining in Senegal”; Williams, “The Gold Standard of Governance.”
 - 83 This book is based on field research I conducted in Senegal in 2013–14 and 2017, in addition to archival research carried out in shorter trips to France, Senegal, and Guinea between 2010 and 2017.
 - 84 The Sirba goldfields at the border of Niger and Burkina Faso are beyond the purview of this study. On Sirba, see Magnavita, “Sahelian Crossroads,” and discussion in Nixon, “Trans-Saharan Gold Trade in Pre-modern Times,” 169.
 - 85 For overviews, see Murphy et al., *Anthrohistory*; Palmié and Stewart, “Introduction.”
 - 86 Models of historical anthropology that inform my approach include Cohen and Obdiamo, *Siaya*; Feierman, *Peasant Intellectuals*; Hunt, *A Colonial Lexicon*; Livingston, *Debility and the Moral Imagination*. Archeologists of West Africa, in particular, have been central to the practice of historical anthropology in African studies more broadly: see Logan, *The Scarcity Slot*; Richard, *Reluctant Landscapes*; Stahl, *Making History in Banda*.
 - 87 Oral traditions, according to Vansina, are “reported statements from the past beyond the present generation” whereas oral histories are accounts based on a speaker’s lived experience: Vansina, *Oral Tradition as History*, 13. Oral praise poems and proverbs are other genres of speaking about the past beyond the lives of their speakers.
 - 88 Cooper, “Oral Sources and the Challenges of African History,” 210. See also Cohen et al., “Introduction.” For critical discussion of oral traditions research, see Cohen, “The Undefining of Oral Tradition”; Hofmeyer, *We Spend Our Years as a Tale That Is Told*; Kodesh, “History from the Healer’s Shrine”;

- Tonkin, *Narrating Our Pasts*. Research on texts in African languages brings attention to the written (not just oral) historical production of African intellectuals: see Barber, *The Anthropology of Texts, Persons, and Publics*; Ngom, *Muslims beyond the Arab World*; Peterson and Macola, *Recasting the Past*.
- 89 On rumor as historical evidence, see White, *Speaking with Vampires*. On spirits as evidence for different historical temporalities, see Apter, "History in the Dungeon"; Johnson, *Spirited Things*; Palmié, "Historicist Knowledge and Its Conditions of Impossibility"; and Shaw, *Memories of the Slave Trade*.
- 90 On African landscapes as repositories of memory, see de Luna, *Collecting Food, Cultivating People*; Carney, *Black Rice*; Richard, *Reluctant Landscapes*; Fairhead and Leach, *Misreading the African Landscape*; Giles-Vernick, *Cutting the Vines of the Past*.
- 91 Cohen and Obhiambo, "Introduction."

Chapter One: A Tale of Two Miners

- 1 *Burkinabe* is a colloquial term used throughout Francophone West Africa for citizens of Burkina Faso.
- 2 Human African trypanosomiasis is the scientific name for sleeping sickness.
- 3 Telli Diallo, interview by the author, Kanoumering, February 9, 2014.
- 4 Orpaillage villages share features with refugee camps, where temporary dwellings often become permanent residences: see Siddiqi, "Ephemerality."
- 5 Since independence from France in 1960, the Senegalese state has not legally recognized village chiefs. Most independence-era leaders in West Africa abolished the chieftaincy, which they viewed as a form of despotism created by French colonialism.
- 6 Bambo Cissokho, interview by the author, Tinkoto, February 11, 2014.
- 7 Doucouré, *Des pierres dans les mortiers et non du maïs!*, 51–52, describes the tribunal in Bantaco, another important orpaillage village in the Kédougou region.
- 8 Established in 1995, Randgold opened two major gold mines in Kéniéba, Mali, in the 2000s. Randgold no longer operates in Kédougou. In 2021, Endeavor Mining, a multinational company with headquarters in the Cayman Islands, acquired the research and permits to mine Massawa, Randgold's primary prospect.
- 9 In contemporary Senegal, ethnic Maninka, Pular, and Wolof follow patrilineal descent. Children take their father's patronym (*jamu* in Maninka). A child's given or first name (*toxó*) is often taken after a family member, friend, or wealthy patron—a means of securing an alliance between the newborn's family and the namesake. On the politics of naming in Kédougou, see Sweet, *The Poetics of Relationality*, chap. 8.
- 10 Author's field notes, 2014.
- 11 Sabodala was renamed the Sabodala-Massawa complex. I continue to refer to it as "Sabodala" because this is what it was called during the research and writing of this book.