

Waste Works

Vital Politics in
Urban Ghana



Brenda Chalfin

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Preface

I did not initially intend to write a book about urban sanitation and the politics of human waste. I came to Ghana's city of Tema interested in infrastructure and the interplay of urban planning and governance in the lives of urban dwellers. As I investigated infrastructural form and functioning in this West African city famous for its planned communities, modernist architecture, parks, greenways, and expansive container port, waste emerged as a recurring theme. Debates about norms, responsibilities, and the very nature of human excreta as burden or asset rose to the fore. I realized Tema's wide-ranging sanitary infrastructures offered novel solutions to citywide dilemmas even as they sparked contestation. Indeed, rather than singularly reflecting the heavy hand of centralized planning for which the city was known, the arrangements I encountered are largely shaped by urban residents from across class strata.

From a study of infrastructure as a means of governance, my research shifted to waste and infrastructure as vibrant sites of political negotiation. The more I paid attention to the composition, operation, and design of sanitary infrastructure, the more I noticed that complicated the well-worn script of high modernity. The popularly devised excremental infrastructures I came upon in Tema offered grounds for collective and individual empowerment and recognition despite the convoluted inheritance of midcentury sanitary design. Though built on the body's most base condition, they enhanced human dignity and public good in the face of waning state capacity and inadequate international fixes.

Ghanaian society prides itself on tact and propriety, and conventionally shrouds intimate bodily functions. Bringing these issues to the fore is thus a delicate matter, exposing class, cultural, and generational divisions. I offer

my account with utmost respect for those who opened their infrastructural and experiential worlds to me. I hope these stories of urban problem solving do not provoke rancor or embarrassment. In sharing the details of urban practice, I stand in solidarity with urban residents who push the boundaries of urban planning and reveal the blind spots of received norms in order to serve pressing urban needs on their own terms.

I take inspiration from the growing ranks of Ghanaian artists, activists, and members of the urban underclass who speak directly to taboo topics in order to enable more effective and inclusive problem solving and social policy. In a cultural setting premised on hierarchy and deference, they expose entrenched norms and enforced silences on the subject of human excrement. These sentiments are evident, for instance, in David Comrade Sedi Agbeko's conceptual art, Henry Obimpeh's installations (pictured on the cover), and Wanlov Kubalor's popular music, and in community-led sanitation campaigns such as "Let's Talk Shit." This book contributes to these wider social and political projects through its frank discussion of human waste and waste politics across Ghana's city of Tema.

My goal is not to discredit Tema's standing as a model city typically celebrated for its efficient urban design, social mobility, and cosmopolitan outlooks. Rather, I draw attention to the hidden underpinnings of Tema's apparent elegance and efficiency. Forged largely by working-class residents as well as more prosperous citizenry, these interventions actively challenge the limits of inherited urban infrastructures and ideals. I argue that they are a formative arena of urban political imagination and mobilization. Resisting claims of success or failure based on abstract norms, the book examines the functional and expressive potential of these arrangements in situ.

I began research for this book in 2009 and continued through 2016, spending several weeks to several months a year in Ghana. After conducting several years of research in northern Ghana in the 1990s (see Chalfin 2004), I first visited Tema in 2000 in the course of a new project on sovereignty and border controls at the city's container port (see Chalfin 2010). When I passed through the city center on my way to the shipping harbor, the city struck me as quiet and contained in comparison with the dynamism of Ghana's capital, Accra, and the working-class Ga suburbs of Teshi and Nungua occupying the coastline between them. Once I turned my back on the port and took a hard look at the city in its own terms, Tema reemerged as a place of fascinating complexity with depth and creativity of its own despite the heavy hand of the city's planning authority.

I am indebted to Marina Ofei-Nkansah for enabling me to see Tema anew. A longtime resident, youth advocate, and former nurse in one of Tema's main clinics, and my primary research assistant, Ofei-Nkansah showed me the many sides of Tema well before the full contours of the project were clear. We walked through neighborhoods to survey midcentury architectural gems and capture the rhythms and layouts of Tema's carefully orchestrated urban scheme. Through Ofei-Nkansah, I learned about the city's double history as a place of middle-class upward mobility and as a site of displacement built on indigenous lands and the labors of an urban underclass.

Ofei-Nkansah brought me to Tema Manhean, where Tema's original residents were forcibly resettled to make way for the new city in the early years of Ghanaian independence. As we scoped out Manhean's subdivisions, rows of public shower houses marked by high walls and raised clusters of PVC pipe and spigots caught my eye. I soon learned that many contained public toilets. Unlike Tema's core communities, where the neatly built concrete-block flats and semidetached homes were equipped with piped water, electricity, and individual household toilets and bathrooms, only a tiny percentage of Manhean residents had toilets, baths, or working taps in their homes. Instead, public toilets remained from Tema's mid-twentieth-century founding, spaced at regular intervals across Manhean's streetscape. Through the counsel of Manhean toilet manager and community activist Solomon Tetteh, I became aware of the long-standing politics of public toilet operation and upkeep. Attracting the claims of political party activists and traditional and municipal authorities, and the counterclaims of residents, in these public spaces the violations of resettlement were subtly replayed.

Tetteh also shared news of a public toilet that was being resurrected decades after being abandoned by city authorities. Faint outlines of buried pipes and fixtures were visible beneath the dirt and rubble. This was the work of a fellow waste-entrepreneur and activist, Kwame Enyimayew. The worldly Enyimayew was one of the first children born in the new city, where he grew up before departing for university and the United Kingdom. Along with his abundant technical expertise, he voiced endless ideas of what the public toilets could be, from community centers to learning spaces and polling places. He also revealed his knowledge of the full gamut of waste infrastructure in and around Tema, including sewage treatment ponds under construction and the city's original sewage outfall at Paradise Beach. I realized this was the tip of a much larger, multilayered system, part functioning, part frozen in time. I began to see the logic of deciphering the city—its aspirations, in-

equities, and alternatives—through its sanitary underground. Crystalizing this sentiment, I visited Ziginshore, an informal settlement built upon the accumulated waste of Tema’s industrial zone at the edge of Chemu Lagoon. Here, Enyimayew had constructed a massive public toilet complex for the transient populace who worked at the port and fishing harbor. He was building an adjoining hostel and had plans for a waste-fueled biodigester to provide power for the complex.

Attuned to the heavy hand of Ghanaian bureaucracy from my earlier research on Tema’s seaport, alongside my introduction to the city through its infrastructural subterrains I sought to understand the official conventions and intentions of urban governance and public provisioning. I approached Tema’s joint planning and governing body, the Tema Development Corporation (TDC). After approving of my credentials, the longtime public relations officer shared a pile of old photographs he had hastily gathered when the TDC’s original office blocks were demolished. Attesting to the importance of Tema to Ghanaian nation-building, they included numerous images of Ghana’s independence leader and first president, Dr. Kwame Nkrumah. A sign of Tema’s international standing, there were images of African heads of state and a picture of Queen Elizabeth inspecting models of the city.

The following year I sorted through maps, blueprints, and drawings guided by the TDC’s chief archivist. These were not PR images but the nuts and bolts of the city-building created by a new generation of technocrats—planners, draftsmen, architects, surveyors, typists, and health officers—in the early years of Ghana’s independence. Most prominent was the imprint of Greek urban planning firm Doxiadis Associates displayed on report covers, serials, and rolls of crisp vellum. Although Tema was built by and for Ghanaians for the purpose of national development, design and construction specs were largely outsourced to Doxiadis’s planning team, in residence at the TDC for much of the 1960s and 1970s.

The site maps and building plans in the TDC’s collection, though in poor condition, provided an institutional bedrock across which I could trace links and layers. Sanitation was a persistent subtext connecting the different sections of the city and the past to processes still in train. I came upon contour maps of water courses and drawings intended to guide installation of drainage pipes. There were plumbing catalogs and studies to determine the ideal size and configuration of bathing areas and water closets. Visible as soon as one started to look for it, here was a point of entry that could be read across Tema’s varied urban plans and scales. It was also unfolding around me as

I relocated from Accra to lodge in Tema's core. While I admired Tema's well-preserved midcentury architecture, it was not unusual to see sewage trucks siphoning spills from burst pipes or puddles left from overflowing manholes. Alleys surrounding Tema's main market were often blocked to permit replacement of spoiled underground pipes. Local blogs and news reports shared residents' complaints, spanning the gamut from open defecation to inoperable donor-built sewage treatment plants. Clearly, sanitation was a matter of concern to current residents, much as it had preoccupied planners and politicians in the wake of new nation-building.

I learned from residents the confusing terms of accountability and jurisdiction surrounding urban sanitation between the TDC and the city's administrative body, Tema Metropolitan Assembly (TMA). The director of waste management confirmed this point. On a tour of internationally funded sewage treatment ponds, he explained their demise and shared his own progressive vision of sanitation for the city, which posed waste less as scourge than as opportunity. Technicians invited me to join them on site visits and inspections. I shadowed engineers at Tema's main sewage pumping station. As they explained the system's operation, they articulated a sensorial sympathy with the materials under their control. Common among waste workers elsewhere in the world and indicative of the interplay of human and nonhuman agency in waste work, it spurred me to think about what I eventually came to call "infrastructural intimacy." This dynamic was also evident as I followed the trail of sewage complaints and tracked interactions among neighbors, repair crews, and local political representatives. Bringing to the fore the status of waste as an agent and object of political negotiation, even in the city's middle-class neighborhoods it became apparent that Tema's infrastructural underground was not an invisible media of interconnection but actively debated and recomposed by residents. Waste, in short, was a political object in its own right.

My research concerns shifted from waste management as means of political suppression to waste and waste infrastructure as sources of self-determination and collective claims making. It was apparent that sanitary infrastructures were not simply the ambit of technical experts. Large-scale solutions were being formulated from within Tema's urban communities, at once correcting, supplementing, and subverting received sanitary technologies and associated models of urban order. Alongside the tensions and overlaps of urban planning schemes and do-it-yourself urban survival strategies, metalevel questions about the place of private bodily processes in the

organization of public and collective life rose the fore. Evident in the unsettled terms of urban sanitation stemming from systems externally imposed without the full means to sustain them, the allocation of responsibility for bodily processes and outputs was perennially unresolved in the city.

While these ideas percolated, I had yet to come upon my final case study: Tema's satellite settlement of Ashaiman. I visited Ashaiman in the 1990s to see relatives of my host family in northern Ghana and was unaware it was founded in the 1950s as a labor reserve for the new city of Tema. Ashaiman gained standing as an autonomous municipality in 2008. Sanitation was a centerpiece of urban reform in Ashaiman, denied the infrastructural inputs of its sister city. With few government-provided facilities or a centralized sewage system, residents relied on hundreds of privately built public toilets located in or attached to residential space. Serving urban needs when the municipality could not, Ashaiman's case affirmed my hunch that waste and sanitation were leading vectors of urban political activism across Tema. A further indication of a new political and cultural economy of waste afoot, private commercial toilets in Ashaiman were associated with status attainment for customers and proprietors alike.

As I parsed the theoretical resonances of my findings in Tema, prevailing frameworks addressing the capacity of the modern liberal state to simultaneously harness and restrict the body as a political object offered important starting points. Yet they ultimately proved inadequate. The hard-won realities of Tema's citizen-driven infrastructural exceptions pointed to fissures in these much-replicated orders. Taken together, Hannah Arendt's discussions of bodily labor, Georges Bataille's ideas about power's heterogeneity, and Bruno Latour's conception of actor networks and non-human agency offered theoretical traction. Informing what I eventually came to term the "vital politics of infrastructure," the case of Tema revealed the never fully containable force of vital materials—human bodies and bodily excreta included—and associated infrastructures. Full of life and essential to it, they are doubly vital. Despite city founders' intention to use large-scale urban infrastructure to imprint individuals and constrain collectivity, the dynamic mix of human necessity and organic and inorganic forces renders these systems unstable. In turn, I realized, they are critical to crafting alternative infrastructural arrangements and enabling unscripted political outcomes.

My juxtaposition of social theory and the lived realities of urban sanitation in West Africa is both deliberate and jarring. I take inspiration from

feminist and antiracist scholars such as Carol Pateman and Charles Mills, who return to classic theoretical precepts in order to correct and confound their normative assumptions and deficits. An ethnographic account of the afterlives of postwar high-modernist infrastructure offers a window on the cracks, gaps, and lapses in the theoretical armature of modernity and an opening to see how people formulate infrastructure—and lives—within, around, and against its strictures and possibilities. Following Bruno Latour’s methodological impulse to locate the political empirically, I argue that putting the base facts of life in the global South in conversation—not just contention—with social theory is an important step in advancing “theory from the South.” Such a move avoids confusing “theory *from* the South” with assertions of “theory *for* the South” and the risk of theoretical-territorial essentialism tying theory—and people—to fixed locations. Challenging narrow understandings of theory’s emplacement is part and parcel of recognizing Africans as actors in, not passive recipients of, modernity’s inheritance, whether seamless citywide sewage systems or grand theories of human progress.

Alongside the social scientific claim that historical experience can be theorized is the companion point that theory has a history. That is, theoretical precepts emerge out of distinct historical junctures that transcend singular locales. The theorists I draw on in my analysis of late modern infrastructural exigencies in Ghana are part of the same world-historical shift of postwar modernization that resulted in rendering the city of Tema a paragon of African progress. Case in point, Arendt and Tema’s founding figures Kwame Nkrumah and Greek urbanist Constantinos Doxiadis were all students of classical philosophy and deeply invested in rebuilding and making sense of the post–World War II world. Indeed, Tema residents, like Arendt, are heirs to postwar internationalism’s paired projects of modern state-building and city-building. Other theoretical propositions I bring into the discussion of Ghana’s postcolonial infrastructural experiments, namely those of Walter Benjamin and Georges Bataille, are likewise born from the same forces of radical displacement—from the disruptions of the Holocaust to the eruptions of the atomic bomb—that produced the city of Tema. Seventeenth-century Thomas Hobbes, whose *Leviathan* also provides a theoretical fulcrum for the text, is certainly a historical outlier in this regard. However, recognizing the diverse logics of nature encapsulated within the state form, Hobbes speaks to foundational modernist precepts—and tensions—long suppressed, which claim a durable presence in the course of urban restructuring in Tema.

Finally, historicizing theory requires situating my own perspectives and preoccupations. I completed this book amid the uncertainty and enforced stasis of the 2020–21 coronavirus pandemic. During that time a final conceptual frame emerged. What I gloss as “deep domesticity,” it addresses the expansion and intensification of domestic functions when state and international institutions fail to provide or protect. In Tema, the process is evident in privately built public toilets that double as working-class community hubs, middle-class households’ collective efforts to rebuild and safeguard shared sewage lines, and city engineers’ self-conceptions as caretakers of public infrastructure. Enlarging the scope and reach of the privatized domestic realm and encompassing practices otherwise deemed government responsibility, I remain struck by their resonance with the recalibrations of daily life induced by COVID in the United States. Street-corner fridges and food banks, the personal sacrifices of essential workers to ensure the survival of others, and the overlay of work, school, and leisure in domestic space—all publicly exposed by private media infrastructure—these shifts gather people and basic life practices together in unexpected ways, not entirely different from arrangements evident in Tema.

These cases remind us that geographically distant corners of the world can be linked by shared structural conditions. They indicate, moreover, the ways cities in the global South map out historical trajectories overlooked in theories of urban life derived from the global North yet surprisingly relevant to them both. As long as humanity is on this planet, waste—including bodily waste—is not going away, regardless of one’s geographic or class location. As recent works such as Chelsea Wald’s *Pipe Dreams: The Urgent Global Quest to Transform the Toilet* (2021) and Catherine Coleman Flowers’s *Waste: One Woman’s Fight against America’s Dirty Secret* (2020) likewise attest, if excrement is part of our shared human condition, inadequate and inefficient waste infrastructures are a global problem. It is thus critical to pay attention to the individuals and communities who forge workable alternatives to the received script of late modernity and the political as well as practical implications of their infrastructural solutions.

Excremental arrangements in Tema demonstrate that the orchestration of human waste in the city by the public and for the public offers an alternative to the social power of the state. Serving as an enduring basis of association and collective action by means of infrastructure, bodily waste’s inevitable excesses and instabilities, both cultural and organic, are political resources in their own right and continuously harnessed to new ends.

Acknowledgments

This book is a product of the generosity of countless friends, colleagues, and acquaintances in Ghana across a decade of visits and returns. Most of all, I am indebted to residents of the city of Tema who generously shared their homes, workplaces, stories, and daily routines with me. I am grateful for the honesty, dignity, and conviction with which they made me aware of the challenges of urban sanitation and the hard-won solutions they devised in turn.

Although I was no stranger to Ghana, my presence as a white American female academic interested in the intimate details of household sanitation demanded explanation and the establishment of trust and personal credibility on my part. To understand these matters and to facilitate, Marina Ofei-Nkansah provided research assistance, friendship, and wise counsel drawing on her academic training, deep ties to Tema, and knack for connecting with people. A skilled fieldworker with a masters of philosophy from University of Ghana's Institute of African Studies, she carried out research with me and on her own in Tema Manhean, Ziginshore, and Tema's core, where she also aided with archival work at TDC. Mohammed Mustapha contributed substantial research assistance in Ashaiman and aided research in Ziginshore. Alhassan Bilal Yunis helped with research in Ashaiman.

At Tema Development Corporation, managing director Joe Abbey graciously approved my affiliation and provided permission for institutional research, as did architect and board member E. O. Adjete. I was welcomed by TDC staff and provided with workspace thanks to communications director Dorothy Asare-Kumah. In return for access to the TDC Archives I assisted TDC archivist Cosmos Anane with cataloging and digitizing materials. Public relations assistant David Donya was ever ready to participate in document searches, digitization, and site visits across the city. Samuel Ye-

boah in the TDC Drawing Room was also a source of expertise and insight on the city's architectural history and design.

In Tema Manhean, Tema *mantse* Nii Adjei Kraku II enabled my request to conduct research in the community on public space and public goods, as did *wulomo* Nuumo Ashiboye Kofi II and chief fisherman *woleiatse* Nii Odametey II. The owners and operators of public toilets, water taps, and bathhouses in Manhean patiently cooperated with interviews and observational and participatory research. Local residents and political representatives also made themselves available for discussion. Following these preliminary walkabouts, in 2009 I met two individuals who would become guides, friends, and key informants in their own right: one, Solomon Tetteh, a toilet manager and community activist; the other, Kwame Enyimayew, a sanitation entrepreneur. Tetteh graciously introduced me to his extended family, putting me at ease in the courtyard of his family home and offering a convenient perch during my many visits to the public toilet he managed. Though the names of Manhean's public toilets and toilet franchise groups and leaders have been changed to preserve confidentiality, all were generous with time, access, and information.

In Ziginshore, Enyimayew taught me more than I ever imagined was possible about the uses and abuses of public sanitation and urban waste. His investment in the infrastructural and social transformation of Ziginshore's wastelands piqued my curiosity early on and continued to fascinate me during the prolonged process of constructing an off-grid toilet, bath, and waste recycling complex in this marginalized settlement. I appreciate the openness of staff members and residents to my presence and that of the larger research team. I acknowledge in particular cleaners, technicians, and attendants Mr. Montey, Nana Sam, Emissah, Steven, Enoch, Matthew, Augustine, Grace, Vida, Efua, and Kekey. Office managers Jennifer and Joshua were also of help. I am especially grateful to the residents of Ziginshore's adjoining hostel who took time to share their lives and experiences with us despite the demands of work, childcare, and precarity of livelihood and living conditions.

In pursuit of further information on Tema's development I visited London's Architectural Association School (AA), where Tema's early designers, Jane Drew and Maxwell Fry, founded the Department of Tropical Studies. Archivist Edward Bottoms connected me to Patrick Wakely at University College of London's Development Planning Unit. Wakely had worked in Ghana in the 1960s and more recently served as a development consultant in

Tema's satellite city of Ashaiman. Wakely told me about Ashaiman's unique sanitation solutions and its drive to become an autonomous municipality challenging the oversight of TDC. Wakely introduced me to his project partners in Ashaiman: Ibrahim Baidoo, Ashaiman assemblyman, activist, and eventual mayor, and urban planner and community organizer Erika Mamley Kisseih. Upon my return to Ghana, I sought their counsel. Both offered and have continued to provide in-depth understanding of Ashaiman's unique history, demographics, and politics, along with ongoing feedback on my research findings. Kisseih was among the first to read and comment on the manuscript in full.

My debts to those in Ashaiman span from city government to managers, attendants, and customers of the city's vast array of privately owned dwelling-based public toilets. Ashaiman's environmental sanitation officer, Eric Kartey, was a patient guide to the city and shared the details of national policy and waste management challenges and solutions in Ashaiman. With the help of Innocent Adamadu, in 2013 I conducted initial surveys of Ashaiman's sanitary landscape. The work was completed with the assistance of Mohammed Mustapha, then a masters of philosophy candidate in Archaeology and Heritage Studies at the University of Ghana, and later a doctoral student at the University of Florida. Mustapha's UG classmate and longtime Ashaiman resident Alhassan Bilal Yunis soon joined the Ashaiman research team. Bilal's home and his family, Fati Adam and Amina Alhassan, became my base in Ashaiman, offering a space of rest, refreshment, conversation, and support. Their own efforts to install private water closets and a small-scale sewage system in their house provided additional insight on the price and politics of sanitary upgrading in the city.

The owners and operators of Ashaiman's many dozens of private commercial toilets patiently responded to research questions and participated in site surveys as we sketched, measured, and mapped each installation. I thank Pius Opuku, Ali Imran, and Agnes Agirron and their families, staff, and customers, who contributed to the case studies featured in this book. Their kindness allowed me and my research team to feel at ease as we learned about the inner workings and social worlds of their facilities over numerous visits and conversations. I also thank customers, staff, and proprietors of the following commercial toilets in Ashaiman: Wisdom, Otumfo, Base 10, God's Way, Fine, Donkor, Taifa, 2010, and Shower House, among many others.

Personnel of Tema Metropolitan Assembly were instrumental to my research on urban sanitation in Tema's core neighborhoods of Communities

1 through 12. At TMA headquarters, I benefited from conversations with Emmanuel Avenogbor, Sevlo Adjei, and assemblyman Sumailah Issah. Officials and employees of Tema's Waste Management Department played an especially critical role in the research process. Waste management director Edward Mbah was exceptionally helpful as he mapped out the multiple models of waste management operating in the city. His successor, Jonas Dunnebon, was also a source of guidance. So too was James Lamina, another "brother" from northern Ghana and longtime leader of TMA's sewage repair squad. TMA engineers Adu Gyamfi, George McCarthy, and Emmanuel Mensah shared their expertise with the work of maintenance and repair. Manager Lucy Tetteh shared her expertise on liquid waste. George Ferguson, Henaku Joseph, and other administrative staff shared their extensive knowledge of the wider scope of system breakdown and rebuilding. In Tema's core middle-class communities, Community 1, Community 4, Community 5, and Community 7, I am grateful to the families and households who so frankly and graciously shared their experiences. I do not name them or TMA workers and use pseudonyms for the sake of confidentiality. Rev. E. A. Armah and Joseph Yedu Bannerman imparted extensive knowledge of the first decades of the new city's management and settlement.

Research outside of Ghana offered additional insight on Tema's infrastructural and political underpinnings. At Belgium's Catholic University of Leuven, I met urban studies scholar Viviana D'Auria, who conducted her PhD research on Ghana's Volta River Project and continues to research and publish on Tema along with a talented group of MA students. Attuned to Tema's program of incremental modification of dwelling units, D'Auria put Tema residents' do-it-yourself approach to large-scale infrastructure in new perspective, offering especially important insight into Tema Manhean. Travel to Greece brought me to the Constaninos A. Doxiadis Archives at the Benaki Museum in Athens, masterfully managed by Giota Pavlidou. Here I found personal correspondence between Nkrumah and Doxiadis attesting to shared ideas about the course of national development. I also came upon original photographs of the city under construction, including massive sewage mains that remain in use today.

A summer visit to Ghana in 2014 afforded the opportunity for follow-up. With support from the University of Florida, photographer/videographer Eva Egensteiner accompanied me to visually document the four communities that form the heart of this book. Building upon relationships forged by Ofei-Nkansah and ties to Enyimayew, staff, and hostel residents, Tetteh

and Mustapha joined the research team in Ziginshore, as did my son, Eliot Chalfin-Smith. We collected workers' and residents' occupational and geographic profiles and watched the waste complex expand before our eyes, with hand-dug wells, a biogas-powered café, and a homemade waste treatment plant. Besides tracing the site's overall infrastructural development, we paid close attention to the relationship between bodies and infrastructure, taking a phenomenological approach to the lifeworlds incited by waste.

Along with that of Tema residents and officials, the support of scholars and educational institutions in Ghana remains invaluable to my research endeavors. The Institute of African Studies at University of Ghana–Legon was my academic home away from home and offered research affiliation through the many phases of the project. The directors of IAS, initially Takyiwaah Manuh, and then Akosua Adamako Ampofo, warmly welcomed me. I benefited from the intellectual support of IAS faculty Richard Asante, Debrah Atobrah, and Albert Awedoba. My ties to Legon extend to Department of Archeology and Heritage Studies faculty Wazi Apoh and Kwadzo Gavuah. This is in addition to ongoing exchange with Akosuah Darkwah in Legon's Department of Sociology, who with Debrah Atobrah provided critical feedback on the manuscript.

At Commonwealth Hall, where my family and I resided in 2011 while on a Fulbright-Hays fellowship, we were aided by hall bursar, porters, and staff. Hall librarian Francis Atsu and family were also a source of advice and support, as were Legon Hospital transportation chief Sammy Dansoh and family. Fellow Fulbrighters Theresa Morrow and Bill Ristow shared their love of campus and spirit of adventure. The US Embassy Cultural Affairs unit also facilitated visas and other documents necessary for research and residence. Special thanks to Cultural Affairs officer Sarpei Nunoo.

Emily Asiedu and the Asiedu Institute provided a second home for me in Ghana, for visits long or short, alone or accompanied by friends and family members. The warmth and unfailing welcome of Auntie Asiedu and her extended family, Dinah Denta, Ebenezer Afful, Solomon Ofosu Appea, and Daniel Ohene Appea; UK-based family Comfort, Mary, and Steven; and Evelyn Asiedu in the United States, are beyond compare. I thank Nana Kwame Fosu for Twi lessons, may he rest in peace. A vast network of Ghana scholars provided intellectual and moral support during shared time in Kokomlemle. They include Jennifer Hasty, Lauren Adrover, Chris Richards, Cati Coe, Jen Boylan, Michael Stasik, Jean Allman, John Parker, Stephan Miescher, Lane Clark, and many others. I recall the many conversations

with Stephan Miescher driving to and from Tema in 2010, as we compared notes on his project on Ghana's Volta River Dam and the early stages of my research on Tema.

A host of other Ghana scholars in one way or another contributed to this work, including Jeff Paller, Waseem Bin-Kasin, Ann Cassiman, Nana Osei-Opare, Abena Dove Osseo-Asare, D. K. Asare, Elisabeth Sutherland, Nate Plageman, Rod Alence, Paul Nugent, R. B. Bening, Jeff Ahlman, and Benjamin Talton. Nate Plageman was particularly generous in providing feedback on the manuscript as a whole. The long-standing friendships and intellectual network of the Accra-based Center for Democracy and Development also helped to ground my research inquiries. I am grateful to E. Gymah-Boadi, Franklin Oduro, Kojo Asante, and Baffour Agyeman-Duah, who is now with the Kufuor Foundation.

The influence of a broad-ranging group of infrastructure-focused anthropologists and urbanists informs my approach to waste politics in Tema. I benefited from conversations, conference panels, and sharing ideas and works in progress with Brian Larkin, Antina von Schnitzler, Mike Degani, Danny Hoffman, Antonio Tomas, Omulade Adunbi, Hannah Appel, Akhil Anand, Kris Peterson, Filip De boeck, Dominic Boyer, Laura Bear, Charles Piot, Daniel Mains, Greg Feldman, Kristin Phillips, Rosalind Fredericks, Sophia Stamatopoulou-Robbins, Kareem Buyana, Peter Redfield, and Steven Robins. I sincerely appreciate Robins's and Feldman's willingness to read and comment on the draft manuscript.

At the University of Florida, I benefited from the support of colleagues in the Center for African Studies and Department of Anthropology. Donna Cohen in UF's School of Architecture has been a source of great wisdom and insight, helping me to place Tema within the wider context of tropical modernism and to recognize the boundary between architectural history and anthropological approach to architecture. This book would not have been possible without her ongoing support and enthusiasm and blunt admonition to stay grounded in my home discipline. Our cotaught course and 2015 conference "Design and Development in Africa" was especially valuable for gaining perspective on these matters. Students Ben Burgen and Xhulio Binjaku brought important insights of their own into the conversation. Binjaku prepared initial sketches from my research findings. Binjaku and I later worked together to design architectural models displayed at a Mellon Foundation-funded conference in Durban in 2016 and published in *Limn* in 2017. Binjaku's drawings are included in chapter 5. Kairon Aiken, another

graduate of UF's architecture program, did the final maps and drawings that appear throughout the book, demonstrating creativity, efficiency, and skill.

Colleagues in UF's Department of Anthropology inspired me to keep the conversation going despite the distractions and demands of teaching, advising, and administration. I am most of all indebted to Susan Gillespie, Ken Sassaman, Mike Heckenberger, Richard Kernaghan, John Krigbaum, Augusto Oyuela-Caycedo, and Marit Ostebo for their encouragement and feedback as well as the model they each provide of original, theoretically informed scholarship challenging disciplinary strictures. Department chairs Susan DeFrance and Pete Collings likewise accommodated requests for research leave and fellowship support making this project possible. I also thank Anthropology's indefatigable administrative corps, Karen Jones, Patricia King, Pam Freeman, and Juanita Bagnall for their aid throughout.

Center for African Studies colleagues offered invaluable friendship and intellectual input and a model for academic research grounded in real-world challenges and accomplishments on the African continent. During my appointment as director of the Center for African Studies, College of Liberal Arts and Sciences dean David Richardson and associate dean Mary Watt encouraged research and scholarship as an integral element of program-building. The committed scholarship of CAS faculty Renata Serra, Luise White, Terje Ostebo, Abdoulaye Kane, Ben Soares, Alioune Sow, Agnes Ngoma Leslie, Joan Frosch, Todd Leedy, Akintunde Akinyemi, James Essegbey, Leo Villalon, and Fiona McLaughlin informed and inspired me. Exposure to Africa-based scholars and experts through the center's many programs helped to keep African agency at the fore of my discussion. This was especially so in the case of African architecture and design. Visiting scholars and practicing architects Joe Osae-Addo and James Inedu George shared my interest in living architecture in West Africa.

In addition to faculty, a dynamic group of Africa-focused UF graduate students contributed to the conversation about infrastructure, built environment, and the politics of everyday life: Cady Gonzalez, Megan Cogburn, Felicien Maisha, Jamie Fuller, Shambhavi Bhusan, Jenny Boylan, Chris Richards, and Netty Carey. Carey, in addition, provided assistance with archival materials and book references. Lia Merivaki provided translations of Doxiadis Greek-language documents pertaining to Ghana. Tracy Yoder assisted with organizing and cataloging archival material at TDC. Felicity Tackey-Otoo helped analyze and organize Doxiadis Associates reports on Tema commissioned by Ghana's Ministry of Housing. Mohammed Musta-

pha, initially in the capacity of fieldwork assistant, and later, UF graduate student, was readily available to offer feedback and bring his combined archaeological and ethnographic sensibility to bear.

A residential fellowship from Harvard University's Radcliffe Institute for Advanced Study in 2015–16 enabled me to focus exclusively on research and writing among a diverse group of scholars and artists in an atmosphere of openness and exchange cultivated by associate dean Judtih Visniak and dean Liz Cohen. In 2015–16 I took a first stab at pulling a book manuscript together thanks to a residential fellowship at Harvard University's Radcliffe Institute for Advanced Study. I profited from fruitful interaction with fellows Daniel Ziblatt, Bill Hurst, Mary Lewis, Lesley Sharpe, and Kris Manjappa. I was fortunate to have access to the immense resources of Harvard University Libraries and the outstanding collection of the Graduate School of Design. Weekly workshops moderated by Jean and John Comaroff offered an engaged and well-informed Africanist community, including Emmanuel Acheampong, Lucie White, George Mieu, Suzanne Blier, and Delia Wendel. Added to this were the social and intellectual sustenance of Tarik Dahou, Helene Sow, Sue Cook, and Oteng Acheampong. Time at Cambridge was further sustained by the unfailing warmth and generosity of my sister, Sonia Chalfin, and brother-in-law, John Wakeley, and the willingness of my daughter, Safi Chalfin-Smith, to explore new urban horizons.

Opportunities to share and receive feedback on earlier versions of book chapters helped me to hone my argument and clarify core themes. Portions of this work were presented at the University of Washington (2019), the University of Oslo (2019), the European Conference on African Studies (2018), the Africa Center for Cities at University of Capetown (2018), Stellenbosch University (2017), the Graduate Center of City University of New York (2016), the University of Michigan/University of Witwatersrand Mellon Seminar in Durban (2016), the Radcliffe Institute for Advanced Study (2016), American Anthropological Association Annual Meetings (2014), African Studies Association Annual Meetings (2014, 2013), the University of Chicago African Studies Program (2014), Northwestern University (2012), the Catholic University Leuven (2012), and the Cambridge University Center for Research in the Arts, Social Sciences and Humanities (2012).

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Material from chapter 3 appeared in “Public Things, Excremental Politics, and the Infrastructure of Bare Life in Ghana’s City of Tema,” *American Ethnologist* 41, no. 1 (February 2014): 92–109. An earlier version of chapter 4 was published as “‘Wastelandia’: Infrastructure and the Commonwealth of Waste in Urban Ghana,” *Ethnos: Journal of Anthropology* 82, no. 4 (January 2016): 648–71. Portions of chapter 5 can be found in “Excrementa III: The Leader in Upscale Sanitary Solutions?,” *Limn*, no. 9, “Humanitarian Goods,” October 2017. Archival photographs are courtesy of Constantinos A. Doxiadis Archives, Ghana Information Service, Ghana Universities Press. In addition to my own, field photographs are the work of Eva Egensteiner, Marina Ofei-Nkansah, and Eliot Chalfin-Smith. Eva Egensteiner also provided photo editing for the book.

A writing retreat at University of California Irvine Anza-Borrego Desert Research Center (DOI:10.21973/N3Q9F) in January 2020 organized by Kris Peterson and Elizabeth Chin pushed me to renew my focus on manuscript completion. Soon thereafter, when the rest of our work lives were thrown into disarray by the fears and uncertainties of COVID, participation in UF’s Center for Humanities and Public Sphere Summer 2020 writing collective offering comradery and shared purpose. Denise Trunk Krigbaum assisted with copyediting. Check-ins with writing partner Leah Rosenberg along with the tool kit offered by the National Council for Faculty Diversity and Development were instrumental to completion of this work. Since our initial conversations in 2019, Elizabeth Ault, acquisitions editor at Duke University Press, has been a great source of encouragement and insight in shaping the manuscript for a broad audience.

My family has stuck with me throughout the long decade it has taken to research and write this book. My son, Eliot, and daughter, Safi, adjusted early to parental absence, family trips to Ghana, and school abroad. Navigating cultural differences from a young age, they have honed their own

ethnographic sensibilities and ease in diverse settings. For three decades now my husband, Daniel A. Smith, has cultivated his own ties to Ghana and gained a shrewd awareness of the vagaries of anthropological research and publication. He has learned great patience in the process, evident in his support across the weeks of pandemic confinement that I devoted to writing, editing, and revision in 2020–21. This work is devoted to them. All errors are my own.



Plate 1. Tema Development Corporation, 2011 (Photo by Brenda Chalfin)



Plate 2. Trunk sewer lines across Chemu Lagoon from defunct sewage pumping station, 2014 (Photo by Eva Egensteiner)



Plate 3. Discarded Nkrumah-era maps and models on the premises of the TDC, 2010
(Photo by Brenda Chalfin)



Plate 4. Tema Central original house plans and modifications, 2011 (Photo by Brenda Chalfin)



Plate 5. Tema Central original house plans and modifications, 2011 (Photo by Brenda Chalfin)



Plate 6. Tema Central original house plans and modifications, 2011 (Photo by Brenda Chalfin)



Plate 7. Pumping station engineers, 2014 (Photo by Eva Egensteiner)



Plate 8. TMA engineer assessing pipe replacement and repair, 2013 (Photo by Brenda Chalfin)

Plate 9. Rodding
team prepares
for work, 2014
(Photo by Eva
Egensteiner)





Plate 10. Objects of contention: Their mains and our extensions, 2014 (Photo by Brenda Chalfin)



Plate 11. Neighborhood and neighborly repairs, 2014 (Photo by Brenda Chalfin)



Plate 12. Fish processing in Tema Manhean, 2010 (Photo by Brenda Chalfin)



Plate 13. Awudung streetscape, 2010 (Photo by Marina Ofei-Nkansah)



Plate 14. Manhean public toilet exterior, 2014 (Photo by Eva Egensteiner)

Plate 15. Manhean public toilet and shower house, 2010 (Photo by Marina Ofei-Nkansah)