

# Recycling Infrastructures in Cambodia

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Circularity, Waste, and Urban Life in Phnom Penh

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## Introduction

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### The Map to Begin With

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# THE MAP TO BEGIN WITH

"What gets onto the map, in fact, is difference, be it a difference in altitude, a difference in vegetation, a difference in population structure, difference in surface, or what-ever. Differences are the things that get onto a map."

(Bateson [1972] 2000: 458)



# The Map to Begin With

We stop at the edge of a hilly street. Sophea<sup>1</sup> bends her back to grasp some empty plastic bottles and styrofoam packages that lie between green grass and dirty gravel before throwing them into her metallic pushcart. Amid loud traffic, honking cars, and passing yellow and black tuk-tuks, Sophea and I stand directly in the middle of what Phnom Penh best exhibits: massive, glittering, blue-hued and sun-reflecting high-rise buildings; skyscrapers with pools; and rooftop-bars. These are situated between houses with colorful roofs and thick security fences richly ornamented with typical cultural symbols, that decorate the entrances. Some boast a golden snake, its head forming a doorknob, or *apsaras*, celestial female spirits petrified in a last position in their dance, forming a graceful gesture that whispers the myths and stories of the past. House shrines in gold and yellow mark the Buddhist belief of hosting house ghosts. Children run playfully around it, trying to catch each other while incense sticks spread a pleasant odor, burning down next to the half-rotten bananas serving as a sacrifice. From a distance, Buddhist mantras from one of the city's hundreds of pagodas with golden cupolas reach our ears as we stand in Phnom Penh's buzz chattering about what is also omnipresent in the city: waste. Its elusive and indifferent smells spread all over the city – around sewers filled with a darkish brewery and in piled trash that decays by the sun and defragment over time. Waste is everywhere in the city. In between are people carrying heavy pushcarts containing mountains of recyclable waste: plastic bottles, aluminum that reflects the midday sun, or cardboard neatly stacked to save space in the cart. With their checkered hats and their colorful clothes, the Ed Jais, as they call themselves, are a fundamental part of the urban picture. I turn my head to Sophea and ask

Who do you think owns the waste?

– *Everyone. We all consume*

She answers. An answer that started me thinking about responsibilities and recycling for a long while to come.

One or two days later, I find myself sitting in the garden of a small café just down the road, surrounded by little banana trees and other flowery plants

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that I cannot identify. A pecking chicken with a shaking head initially moves toward me but then flees, scared away by the waitress, who seems to do this regularly. I open the journal in my hand and search for the article I want to read. Taking a deep sip of my iced avocado shake, my fingers comb through the pages, damp from the high humidity when I finally find what I am looking for. The headline jumps out at me: *The waste crisis of the world!* The article discusses the drowning of our planet in garbage and the possible solutions to mitigate climate change effects, the destruction of maritime environments, and the climate-induced migration of so many people – *In the Global South*, I add to myself. No doubt that there is too much waste, especially the world's garbage dumps generally located in the Global South. However, I begin to wonder if recycling is the only option to cope with the situation, as the article suggests the circular economy approach that so many have suggested lately. I then think back to the last days of my research, when I spent a considerable amount of time with the city's Ed Jais. For whom, I wondered, is this actually a crisis? Is the true picture not so black and white? Is there simply a homogeneity of statements that omits local voices? What map does this create?

The media floods the public with pictures of garbage islands, overcrowded landfills where children search for valuable waste. This reporting is also reflected in numerous international political climate summits to achieve the promised 1.5 degree aim by 2050 through increased citizen involvement or the foundation of new local non-governmental organizations (NGOs). However, each party is not equally involved in determining how much theoretically recyclable waste is produced and where it is disposed, discarded, or transported. The waste problem is global *and* local. At the production forefront of plastic waste and the often-unrecognized aluminum residues are companies such as Coca-Cola, Nestlé, Danone, and Unilever, which are among the largest plastic producers (Fuhr/Buschmann/Freund 2019). Without exception, all are companies from the Global North. However, as these companies' production sites are located in Asian countries, 38% of global plastic waste, in the form of disposable plastic articles, is produced in Asia and the Pacific and finds its "end" there. In global terms, just over 50% of the plastic *ever* produced has been recycled since 2000. The overall waste generation in Cambodia, though, lies around 409 thousand tons per year in Phnom Penh (2010), with approximately 21% of Phnom Penh's municipal waste being plastic waste (meaning citizens generate about 4.2 kg/year of plastic waste). Aluminum waste, in turn, is not considered at all in tables concerning waste disposals in the country (Seng/Fujiwara/Seng 2018, Seng et al. 2013). Here, the largest "deliverers" of plastic packaging materials, often imported from abroad, are food companies and market stalls. They use styrofoam packaging for the takeaway delivery service, fruit and vegetables wrapped in plastic coverings in supermarkets, and plastic bags disseminated at local markets. The largest distribution hubs for aluminum include beverage and food packaging but also construction materials.

After the plastic and aluminum items are produced and distributed to consumers, the material's valuable form comes to an abrupt economic end.

Accused of being worthless, they end up in our household waste or, as is the case in Cambodia, are often burned, buried, and blanked out. The production, application, disposal of waste tremendously impacts on our climate, maritime ecosystems, and health. Annually, 56 gigatons of carbon dioxide are emitted from worldwide plastic production, and approximately 17 metric tons of CO<sub>2</sub>-equivalents are emitted by aluminum production and its recycling activities worldwide (Fuhr/Buschmann/Freund 2019, Saevarsdottir/Kvande/Welch 2020).<sup>2</sup> The emission of greenhouse gases and black carbon from the landfill in Phnom Penh was approximately 59,715 tons/year (Singh et al. 2018).

Mantras of the circular economy as the best solution for lowering global carbon dioxide emissions, which is also the result of burning processes, persists. Regularly forgotten in these arguments are the countries most affected by the flood of waste, which are often unable to erect recycling plants in the supposed manner and sometimes receive other countries' waste, too. Neglected also are the people who already work in recycling economies, that might not fit in a conceived scheme of formalized circular economy approaches, treated by the impact of the Anthropocene, produced unequally (Todd 2014). In addition, those who advocate for the circular economy solution fail to consider the plastic that is part of our clothing in the form of synthetic fibers such as polyamide, polyester, acrylic, or nylon. This plastic is as integral as the rubber in our car tires or the aluminum in construction elements and food packaging. Aluminum likewise exemplifies the "modernity" of our daily life, our inventions and infrastructures. It speeds and lights up our world, often in the image of sustainable technologies that serve aluminum's clean image (Sheller 2014). Its environmental and societal overexploitation seems here to have eluded scrutiny thus far. In reality, plastic and aluminum scraps can decompose and become rusty, shatter, and even eventually transform into tiny microparticles that invade our rivers and seas – our environment and our bodies.

### **The Cambodian Waste Economy**

Phnom Penh is a rapidly growing city, with over 2 million inhabitants. In comparison, the total population of Cambodia is approximately 16 million; people come from all over the rural countryside to find new and better jobs, to study, and to partake in the opportunities the capital promises. Younger people especially, who compose the largest portion of the population (15–29 years), make up a vastly growing number in the largest city in Cambodia. These youths count themselves lucky to be able to move there, where they hope to find a gateway to the world – blessed by, at least, more money and a job. Most rural migrants settle somewhere on the outer reaches of the city in squatter settlements along the main road, along sewage channels and railways, or in a family member's house. The city thirsts for young, fresh, and strong people, who all find jobs somewhere. There is a growing number of shoe and textile factories in the outer districts, countless construction

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workplaces, and jobs in the growing tourism sector (UNFPA 2014). At the same time, entrepreneurialism is growing, and shiny, glassy shared offices are sprouting up. As the capital expands in terms of people as well as geography and economics, more and more waste is produced, patterning the streets and sewage systems. It is pervasive and omnipresent.

The Cambodian waste economy can be roughly divided into the sector that deals with solid waste and the one that manages all theoretical recyclable waste. Recyclable waste systems in other countries are partly or fully “managed” by either large or state-owned enterprises. In contrast, Cambodia’s waste system is a genuine grassroots recycling economy that follows its own paths and laws without state support (until now). In the past 20 years, so-called “informal” (recyclable) waste economies worldwide have been successively formalized and privatized. In adjacent countries such as Thailand and Vietnam, waste reclaimers<sup>3</sup> remain able to maintain their recyclable collection activities, but the state supports the sector both financially and technically, as well as through capacity-building initiatives and incentives (e.g., Chua 2016, Jellinek 1993, Nguyen 2019, Sasaki et al. 2014). The recycling economy in Phnom Penh is thus considered unique, though intense political deliberations to formalize the sector endanger that uniqueness.

Before 2019, there was only one solid waste collection company, CINTRI Cambodia Co. Ltd., which brought household waste (over 50% of overall waste generation) to the nearly full Dangkao landfill in the southwest region of the city. The landfill in Phnom Penh is one of 106 across the country, while 79 districts and cities have no landfills at all (Vida 2020). Due to narrow, inaccessible, and dark streets; labor problems; and the city’s rapid expansion, the waste collection company failed to fulfill its service. In particular, outer and poorer districts rarely have their household waste taken at all. The company collected the fees for this service until the beginning of 2020 through the electricity bill by the Electric Authority of Cambodia (EDC). Were a resident to refuse to pay the bill, the EDC could cut their electricity off (Denney 2016, Singh et al. 2018, STT 2015). During this period, citizens were supposed to use an electronic system for payment, and the local government opened the market for multiple solid waste collection services. On February 27, 2020, the Phnom Penh Municipal Hall (PPMH) announced the beginning of a bidding round for interested companies seeking to replace the hitherto only existing waste collection company, CINTRI, which has since been substituted by several suppliers (David 2020).

Whereas the solid waste sector in the city is occupied by the services of several official waste collection companies, the disposal of recyclables is in the hand of many waste pickers and intermediaries. If recyclables are not bought off or collected by the Ed Jais, they are thrown on the streets and in rivers or sewers, burned, or collected by CINTRI or one of the other solid waste collection companies. In respect to the city’s overall waste composition, its recyclables consist of plastic bags (14.2%), other plastic (3.8%), paper products (6%), metals (1.1%), glass (1.4%), and other types (16.1%; Mongtoeun/Fujiwara/Sethy 2014, Seng/Fujiwara/Seng 2018,

Spoann et al. 2018). Sophea is one of the roughly two thousand Ed Jais<sup>4</sup> who wander throughout the city each day to buy and collect recyclables (Sang-Arun et al. 2011, Seng/Fujiwara/Seng 2018). Additionally, about 300 waste reclaimers live and collect at the city's dumping fill Dangkao (Seng/Fujiwara/Seng 2018), several more only collect in the city at night, and others are solid waste workers who fetch recyclables from bin bags when collecting them from the households.

### *The Situatedness of the City's Recycling Economy*

The recycling economy in Phnom Penh is overall intertwined with material flows and sociocultural practices that cross state boundaries as well as dichotomies of formal and informal and of local and global, unveiling an essential and functioning situated recycling infrastructure in the city. It is entangled with sometimes far-flung places and politics that navigate along moral sentiments. In this way, the recycling economy is a complicated sociomaterial network of materials but also humans and non-humans who follow long-established rituals and recycling practices that make the system highly functional.

In this context, Ed Jais sell their collected waste to intermediaries, who themselves assemble different kinds of recyclables from different waste picker factions. They re-sell this to bigger depots that then ultimately send cleaned, ordered, and sometimes already squeezed recyclable materials further abroad, mainly to Vietnam, Thailand, and China,<sup>5</sup> where the prominent recyclables (aluminum, plastic, paper) are eventually recycled. In contrast, e-waste (copper and metal) mainly goes to Singapore. Styrofoam and polystyrene, which comprise a significant portion of the city's waste – including from construction sites – are not collected at all. Though Cambodia possesses a small number of recycling facilities,<sup>6</sup> they are unable to recycle the entirety of the generated recyclable waste. Waste's specific global character, in the sense that it is always in motion and flows regardless of national borders, is inscribed in the routines, habits, and daily encounters with waste. Simultaneously, the sequence of services and work neatly connects different groups that are part of this economy definable not only through the category of economic value but through the enactment of different waste values (cf. Chapter 3). In this sense, the recycling economy in Cambodia is an entire bottom-up endeavor.

However, the management of waste is commonly understood as a dedicated task for politicians and urban planners. For the depot owner Sanyu (2017), an urban dweller, a functioning waste management "(...) makes sure that it [the city] has a clean space for the people, a good environment for the people." Despite this, the perception held little interest in daily politics until 2019. Yet, the government was under pressure from several areas: the international climate protection agreements of inter- and intra-governmental organizations, increased citizen awareness, a public desire for disposal services, and widespread enthusiasm for waste collection that protects the environment.

As a first step, the city government implemented a regulation on plastic bag distribution in April 2018, requiring larger supermarkets to charge 400 Riel (10 cents) per bag. However, this has had almost no impact on the overall generation of plastic waste as most citizens obtain their groceries daily at markets and smaller family shops, which were permitted to distribute plastic bags free of charge. Moreover, it is a common cultural practice to wrap many items in plastic – ranging from the small food portions sold at local markets to liquid shakes that dangle from the handlebars of motorbikes. The divergence between the implemented regulation and the daily usage practices of urban citizens is obvious. Simultaneously, ongoing negotiations between the United Nations Development Programme (UNDP), among others, and the Ministry of Environment (MoE) to formalize the recycling sector promise to change the way organic waste and plastics are currently handled. Additionally, the government explicitly advertises investing possibilities in this sector in the form of conferences to devise economic and technological possibilities.

Since 2020, the COVID-19 pandemic has further affected Ed Jais' working conditions and their societal status, unveiling rooted power relations. Many feared becoming infected by the virus from touching synthetic surfaces, such as plastic or aluminum, and becoming unable to work, leading them into abject poverty (e.g., Eitel 2020). Several lockdowns accelerated this situation – especially since Ed Jais needed to decide between their own well-being and those of their families, as no further income would have meant starvation. The temporary closing of borders additionally shackled the entire recycling economy and prices, at which point the value of recyclables became extremely low.

This rupture reveals a deeply rooted societal and global inequality – one that actors working in the recycling economy face daily but that is typically ignored or relegated to a background issue (cf. Chapter 2). Several circulating predominant waste fantasies value waste-reduction attempts, drawing new classifications around garbage and disposal strategies and nurturing a moral atmosphere of waste. In this regard, the recycling economy exhibits a situated character reminiscent of its genuine and embedded character that transcends binaries of local-global and past-future. It further undergirds the aim of revealing seemingly objective and technological attempts, appearing as a “view from above, from nowhere” (Haraway 1988: 589) to handle the Cambodian waste “crisis” by implying a decided hegemonial position that claims to exclusively know.

### *Economies beyond the Scratch of the Pen*

In the 1970s, the International Labour Organization (ILO) described so-called “informal” economic activities as those unregulated by states or enterprises. In Cambodia, these “informalities” constitute “business as usual.” Idealizing the formalized economy as one that counts as desirable creates distinctions between “good” and “bad” ways of doing economies that are strongly connected to imaginations of poverty and vulnerability. These assumptions are



often dated back to William Arthur Lewis' work from the 1950s. Lewis understood the informal sector as a reservoir of inexpensive labor for the formal sector (Lewis 1954). The state thus prioritizes a good economic climate that guarantees capital accumulations regardless of which back is carried; this is one reason for understanding cities as places of rebellion, according to David Harvey (2013). Ironically, as Saskia Sassen (2005) mentioned, informality is, in this way, an essential element of advanced capitalism and not an imported feature from economically poor regions of the world. Indeed, Ananya Roy and Nezar AlSayyad (2004) emphasized that informality is strongly intertwined with urban space and should consequently be considered an important driver and modus of urbanization. Furthermore, contemporary waste studies examining issues in these economically "backward" countries intensively scrutinize "informality," especially in relation to (neoliberal) governance (e.g., Collier 2011, Collier/Schnitzler/Christopher Mizes 2017, Myers 2016).

The term "informality" thus implies a misleading understanding of economies. First, it envisions a neo-evolutionary process in which economies and nations proceed to the stage of a "formal" economy. Secondly, it renders the picture binary into two optional concepts, blurring the diversity of economic modes that fall under neither formal nor informal at all.<sup>7</sup> Like many other "Western-centric" concepts through which countries of the Global South are often analyzed (e.g., neoliberalism (Ong 2006)), the dichotomy between informal and formal fails to grasp the locality's uniqueness, neglecting what anthropologists have long observed: economies are complex cultural and socially informed networks based on a different set of factors, such as rituals, reciprocity, and redistributions of goods and labor that are graspable through an ethnographic approach (Carrier 2012).

However, current developments to the recycling economy in Cambodia fall within a broader trend in Southeast Asia. As governmentality moves beyond the mere state regulations toward a transnational governmentality, many actors have influenced the discussion of how the economy should be formalized. International private aid initiatives, NGOs and intergovernmental institutions that directly approach the field are contributing to what Didier Fassin (2012:1) called "moral sentiments" – "emotions that direct our attention to the suffering of others and make us want to remedy them." This societal barometer thus also indicates how practices and discourses aiming to reduce social inequalities are valued. The social question then increasingly becomes a transnational one. With that in mind, the contemporary state of the recycling economy is a good example of historically derived narratives about states and economies and current, evolved forms of transnational governmentality. Further, though, it also enhances understanding of how these forms of governmentality are enacted on the back of the land and the people.

In this way, the social construction of this environmental "problem" is based not only on moral assumptions but on scientific knowledge as well, as noted by cultural anthropologist Gisela Welz (2007). In combination, these

factors lead to an ethic of environmentalism that emerges in a “moral economy of responsibility” (Herzfeld 2006: 186, cf. Welz 2007: 153f.). Using scientific knowledge as an ultimate basis of decision-making likewise renders the “problem” apolitical, as the “moral turn” implies that the construction of the problem can be solved through technical fixes, e.g., through a “one-off intervention” (Derks/Nguyen 2020: 2). This problematization makes it impossible to touch the rooted power relations at hand. Moral sentiments create an atmosphere that envelopes with its veils; it fangs ideas, actions, and the deeds of urban inventors, constitutively permeating an ethic of environmentalism and, more precisely, an “ethic of waste” (Hawkins 2006). Currently, it is international aid initiatives, transnational governmental organizations, and political authorities that are deliberating unilineal solutions for the Cambodian recycling economy based on scientific knowledge. This scientific knowledge derives mainly from the natural sciences and quantitative data analysis, creating universal categories of what waste *is*.

However, what waste is, is differently understood by waste workers, urban dwellers, the construction industry, factory workers, and other groups. On negotiation platforms, matter of facts about sustainability, green growth, and waste become materialized, perpetuating the alienation between “nature” and “culture” and prevailing fantasies of “proper” waste management. Though these topics may not seem directly related to the waste situation on-site, they are situated within a broader assemblage, connecting in a “sympathy” toward certain topics from seemingly distant areas (cf. Chapter 4). Yet, the materialization of knowledge through these platforms, which are not necessarily based on-site, results in the implementations of technical fixes that essentially invade in (political) Land.

### **Waste Fantasies**

That waste is a relational category is nothing new in the field of existing social science waste studies that has risen exponentially in recent years. As a deeply relational category, waste reveals to be embedded in practices, both those of disposal or wasting, collecting, or dumping and those of knowledge-making – in other words, matters of environmentalism or “sustainability.” As Zsuzsa Gille (2013: 29) described, “(...) waste constitutes a social relationship, and as such should be studied as something produced materially and conceptually by profoundly social relations” (see also Reno 2014). Waste should thus not be examined in isolation or as an item possessing value on its own. Rather, it stands in relation to practices that define and emerge from what it becomes. Waste is arbitrary and exhibits an indeterminacy (Alexander/Sanchez 2019). The practices of waste handling that are part of an economic system describe the arbitrary and indeterminacy character of waste based on its (multiple) definition, what it is used for, and what its (multiple) value is. Analyzing the practices of waste collecting, sorting and ordering can bridge the gap between seemingly enclosed single actors

and exist in often unrecognizable intermediate spheres. This in turn poses questions about waste and labor (Gidwani 2015), widely connected inequality structures and waste colonialism (Liboiron 2018), and garbage citizenship (Fredericks 2018).

Interdisciplinary research stream Discard Studies assembled exemplary research examining waste as more than the singular focus of recent interest. Distinctive from earlier research strands such as waste studies (Zimring/Rathje 2012) and the archeologically field of garbology (Mullins 2002, Rathje/Murphy 1992, Shanks/Platt/Rathje 2004, Sosna/Brunclíková 2017), this field of research investigates questions about waste “(...) as a process, category, mentality, judgment, an infrastructural and economic challenge, and as a site for producing power as well as struggles against power structures” (Discard Studies 2018, Liboiron/Lepawsky 2022). In this context, the Cambodian recyclable waste economy can be understood as embedded into its specific sociocultural and transnational-informed surroundings that influence the way waste is perceived and handled.

However, the recycling economy is more than just a product of its surroundings – it is simultaneously co-producing it. Emphasizing this mutual connection between the economy and its environment provides the opportunity to see the recycling economy no longer as a morally induced and, as such, apolitical economy but as a politically emergent one. Its persistence is not based on the political will that forms through transnational governmentality but is also highly dependent on the way interests, social appearances, and needs emerge and are represented.

### ***Universalizing Waste***

Waste functions always as a marker pointing to the on-site inequality structures on which waste and pollution sit and dismount. Aptly characterizing this situation as environmental racism, the environmental justice movement (especially prominent in North America during the 1970s) brought attention to the strong connection among race, inequality, and environmental exposure. Exemplarily, Robert D. Bullard, dubbed the father of environmental justice, reminded of garbage worker strikes in Memphis as well as demonstrations against plans to construct a sanitary landfill in a suburban region of Houston, mainly inhabited by People of Color (Bullard 2001). In this sense, racial injustice becomes climate injustice, which remains an ongoing problem.

In Phnom Penh, where dumping fills are erected in districts primarily inhabited by vulnerable residents, environmental injustice is visibly enacted on a daily basis. People there are affected by high pollution and toxicity, leading to “environmental racism” (Bullard 1993, Taylor 2014). This environmental racism is result of complex urban activities and prevailing visions about urban participation and citizenship, influenced by historically and

contemporary ways of doing politics. As Max Liboiron (2021: 12) noted, pollution is colonialism, understanding the latter concept “as a set of contemporary and evolving land relations that can be maintained by good intentions and even good deeds.” Conceiving of colonialism as not only historically but also contemporarily linked and bonded to the land brings back the attention to “place”, i.e., occupied for landfills and recycling plants as a form of postcolonial influence. In this regard, waste management is a direct result of certain waste fantasies of transnational and local political authorities that orientate themselves to moral sentiments deeply rooted in history (cf. Chapter 1).

Waste fantasies, that are materialized imaginations for navigating optimal synthetic waste management, affect both the recycling economy on-site and the understanding of “waste” as possessing “universal” properties that are understood as unrelated to social and cultural contexts. In this regard, they inform current waste disposal strategies driven by moral sentiments and “approved” strategies and technical fixes (cf. Eitel 2021). In essence, waste fantasies are imaginations unfettered by reality (cf. Collins Dictionary 2021). Following Mel Y. Chen’s (2007: 367) notion of “sovereign fantasies” that describe “the national or imperial project of absolute rule and authority,” waste fantasies are predominant imaginaries that push onto normative understandings of waste as a universal object against other definitions.

In so doing, international and local actors’ good deeds and intentions to “help” Cambodia out of its “waste crisis” result in interventions driven by alien waste fantasies about land, culture, and life. These in turn lead to political waste practices rooted in historical and (post-)colonial ways of doing economy as perpetuated in the present with a view toward the future. By enacting domination over (national) politics and interpretative sovereignty, waste fantasies directly intervene in political “Land”. According to Max Liboiron (2021), “Land” (with a capital “L”) refers to land that includes its geographical, cultural, and societal resources. Postcolonialism is consequently an established mechanism of ruling *through* an entity in the form of, for instance, the waste crisis, allowing actors to continue invading foreign lands. Like many other countries of the Global South, Cambodia is exploited as a resource for “global waste sinks” in which matter (waste) is very much *in* place despite being out of place for someone else (cf. Eitel 2019).

### ***Devaluation Work***

By unifying the “problem” of waste and its control strategies, histories, narratives, and beliefs in which waste and its disposal strategies are embedded are muted. Thus, not only is waste itself a marker of inequality, but also the biopolitical and technological responses to the “problem”, that are based on predominant waste fantasies. In this way, biopolitical programs affect human, non-human, and public bodies, treating them like trash as well (cf. Chapter 2). Anthropologists Thomas H. Eriksen and Elisabeth Schober made the following point: “There is a logic of exclusion and expulsion to the way we

handle waste, which is paralleled in the way people are being treated: redundant humans, sometimes spoken of as “human waste” (Eriksen/Schober 2017).

Simultaneously, urban developers force a picture of a “global city” that corroborates and even exacerbates people’s vulnerabilities, such as those living as squatters in the city, as Colin McFarlane (2008: 431) described it using the example of postcolonial Bombay. Similarly, Vinay Gidwani (2015: 1) felt that the “bumpy geography of the waste economy” permanently (de-)values people and places. In this regard, marginalized urban dwellers face violence in the form of spatial discrimination by urban-planning-induced segregation, the place-making of technological projects, and the absence of basic infrastructure (be it waste disposal, water, or electricity). All these manifestations of violence correlate with the social status that push or hold already marginalized groups on the margins of society (cf. Chapter 3). This form of violence is not always immediately visible but rather emerges as a form of “slow violence” (Davies 2019, Nixon 2013).

In this way, violence grounded in waste fantasies is an institutionalized form of discrimination and devaluation that permeates bodies and degrades people, labor and Land. The way in which waste management programs and policies are carried out, is strongly connected to long-established ways of doing politics. These political infrastructures remain active in some ways, performing devaluation work as they categorically identify local waste practices as irrelevant to larger economic relations. By universalizing waste as something to be understood apart from its sociocultural relations, the associated waste workers, labor, and place are also disconnected and devalued. What is understood by waste and how it is handled is decisively determined by those prevailing waste fantasies that occupy relevant decision-making positions by systematically performing devaluation work.

This book turns to situations in which such devaluation work becomes apparent: in dependency relations within the “informal” recycling economy in the city, in an understanding of “being a waste picker,” in waste workers’ strategies to survive, and in the production of “sustainability” and “green growth” that envisions a clean and in turn livable city of Phnom Penh. It simultaneously emphasizes historically rooted meanings of plastic and aluminum as promises of modernity and the faith in technology as a production site of such waste fantasies. In contrast to visions of uncertain futures and contemporary political actions, these fantasies are mainly juxtaposed to the genuine recycling economy in the city, which stands firmly between hegemonial tides. Throughout the book, the recycling infrastructure on-site is revealed to offer a political reply to waste fantasies and moral sentiments throughout quotidian city life by reclaiming not only the value of waste but political Land and by silently altering the societal order. Configuring tropes and narratives, maintaining autonomy and networks, and creating new comradeships uncovers forms that subtend simultaneously biopolitical and technological answers. In turn, opportunities also emerge using the infrastructures

as a political platform to claim different realities and knowledge about society and waste.

### **Vivid Infrastructures**

Comprising many modes of doing economy, recycling activities in Phnom Penh constitute part of a heterogeneous infrastructure that provides a basic urban need (the systematic disposal of recyclables in the city), but it offers more than just that. Contrarily to technical assumptions that attest infrastructures a physical shape, equipped with the single goal to provide a flux of materials or services from A to B, the recycling infrastructure in Phnom Penh elicits circular, and thus processual, ways of doing economy.

In conjunction with intermediaries, depot owners, pushcarts and green scales, and many others, Ed Jais make their living by collecting and selling recyclables. They are, as AbdouMaliq Simone (2004) described, “people as infrastructure.” Identifying people as an essential (constitutive) part of infrastructures relates to infrastructures’ vividness, similar to what Rosalind Fredericks (2014; 2018) called a “vital” or Ash Amin, among others, a “lively” infrastructure (Amin 2014, Hetherington 2019). In this perspective, focus shifts from infrastructure as a physical, built entity to one without any physical and immediately visible material structure. This view understands infrastructure as pulsating, colorful, and lived. In this regard, infrastructure can be vivid (from Latin *vividus* which means “animated, lively”), as it is lived and intensive in how it leaves impressive stamps to emerging others. The term thus refers to a vivacity that infrastructures exhibit because they are utterly interwoven with human and non-human activities and everyday practices. Furthermore, infrastructures relate to the clarity and intensity with which they are always partially perceived; they resonate in the emergence of sociomaterial worlds, in the creation of stories and narratives, and the struggle over ontornormative categories of knowledge.

Analytically, the concept of infrastructure is useful because it provides a way to understand the relationality of the sociomaterial constellation, unraveling the trajectories the material waste undergoes when it travels and when it becomes, such as a resource, a means to sustain life, and a marker of inequalities. They also unravel when waste is materializing *with others*. In specific correlation and conjunction, this enacts waste fantasies, different understandings of the proposed waste problem, and visions of the city. A closer examination also uncovers the emergence of novel ecologies in ruined places (cf. Chapter 5). Considering the recycling economy an vivid infrastructure transcends the picture of an economy structured around a set of aspects of reciprocity, exchange, and monetary value. Rather, it brings the (sometimes dispersed) relation between things and the processual character of *doing* economy in its situatedness into focus. The concept of infrastructure has often been criticized for being overly specific and coherent while simultaneously being overly broad and endless, as Penny Harvey observed: “[i]t served

as a target for both trenchant critique and creative analytical possibility” (Venkatesan et al. 2018: 4). Thus, it helps to fruitfully consider infrastructure as a concept and a practice (Harvey/Jensen/Morita 2017: 6). As infrastructures are “(...) the material conditions of possibility for life” (Venkatesan et al. 2018: 5) and anthropology is genuinely interested in what these conditions of (cultural) life are about, infrastructures are “classic anthropological entities” (Harvey/Jensen/Morita 2017: 6).

Roads, pipelines, payment systems, and bridges are often understood as the “hard” infrastructure of long-cherished research objects regardless, as they also demand attention from society (Appel/Anand/Gupta 2018: 4). The recycling economy in Phnom Penh is, in opposition, far from being a physically built entity purporting to be a stable construction that provides “the basic structures and systems needed for a country” (Cambridge Dictionary n.d.). Transcending the definition of infrastructures as “tubes and wires,” the economic practices of recyclable waste disposal on-site can be aptly related to a “collaborative network” “(...) that facilitate[s] the flow of goods, people, or ideas and allow[s] for their exchange over space” (Larkin 2013: 328) and what AbdouMalik Simone (2004; 2015) stated comes through multiple temporalities and encounters into being. That the recycling infrastructure in Phnom Penh exhibits a rather vivid character highlights the daily practices enacting it. In this regard, Jörg Niewöhner (2015: 5) discussed “infrastructuring” as a material-semiotic practice that “interpellates” life in the way it “mangles subjects and objects, constantly changing roles, perspectives, and agencies thus rendering the distinction [between subject and object] meaningless.” Paying “situated attention” to infrastructures, as Asta Vonderau (2019: 10) suggested, can unravel the varying and embedded relationships that infra-structure life while “(...) continuous bringing together, relating, and coordinating of technologies, communities of actors, organizational structures, and moral values.” In this way, infrastructures are practiced, building continuous relationships with different aspects such as labor, social orders, and urban living. Following materials through the trajectories of the recycling infrastructure in Phnom Penh and understanding practices as co-constitutive of infrastructures offers insight into the shaping potential of these specific constellations that are entangled with the motion of things. This includes its narratives, visions, and the dynamics of practices that are embedded in cultural-specific histories and wishes for the future that are all part of emerging sociomaterial constellations and (political) worlds.

The vivid character of infrastructure is not unintelligible, arbitrary, and chaotic. Rather, its related materialities and practices follow trajectories and pathways, revealing an organizational principle according to which the vivid infrastructure “works,” forming and shaping the collaborative network. As they create new alliances with potentials for the future, connected with a “(...) guess of where the city is going (...)” (Simone 2015: 158), they constitute themselves as well. In this empirical context, materials and practices not only “move” from one point to another in a causal sequence but tend to circle

among different positions. This aspect of circulation and how we partake in it seems to be a crucial theoretical entry point if we aim to think beyond an infrastructure “out there.”

Against this backdrop, anthropological and STS-informed infrastructure studies have disregarded to closely examine the *circular* movements of things and practices in their *constitutive* potential. Instead, studies have especially scrutinized the movement of materials and the way value is produced (e.g., Simone 2010). Going beyond infrastructures as linear sequences of value chains, I choose to open an old barred box of cybernetic thoughts. By doing so I like to demonstrate how the dynamic of practices and materials in circuits “holds” the entire infrastructure together and to further emphasize the analytical entrance point of understanding infrastructures as made by (human and non-human) valuable practices that remain often ‘out of sight’.

### *Circularities and Early Cybernetics*

Focusing on circularity points toward a way of seeing the world as existing in a process, providing a differing analytical entrance point. Today, the concept of circularity is visible in circular economy approaches, as well as in fields building upon theories of self-organization, feedback loops, and systems theories. Its “discovery,” however, returns us to early cybernetics as theories of complexity and self-organization. These early theories align with the contemporary concept of circularity, which Arturo Escobar (2007: 106) identified as “(...) outside of the immediate scope of the social science[s] (...).” It seems that the concept is worthy of and relevant for (re-)consideration.

Generally, the cybernetic approach understands the world as patterned in complex units focused on the cooperation and relationality of system elements rather than on asking for the types and amounts thereof. Its focus is on *processes*, not things. The crucial element of cybernetic theory is the notion of *circulation*, which circumvents the presupposition of casual linear mechanism, following sequentially ordered progressions, structuring our whole life and the way we perceive it. As anthropologist Miriam Rodin (1978: 747) remarked in her review of an “Anthropology Today” panel discussion in 1977, systems theory “(...) is a general perspective, a way of looking at the relationships among variables that has much in common with traditional anthropological holism” (Rodin 1979: 748). It is a statement that sounds familiar to infrastructure scholars, highlighting the infrastructures as an analytical concept, an ethnographic object. In other words, it is a perspective for examining things (e.g., Anand/Gupta/Appel 2018, Schnitzler 2018).

Biologists Humberto R. Maturana and Francisco Varela’s (1987), for instance, conceived of circularity as bound to the concept of a living system’s autopoiesis, allowing it to always work self-regulatively as being self-referential, and thus produce the components for the maintenance of



their system. This means that living systems in Maturana's approach are able to (re-)build their own fundamental elements repeatedly. Nonetheless, it acts with its environment, though structural differences occur within and are sourced by themselves. Its organization repeats only what works – in way as recursive as feasible. If irritation or shocks occur – and they will –, the system reacts in reshuffling some preconditions of their reproduction, but in a conservative manner. These systems are thus stable *because* they are dynamic and adapt constantly to their environment. Systems of sufficient complexity are able to “remember” their (internal) response to a certain quality of environmental interference, thus anticipating viable reactions to future challenges. Higher orders of this behavior is what we usually refer to as “learning.”

In this context, self-referentiality means that any difference (in system language, this would mean any perturbations from the “outside,” the environment, responsible for the differences) that affects the system (and reciprocal to its environment) changes the system accordingly (in-forms it). The system's current status always refers to its former self, and its condition most commonly only slightly differs from the former status. If change transgresses an intrinsic threshold and if the outcome drastically differs from the former status the living system will not be able to re-produce itself, – the organism dies.

### ***Differences, Effects, and Information***

One of the central aspects of circularity is the “(...) connection between action and experience, this inseparability between a particular way of being and how the world appears to us, tell us that every act of knowing brings forth a world,” of which “[the action and experiences] (...) applies also to what we are doing here and now” (Maturana/Varela 1987: 26).<sup>8</sup> This act of knowing marks a difference in each system. This is easily applicable to Gregory Bateson's famous statement that information is ultimately the “difference which makes a difference” (Bateson [1972] 2000: 453) that can (in-)form the system, such as, for instance, a city's recycling infrastructure. What differs changes and modifies. It is not the “thing” between two parts that *is* the difference but rather an “abstract matter” (Bateson [1972] 2000: 452) that comes into being due to the relationality between two parts:

(...) when you enter the world of communication, organization, etc., you leave behind that whole world in which effects are brought about by forces and impacts and energy exchange. You enter a world in which “effects”—and I am not sure one should still use the same word—are brought about by *differences*. That is, they are brought about by the sort of “thing” that gets onto the map from the territory. This is difference.

(Bateson [1972] 2000: 459)

Accordingly, what differs changes and modifies *as* effects. To trace these effects, it seemed suitable for me to follow materials and practices relevant to the recycling economy in Phnom Penh. The map Bateson referred to in distinction from the territory stands representationally for the territory, never able *be* it. What I like to borrow then from cybernetic ideas of circularity is the aspect of self-referentiality and differences.

The differences that make the difference and continuously alter the system are initiated by interactions between the system and its environment, between parts of it within and beyond. The difference may be grasped as an abstract matter according to Bateson, but the *effects* that lead to changes in the observed world become more evident. They are visible and therefore methodically traceable as the parts (Bateson [1972] 2000), waves (Barad 2007) or systems, “intraact” with each other, creating a noticeable diffractive pattern. Grasping these effects methodologically opens new possibilities for characterizing and following things beyond boundaries between the human and the non-human and understanding recycling practices as a deeply sociomaterial practice. In this regard, the emphasis is on processuality, i.e., in form of moments, events, and ontological experiments aimed at the “decentring of the anthropology of infrastructure,” as Casper Bruun Jensen (2017: 629) once described it.

These patterns are also visible when waste reclaimers change the way they collect recyclables after being informed of the best time to collect waste the next day, for example. As parts of a sociomaterial constellation (system), they interpret the information about which household to collect recyclables from the next day as so relevant that they alter their walking route (status of the system). Through the recurrences of practices, they simultaneously maintain the infrastructure.

Moreover, this system does not exclude non-human or more-than human agents and practices; it rather implicitly considers them, as the analytical framework does not allow (from a structural perspective) for the separation of object and subject and human and non-human. It does, though, allow for other distinctions from a perspective of practice and life on questions of power, hegemonial structures, race, gender, and other categories of difference. The “elements” of the systems are therefore not human or non-human agents but practices that remain similar in structure and organization (meaning relation) to other practices and actions sustaining and maintaining the system and materials.

In this way, practices and materials are mutually constitutive in the process of materialization. In the framework of new materialism, I “position” practices and materials as always being dynamic and moving while emerging through and *with* events and occurrences that bring situations, things, and materialities into being. “Things” and materialities are consequently not understood as having an ascribed agency (by scholars) but are rather as parts of constellations that “act.” This means they practice (as a verb) through these events, which is visible when waste, for instance, provokes reactions due to its omnipresence on a city’s streets. Such a characterization is similar to Karen Barad’s idea that “agency is not held, it is not a property of persons or things;

rather, the agency is an enactment, a matter of possibilities for reconfiguring entanglements” (Dolphijn/van der Tuin 2012). Practices are conducted by humans *and* non-humans alike (Mol 2002) and in turn bring objects into being. “(...) [T]here is no longer a single passive object in the middle, waiting to be seen from the point of view of seemingly endless series of perspectives” (Mol 2002: 5). In this regard, a praxeological approach ultimately enables an empirical inquiry into the way constellations *practice* materializations.

Stefan Beck (2019: 17)<sup>9</sup> suggested using Gregory Bateson’s idea of ecologies and feedback loops to posit a potential practice theory 3.0, using “practice” not only as a substantive but as a *verb*. He further explained that a practical action is based on a feedback-loop depending on the information. Eventually, that loop leads to constant adjustments of this action. As an example, one can use the image of a woodcutter, a person routinely adjusting their blows, among others relative to their own position and the one of the dents already made, while cutting a tree (Bateson [1972] 2000). Beck (2019: 21) suggested centering the “organizational principle” of such constellations of practices, meaning their conditions created for their self-organization and maintenance. The further implication for “the” social, or in this case the materialization processes they trigger is a part of this at the same time. The praxis of the system is therefore detectable in the organizational principle through which human and non-human practices (substantive) occur in a sociomaterial constellation (such as an infrastructure) that practices (verb) materialities, meaning that it enacts and emerges through events’ materialities. The infrastructure of waste handling is not the totality of all things, but it is a kind of organization of practice that emerges as “the” service for recyclable waste handling in urban Phnom Penh “on the surface.” In contrast, “behind the scenes,” waste handling, and waste as a sociomaterial practice is constantly negotiated, shaped, manifested, and destroyed.

### ***Infracycles – a Suggestion to Focus on Processes***

The concept of circularity marks another way of thinking about processes, movements, and how “progress” happen. In this context, “progress” refers to the often-unchallenged understanding of history, change, and sequential processes of life in a causal-linear structure with single temporalities. Our history is believed to create our future; seasons follow others until the unity of a year is over, and things follow other things built on them. This seems to also count for infrastructures, which are built based on others, attesting to be temporal markers underlying uniform-temporal circumstances. Understanding infrastructures as the result of multiple practices may allow circularity to provide an epistemological entrance point from which to grasp the process of materialization through the movement of materials and the recurrence of practices. At the same time, it may facilitate the understanding of circularity as a principle that conditions also infrastructures. As such, circularities that become visible point to multiple temporalities, such as wishes of wealth rooted in history or a codex of cultural habit that shines through. As a basic

principle of infrastructure, circularity provides an explanation about how information and differences stimulate its self-organization process and maintain and therefore hold the entire infrastructure together.

However, human and non-human socioculturally informed ways of doing is chaotic, complex, and temporally nonlinear. They are circular diverse. As the movement of people, things and life works rather in circuits than in linear sequence, its analytical focus is on circuits. As Gregory Bateson once specified, "(...) if you want to understand some phenomenon or appearance, you must consider that phenomenon within the context of all completed *circuits* which are relevant to it" (Bateson 1991: 260, emphasis by the author). These circuits are not bound to a closed unit at all. Rather, they go beyond it, indifferent to human-made boundaries, transgressing borders that are stipulated by a of a thing's category or by the reification of the temporal marker in history or for the future. Through this process, an infrastructure emerge as an result of differences that are effect of recurrent practices, based on information. This connects the phenomenon to sometimes disparate believed platforms of negotiations and interplays of which the infrastructure is a part, which do not connect "back" to any given scale as micro or macro. Instead, they work on different levels simultaneously. Their encounters create differences that alter parts and knots "within" the infrastructure, influencing politics, daily life, and ontological platforms that are undetectable in a linear way as they work on different things synchronically and multidimensionally.

Identifying relevant "circuits" by following circular practices of waste workers in Phnom Penh unveiled the recycling infrastructure as more than a homogeneous unit. It is rather comprised of smaller infrastructures – infracycles, as I call them – which constitute the whole infrastructure. I move here from the cybernetic term "circuits" to cycles to emphasize their processuality and unruly character, which breaks the dichotomy of system-environment. As underlying sociomaterial constellations, they come into being through recurrent, repetitive and recursive practices of different actors and boundary material(s) embedded in political, social, and historical circumstances and interplays in multiple temporalities and spatialities. In Phnom Penh, these recycling infracycles are entangled with the path life takes depending on sociocultural and religious structures, experienced structural and slow violence, and the will to survive and change a life. Embedded in and affected by (post-)colonial ways of doing politics and in form of prevailing waste fantasies that further perpetuate the alienation between nature and culture. The boundary object "waste" includes its multiple reifications as an object of desire, a knowledge bundle, a mundane object and other materialized versions such as imaginations of wealth and a better future. In the materialization process of the recycling economy, waste, stories, narratives, and ideas circulate, enacting knowledge about the economy and a reordering of (urban) life. In this regard, the circular moment is present both in the movement of material (maintaining different positions within individual infracycles and the whole infrastructure) and above all in the repetition of practices that materialize the overall recycling infrastructure. As such, the circularity that undergirds the entire infrastructure

generates its stability while it is dynamic and lived. It is all held together by the tangible way it is maintained and organized. Moreover, circularity is stable in its structure through its dynamics, and it is lived as a part of social worlds. This ensures that infrastructures serve as sites of “immanent ontological experimentation” (Jensen 2016: 621; Jensen 2015), as a platform or a host that brings new ecological ontologies into practice (cf. Eitel/Meurer 2021).

As cycles do not necessarily close the loop, circularity points to the temporal frame in which practices recur and the spaces through which materials, such as waste, stories and knowledge, travel. In contrast to circular, “cyclic” implies repetition rather than closure. It thus remains open for new, different – with regard to its concept – critique. While “circular” refers to the spatial form of something, “cyclic” understands the movement apparatus as temporally situated.

Following the “relevant” cycles allows the researcher to position themself in a “more pragmatic position” (White/Rudy/Gareau 2016: 11). Researching ethnographically in a “cyclic” manner, that means to follow the circularities, then implies following materials and practices across multiple time spans and various sites by examining the recurrence of themes, practices, or materials for their *affinity*. In doing so, seemingly chaotic unintelligible, and arbitrary relationships that are at first indeterminable come to the forefront of ethnographic interest. By methodically following these relations across sometimes widely dispersed themes and times, things can be drawn together. In this regard, ethnographic research is able to shift to focusing on engagements, making arrangements for bridging dichotomies and highlighting realities that lie beyond a positively realistic or purely constructivist differentiation.

The processual approach, then, refers to the concept of circularity that yields a threshold at which infrastructures can be conceived of differently. First, it takes focus from the linear structure of an infrastructure and transitions it toward the circular, self-sustaining moments and events that come into being through its practices and materials (infracycles). Second, because it disentangles the movements of material and practices, it unravels its underlying principle as the basis on which practices take place: as recurrent, repetitive and recursive. This is because it consists of flows of information, material and practices bound to refer to the infrastructure itself. The infrastructure is formed from a multitude of situated infracycles characterized by their (temporal) periodically *recurrent* actions (meaning an automatic repetition under the same conditions refers to the form) and their *recursive* (as it refers to itself; in a cybernetic sense, it acts self-regulative and, as such, also circular) and *repetitive* (in terms of content) nature. The metatheory included here observes the existence of *chaotic* constellations and assemblages that become visible *in-between* because they are essential part of an ongoing materialization process that becomes the infrastructure. This refers, then, to an approach that follows the movements of materials and practices, as well as one that understands worlds as *circular diverse* through which constellations maintain a certain stability by “referring to themselves.”

Ultimately, and despite all theoretical appropriation and methodic efforts, waste – its narratives and its body – cannot be “put in its place” by the

concept of infracycles, the services of the recycling infrastructure, or the waste fantasies subject to the calculation of waste and the effects of climate change. Waste regularly oozes out, taking “other paths” and creating different forms of policies that contest predominant city visions that are making clean cuts between what is nature and what is waste. In circumstances not uncommon for ethnographers, the researcher is not only an observer somewhere outside but is intertwined and entangled with the occurrence and emergences they grasp empirically to equip *one* map (of many possible).

### **The Guiding Threat**

Following the circularities of practices and materials brings us to the dispersed sphere in time and place, revealing events of different temporality that can appear suddenly, point to in the past or the future they derive from. Using the dispersed sphere, this book brings you to several eerie moments surrounding waste that have shaped the contemporary lives of people and others in Phnom Penh, Cambodia and beyond. Centering materialization process of “waste” and daily practices as part of the recycling infrastructure in my research provides three benefits. First, it permits the conception of materials as practiced, historically and contemporarily negotiated, and politically active. Second, it enables understanding of practices as being connected to self-referentiality and circularity that stabilize and maintain infrastructures. Third, centering material “waste” offers new perspectives on predominant versions of governing “problems” that intervene in political Land.

Chapter 1 explores historical and contemporary economies in Cambodia. It places special focus on the historical roots of plastic and aluminum products, their inscribed narratives of wealth, and their effects on politics and (waste) management induced by (post-)colonial Western powers during and after their occupations. What narratives and images are inscribed in synthetic products like plastic and aluminum? To what extent have foreign powers’ occupation periods affected the understanding of wealth under the paradigm of modernity, technological progress and development, particularly regarding plastics and aluminum and the way they are handled as waste today? I argue here that colonial and hegemonial relations led to the promotion of inequalities that exist today and that accelerate the uprising of waste fantasies. In doing so, international occupation not only brought narratives of wealth to the country under the paradigm of development and in the form of synthetic modern products but also significantly contributed to the creation of moral sentiments about how politics should be conducted.

Chapter 2 elaborates on the genuine recycling economy in Phnom Penh as a complicated sociomaterial network. Through everyday practices of collecting, ordering and sorting, the chapter demonstrates how this infrastructure comes daily into being. Waste pickers simultaneously suffer from the social hierarchy within the recycling economy, which is characterized by (inter-)dependencies between individual groups and violence effects in a proxy war on pricing politics between depots. However, Ed Jais contest this rigid

structure and the additional burden of societal marginalization as they build relational solidarity among themselves. Moreover, as waste is handled as an object of desire, a bundle of knowledge and a mundane object, it stabilizes the overall infrastructure through its boundary status. This reveals the recycling infrastructure as one comprised of many smaller sub-infrastructures called infracycles.

Chapter 3 investigates the worlds of repair, care and maintenance that upheld the greater recycling economy in practice. By repairing not only technical equipment but social disturbances and “system failures,” waste workers take care of themselves and their direct environment, including the dirt of the city. When they perform strategies to maintain their jobs, such as those involving pity or proclamations of their right of flexibility, they preserve both the economy and their jobs. Through this process, freedom becomes a common leitmotif in their pursuit of self-determination. Performing “rebellious acts” within their working conditions mean Ed Jais are tinkering with a new social order that allows them to silently and slowly reposition themselves in a society that walks the tightrope between Buddhist informed tradition and modernity.

Chapter 4 demonstrates interplays between waste and nature that are informed by the politics of different negotiating platforms. Examples include negotiating the achievement of sustainability or the preservation of the economic system through green policies that simultaneously combat the effects of climate change. Clean visions of the city of Phnom Penh are thus enacted. Examining the outcome of these negotiating platforms, which becomes a matter of fact, the chapter reveals the interrelationship between these and the prevailing waste fantasies that determine how and which programs are identified as appropriate solutions to the “waste crisis.” As the responsibility for this “crisis” commodifies, it becomes, much like nature, a container model that is calculable and easy to manage. In this respect, the alienation between nature and culture that must be maintained in order to pursue green policies is also the condition under which these fantasies operate. In turn, waste fantasies strengthen (post-)colonial ways of doing politics that intervene in political Land.

While examining the oozy characteristics of waste, Chapter 5 challenges the concept of the infrastructures, -cycles and waste fantasies that attempt to keep waste in its place. In this way, new forms of life and death emerge in wastelands and ruin sites, where waste undergoes multiple encounters, showcasing different versions of the city. Approaching the “waste problem” from its margins contests heteronormative concepts of waste and the Anthropocene, highlighting the diversity of opportunities for living on our planet that are generally eluded by heteronormative and predominant political practices.

Chapter 6 concludes by emphasizing a processual approach that can shed light on circularity as a condition of what materializes, a precondition under which the city and life function. It explains how recurrent, recursive and repetitive practices are important aspects of what becomes a stable and durable constellation. The chapter also revises the circular economy model and

provides insight into how it can be fruitfully extended under consideration of the on-site circular mechanism.

This book argues for a processual approach to infrastructures. Going beyond heteronormative and Western-centric ideations of chaos, a proper economy, or a waste problem, this study emphasizes the situated characters of waste handling, infrastructuring, and living and dying that emerge politically in contrast to prevailing waste fantasies. In daily urban life, postcolonial assumptions of wealth and waste persist, and clandestine and ephemeral constellations with social realities and materials challenge the existent capitalist system by creating new tropes of freedom, working labor autonomy, and the will to survive. Using these realities as a guide, this work revises the concept of infrastructures and circular economy models alike.

## Notes

- 1 All people are pseudonymized.
- 2 The extraction of aluminum has further environmental and social effects, as it often is accompanied by the displacement of locals when new recycling or extraction plants are erected. Further, while turning bauxite into aluminum, ‘red mud’ is thereby generated, which is highly toxic and destroys the environment. In order to produce one ton of aluminum cans, four tons of bauxite are needed, this generating four tons of red mud which harms the environment and contaminates the groundwater, see (Sheller 2014, Wong/Lavoie 2019).
- 3 Throughout the book I foremost call people collecting recyclables in Phnom Penh as their profession Ed Jais (as they call themselves), waste pickers or waste worker (especially in case I like to highlight the human *and* non-human dimension), or in reference to Kathleen M. Millar (2018) waste reclaimers. I decidedly refrain from naming these people scavengers as this comes with a very negative connotation, disregarding the valuable work these people do and simultaneously additionally degrading them in their societal status.
- 4 These numbers are rather estimated than counted. Personally, I would assume that they are much more than just 2000 Ed Jais circulating throughout the city – especially in rural areas of Phnom Penh, the number of waste pickers rise quickly due to the ongoing drift to the city.
- 5 Since China changed its policy according to its waste buying policy at the beginning of 2018, and refuses to continue to buy up all recyclable goods, especially from Western countries and Japan, and salvage them, Cambodia’s flow of recyclables stays presently untouched by the issue, as far as only the minority of recyclables get reprocessed. Still exact numbers to identify to export rates and destinations precisely remain in the framework of hearings and rumors. However, it has been proven more likely that the world’s new garbage dump will be Southeast Asian countries, especially Malaysia and Thailand, see (Gerin 2018, Hutt 2018) and for e-waste it is Pakistan (Kurmelovs 2021).
- 6 Cambodia exhibits about 50 recycling companies in the country that are able to recycle plastic (especially plastic bags and bottles). The number for aluminum processing plants is unknown.
- 7 Thus, the term will be not used in what follows, with exceptions of direct sayings or in order to critically highlight elsewhere this term.
- 8 After the invention of this groundbreaking idea of circularity during the 1950s and 1960s, there have been a lot of criticisms of and debates over cybernetics and systems thought, especially when it comes to the character of the autopoiesis which systems exhibit. This ‘new’ approach was especially criticized for its generalizing



character, as it was attempted to transfer systems 'found' in nature by natural scientists and biologists such as by Maturana and Varela to complex sociocultural realities. Furthermore, it has been criticized that nature, as well, can't be a constructivist example, as it's never ultimately defined (White/Rudy/Gareau 2016).

- 9 The here quoted paper by Stefan Beck has been published *postmortem* and is unfortunately uncompleted. Beck differentiated in his keynote at the conference 'Digitale Praxen' at the Goethe-University Frankfurt between theories of praxis 1.0 to 3.0 (cf. Beck 2019).

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