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1

What's in a Blockchain?

Blockchain is confusing. Since its rise to fame, countless technical explainers, glossaries, decoders, and guides have tried to make sense of it. Bold claims have dominated headlines: "How blockchain can reduce inequality," "How blockchain can potentially end global poverty," "How blockchain can help with the refugee crisis."[1] After reading these articles, it is usually still unclear how the technology will deliver on such grand promises. Blockchain has become a satirical subject, regularly described as "something that nearly everyone has heard of . . . yet at the same time essentially no one understands" (Hautzinger, 2022).[2] Grasping what is inside a blockchain—what it consists of and how it functions—is no easy task.

1. Some headlines are candid, some ironic—even including "Blockchain: The answer to life, the universe, and everything" (Huang, 2019; Hern, 2016; Pepijn , 2017; Berggruen, 2018).

2. Even expert tech critics are up-front about blockchain's confusing aura. In the book *Radical Technologies*, Adam Greenfield characterizes blockchain as "just fundamentally difficult for otherwise intelligent and highly capable people to understand" (Greenfield, 2017). Ian Bogost writes in response, "I was relieved when I read this, because I have been pretending to understand cryptocurrencies—digital money based in code-breaking—for years" (Bogost, 2017).

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The confusion deepens with the almost mythical aura surrounding the term "blockchain," which obscures the vast differences in how these systems operate. Shakespeare's Juliet famously asks Romeo "What's in a name?" to suggest that names are meaningless: "That which we call a rose by any other name would smell as sweet." Her question carries dramatic irony, since family names ultimately determine these characters' tragic fate. Social categories can be both meaningless and powerful, depending on your outlook. Blockchain embodies this paradox. The label itself reveals little about the actual workings of these database systems: They can be centralized or decentralized, private or transparent, open or controlled. But "blockchain" has symbolic status in popular discourse, simultaneously empty and meaningful.

Blockchain is usually discussed as a unified concept or thing. Much like artificial intelligence (AI), it can be either fetishized as a transformative force or dismissed out of hand as nonsense hype. In this book, I often use the singular "blockchain" to emphasize that it is more than just a technology—it carries imaginative associations among my research participants and beyond. Blockchain is symbolically linked to the radical technological libertarianism of Bitcoin, which embodies core characteristics such as

1. Decentralization: Instead of a bank managing your money, a massive network of computers shares the job.
2. Automation: Rather than a bank approving transactions, algorithms automatically check they are valid.
3. Privacy: Each transaction shows a code instead of your name, protecting you from surveillance.
4. Immutability: Once a transaction is recorded on the blockchain, that record cannot be erased or changed.
5. Transparency: Everyone can see what was recorded, when, and by which code name, in real time.

However, in practice, none of these characteristics are inherently tied to all blockchains. When I use the plural "blockchains" in this book, I do so to highlight the diversity of database systems

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that fall under the term, each with distinct properties and implications. I explore this in greater detail in chapter 2 when analyzing the various technical decisions behind the Links project in Jordan. For now, here are some basic differences between blockchains:

- They can function as public or privately owned database systems.
- Access can be open to anyone or restricted to preapproved users.
- Their scale varies, from a small company's internal records to vast open-access networks, each designed for specific purposes.
- Transaction records can be altered if enough influential users reach consensus.
- Transactions are not always anonymous and can sometimes be linked to real identities.
- A blockchain can operate with banks and governments rather than against them.

Not all blockchain developers embrace the same radical or libertarian ethos as Bitcoin. Rather, they span a broad political spectrum.[3] While many are anarchic libertarians who champion anti-state, free-market ideals, others seek new forms of socialist economic cooperation beyond traditional state and market structures. An institutionalist faction of blockchain enthusiasts has also emerged, prescribing the technology as a remedy for state inefficiencies. Some blockchain projects aim for the radical transformation of the international banking system or Internet governance. Others focus on more mundane but practical applications like internal record-keeping or payment processing. As Maurer notes, it is most often a "relatively dull feature" of blockchain database systems that generates excitement: not their potential for underpinning non-state

3. Researchers have investigated the diverse political ideologies driving blockchain innovation (Bogost, 2017; Golumbia, 2016; Huckle & White, 2016; Husain, Franklin, & Roep, 2020; O'Dwyer, 2019; Rozas, Tenorio-Fornés, Díaz-Molina, & Hassan, 2018; Swartz, 2017).

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cryptocurrencies, but rather their simple ability to keep track of information—to function as an accounts book (Maurer, 2016, p. 85). For humanitarian aid organizations, blockchains become tools for bookkeeping basic human needs, as I discuss below.

Given the diversity of systems, purposes, and political ideologies that fall under blockchain's banner, I argue that no singular, definitive blockchain exists independently. This might be controversial to the purists, especially "Bitcoin maximalists" who maintain that the original Bitcoin blockchain is the only true version and all others are redundant. An anthropological perspective invites us to resist defining this technology as a fixed, monolithic entity with preordained features. Instead, the essence of blockchain is found in the collective patterns of how real-life communities adopt and adapt it in everyday life. Anthropologists have shown that people can use, experience, and think about the same kind of technology in radically different ways depending on the cultural setting. Thus, for example, "there is no such thing as Facebook; there is only the aggregate of its particular usages by specific populations" (Horst & Miller, 2012, p. 152). Similarly, blockchain is the cumulative result of how various populations interact with and appropriate it for their own needs, contexts, and purposes. The Links project in Jordan is an emblematic case, where multiple and distinct communities shape what blockchain becomes, enables, and disables in practice.

Blockchains as Payment Infrastructures

Viewing blockchain as a unified entity can unhelpfully inflate the hype about its potential just as much as it can invite oversimplified, knee-jerk criticisms. Blockchain is not another new device or interface. Blockchains are simply distributed database systems. They restructure the distribution of information, recording and facilitating all kinds of transactions.[4] While we must be cautious

4. This book focuses on how blockchains work as payment infrastructures. However, blockchains can record and facilitate many types of exchanges, not just monetary

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about attributing fixed characteristics to all blockchains, we can recognize that their networked, recordkeeping nature is a common thread across implementations. The systemic nature of blockchains also contributes to their complexity; they remain elusive, never fully visible or physically graspable. Yet they are quietly reshaping the *infrastructure* of humanitarian economies.

This book draws on the tools of anthropology and Science and Technology Studies (STS) to conceptualize blockchains as infrastructures. Infrastructures are large-scale, dispersed systems that connect, enable, and sustain social action. From roads, canals, undersea cables, and electrical grids to servers and databases, they underpin the production and circulation of things and people, resources and capital, knowledge and information.[5] But "infrastructure" is not just about specific physical networks: It is a heuristic—a lens for understanding how technologies evolve and spread through complex systems of people, practices, and tools.[6] The infrastructural perspective helps us assess the implications and limitations of technological change more realistically. It helps us capture three key aspects of blockchains:

(i) They are not one thing: They rely on bundles of communities and technologies.
(ii) They do not work by magic: Their upkeep depends on continuous human labor and maintenance.

---

ones. A supply chain blockchain might track a coffee bean's journey from farmer to consumer. A medical blockchain could manage patient consent for sharing medical records between providers. Property registries might use blockchains to record land titles and transfers. Universities could issue verifiable digital credentials on blockchains that graduates can share with employers. Voting systems might use blockchains to create tamper-resistant records of ballots cast. In these cases, blockchains act as shared ledgers, tracking the exchange of goods, permissions, rights, or information between different parties—expanding their role far beyond finance.

5. See the classic studies of infrastructure (G. Bowker et al., 2010; G. Bowker & Star, 1999a; Star & Ruhleder, 1996b).

6. Bernards and Campbell-Verduyn (2019, p. 773) frame infrastructure as a "heuristic for injecting nuance into debates on the emergence, limits and implications of technological changes in global finance."

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(iii) They are not merely technical: Blockchains are shaped by the values, dreams, and promises of the people who create and use them.

BLOCKCHAIN BUNDLES

Infrastructures are "hybrid systems of humans and machines bundled together" (Larkin, 2013, p. 339). They assemble a diverse set of social relationships and material things so that basic but essential everyday functions can be carried out. For example, Shamir demonstrates how electricity infrastructure consists not only of material components such as wires, poles, generators, transformers, and meters, but also of entrepreneurs, engineers, technicians, politicians, advisors, consumers, and regulatory authorities. Together, these human and nonhuman actors form a network through which electricity is produced, distributed, governed, and contested. Hence, in resource-poor contexts, electrical systems do not simply transmit energy but actively generate social and political power (Shamir, 2013).

The present book examines another essential function of infrastructure: payment. Payment allows humans to coordinate, survive, and cooperate at scale. It comprises not just money itself but "the infrastructures that facilitate its movement, whether from hand to hand, over a proprietary network, or through the Internet" (Rea et al., 2017, p. 3). Every time we make a payment, a bundle of physical devices and routine social practices need to be assembled. These may include notes and coins, plastic cards, point-of-sale terminals, anti-money-laundering protocols, Wi-Fi connections, fiber-optic cables, transaction databases, and payment processor telecommunications networks. In the meantime, an array of actors is involved in calculating payments, converting exchange rates, enforcing regulations, designing algorithms, keeping tallies, guarding cash stores, and more.

This is no less true with aid payments. This book captures how the blockchain infrastructure in Jordan's refugee camps assembles

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Internet connections, eye-scanning machines, payee databases, humanitarian needs assessments, cash storage facilities, money logs, and paper till receipts, along with various users, experts, attendants, devices and practices. Each chapter reveals how what blockchain is and does depends on who you are: your position in a network as a refugee, frontline aid worker, aid manager, or tech developer. The impact of any one technological advancement cannot be understood in isolation from its connected elements. Infrastructures are not fixed systems, but dynamic: They evolve through ongoing interactions between components, gradually shaping how a new system can be used and what effects it has. Evaluating blockchain's impact means examining the contingent network of people, practices, and technologies it bundles together.

Infrastructures are political. How blockchain projects bundle together this network of people, practices, and technologies is a question of how power, information, and resources are distributed. Payment infrastructures have material implications for inequality and exclusion.[7] They channel or block people's everyday resources, choices, and relationships, entangling or disentangling them with different intermediaries, requirements, and fees. Just as a new high-speed motorway will exclude drivers who cannot afford the toll it introduces—and those low-income drivers will fall behind, forced to take slow, circuitous routes—a payment

7. On payment infrastructures and their entanglement with political authority, see notable studies (Maurer et al., 2013; Nelms, Maurer, Swartz, & Mainwaring, 2018; Swartz, 2020). Rea et al. (2017, p. 9) note that "in December 2010, PayPal, Visa, MasterCard and Western Union blocked donations to the whistle-blower website, Wikileaks, demonstrating the political power that comes with control over the payment rails." More recently, Elon Musk's seizure of the payment systems of the US Treasury has been dubbed a sly "coup d'état" (Naughton, 2025). Sanctions on Syria blocked aid transfers during the 2023 earthquake response, forcing organizations to seek special licenses. In Afghanistan, banking restrictions after the Taliban takeover in 2021 severely limited NGOs' ability to pay staff and distribute aid. These cases all exemplify how control over payment infrastructure serves as a powerful political tool. As we will see, blockchains do not operate in isolation from this politics.

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infrastructure requiring high tolls, digital literacy, and bureaucratic requirements will force out those who lack the money or training.[8] Blockchains may be arranged as an accessible public utility for the collective good or as a privately owned system with hidden rules and extractive business models.

Moreover, payment infrastructures raise pressing questions about data: how information about people's identities and transactions is owned, controlled, made visible, and monetized. Blockchains like Links reshape not only how aid payments are made, but also how they are allocated and tracked and by whom. Blockchains do not spring into action fully realized, independent from preexisting ways of classifying people through data and the biases, discriminations, and exclusions they entail.[9] They intermingle and clash with legacy data practices and procedures. This book unveils a collision of worlds as blockchain's lofty promises of financial emancipation are repurposed to fit the machinery of aid governance, where infrastructures (aid payments, identity checks, social media monitoring, the strict rationing of electricity, Internet, shelter, water, and food) simultaneously support refugees' livelihoods and are designed to monitor, control, and contain them. Blockchains can be designed in many ways, but they always rely on arrangements of labor, people, and tools to function as intended. These arrangements can be profoundly unequal.

8. Baradaran argues, "Now, more than ever, the economy is digital, global, and mediated by technology. Those who do not have bank accounts pay a fee every time they participate in modern commerce. Just as the railroad, telephone, and electricity were once recognized as essential public utilities, access to payments should also be recognized as an essential public good" (Baradaran, 2020, p. 358).

9. Studies of information infrastructures reveal how even mundane database systems yield suffering and advantage: They classify people, generating concerns around access and exclusion, transparency and accountability, labor and maintenance, ownership and control (G. Bowker & Star, 1999b; Harvey, Jensen, & Morita, 2017).

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BLOCKCHAIN MAINTENANCE

Infrastructures must be maintained through the graft of human and nonhuman mediators, fixers, and attendants.[10] The humdrum work of maintaining infrastructure usually involves invisible (or invisibilized) labor. In the digital age, prominent examples include the underpaid and under-recognized work of online content classification and moderation, raw material production, and e-waste processing that props up Silicon Valley platforms and AI.[11] This kind of labor is unevenly distributed by class, race, gender, citizenship status, and geography. Labor does not simply disappear (as it is often assumed to) with the advent of new technology. Blockchains are no different. They involve real-time records-making, and therefore continuous maintenance: "Without a community of computers running the protocol and engaging in transaction verification, the system stops working" (Dupont & Maurer, 2015). Without workers entering data or executing code, the computers cannot work.

A powerful myth prevails: that blockchains are "free to use public ledgers that create disintermediation via distributed bookkeeping carried out by anyone" (Caliskan, 2020, p. 13). This bookkeeping is never free: It requires significant computing power, electricity, physical infrastructure, and human expertise. It is not carried out by just anyone, but rather by those with technical knowledge, economic resources, and specialized skills. Furthermore, blockchains do not seamlessly remove intermediaries. They create intermediations (e.g., with blockchain governance

10. Infrastructure studies often highlight the material work of maintenance, tinkering, and repair that sustains complex systems (Bellanova & Glouftsios, 2020; Ramakrishnan, O'Reilly, & Budds, 2020; Ribes et al., 2013; Vinsel & Russell, 2021). IT professionals are a good example: They quietly update and mend the software that everyone in a given organization uses daily, often with fewer resources and less recognition than those designing and programming flashy new innovations (Vinsel & Russell, 2021).

11. Studies examining the labor and laborers that prop up complex socio-technical systems put forward concepts like "ghost work" (Roberts, 2019; Suri & Gray, 2019; van Doorn & Badger, 2020).

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committees, cryptocurrency miners, and exchange markets) and re-intermediations (e.g., by replacing the governance functions of banks and states with commercial entities) (Zook & Blankenship, 2018). They are often assumed to enforce immutable rules through software. In fact, the code of blockchains is often changed, by human actors, not always reflecting the values of (or benefiting) all the other actors involved (White, 2024). Power in blockchain ecosystems is not necessarily peer-to-peer or horizontal; it can be centralized, unaccountable, and driven by elite self-interest—and some blockchains have been prone to governance attacks, hacks, scams, fraud, and other exploits.[12] Ongoing maintenance work and adaptation are required: to navigate state regulations and mitigate illegal purchases, money laundering, or sanctions evasion via blockchains; to maintain data and software infrastructure; to carry out the social coordination necessary to resolve disputes, implement upgrades, and sustain the system over time.

In the aid sector, blockchains require an ecosystem of software and hardware, produced and maintained by a network of professionals—from humanitarian data managers to code developers. The implementation of blockchain then affects the essential work of aid's main brokers: frontline humanitarians. Humanitarians mediate between institutional protocols and the local realities of refugees, maintaining humanitarian assistance on the ground under challenging conditions.[13] Many major blockchain

12. Software engineer Molly White regularly catalogs such major blockchain breakdowns, exploits, and controversies in a satirical blog. See "Web3 Is Going Just Great" entries, including: April 2024: "SushiSwap [a popular blockchain platform] team votes to give themselves control of much of the 'decentralized' project's treasury"; July 2023: 'Party Parrot team prepares to 'vote' to allocate themselves 80% of initial offering funds, around $60 million"; July 2022: "Attacker makes off with $1.1 million after successful governance attack on the Audius web3 music platform." More recently, White has reported on the crypto "grifts" of political leaders such as El Salvador's Nayib Bukele and Donald Trump.

13. See studies examining the vital mediating roles of frontline humanitarians, technicians, enumerators, and other bureaucrats in the field (Donovan, 2015; Leurs, 2020; Mosse & Lewis, 2006)

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companies have established nonprofit foundations, strategically positioning themselves as partners in humanitarian activities by offering funding and technical support.[14] Their growing influence stems from their control over financial infrastructure. Despite blockchain's promise of unmediated transactions, the technology requires significant human labor: data entry, verification, troubleshooting, and compliance work. This expanding chain of labor imposes new responsibilities on humanitarian workers while raising concerns about the commodification of beneficiary data and the outsourcing of core humanitarian functions to technology companies. These firms increasingly embed themselves in public-interest domains, capturing public functions and infrastructures and raising serious questions about democratic accountability.

BLOCKCHAIN DREAMS

Infrastructures straddle the material and the conceptual. Studies of infrastructure stress that even mundane systems like roads or water supply operate through dimensions of enchantment, fantasy, and promise.[15] Blockchains, like other infrastructures, serve practical functions while also carrying broader social meanings and aspirations. They are invested with significant symbolic value, shaped by what Swartz calls "blockchain dreams"—visions of transformed economic and social systems (Swartz, 2017).[16] Understanding blockchain adoption in humanitarian aid requires examining its technical features alongside the ideas shaping its

14. The major blockchain companies have established foundations for this purpose. These include the Stellar Development Foundation, the Cardano Foundation, the Ethereum Foundation, the Tezos Foundation, and the Binance Charity Foundation.

15. See examples from infrastructures studies (Anand, Gupta, & Appel, 2018; Harvey & Knox, 2012; Hetherington, 2016; Larkin, 2013).

16. Baym et al. suggest that blockchain is a "convening technology": Rather than bringing about a technological solution, it brings disparate actors into dialogue around imagined futures. On the metaphors, imaginaries, and ideals propelling blockchains across sectors, from finance to space engineering to the music industry, see Baym, Swartz, & Alarcon, 2019; Faustino, 2019; Swartz, 2017, 2018.

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development. When aid organizations and technology partners design a blockchain, they build specific values, assumptions, and authority structures into the infrastructure. Understood in ethnographic context, humanitarians' dreams are not reducible to any singular logic. What blockchains are, do, or should do is highly contested, even within the same project. Close-up ethnography helps us capture competing dreams (blockchain as enabling refugees to claim economic autonomy or as extending bureaucratic and commercial power?) and how they play out over time (Cheesman, 2020). Importantly, refugees, aid workers, and local partners, with their own rationalities and priorities, contest and shape blockchain infrastructures. They develop workarounds, adapting official procedures to local needs and repurposing features in ways not intended by designers.

Critics liken blockchain to snake oil or magic beans: a hyped, poorly understood panacea fundamentally unequipped to solve the problems it claims to address (Gerard, 2017). The phrase "put it on a blockchain!" emerged as a satirical response to the blockchain industry's misguided tendency to present it as a universal solution to virtually any problem (Griffith, 2018). The persistent invention of new blockchain projects despite repeated technical critiques—that these distributed databases are inefficient, expensive, overcomplicated, mired in disastrous scams, conceptually flawed, and often unnecessary—reveals how their adoption may be driven by factors other than pure technical merit.[17]

Fear of missing out (FOMO) is one such driving factor. Another is marketing, which explains why many projects mysteriously invoke blockchain without actually implementing distributed ledger technology.[18] Distinguishing "true believers" in blockchain's

17. Notable experts, including cryptographers, contest the technical need for actually using blockchains instead of other shared database systems in most cases (Kaminska, 2019; Lehdonvirta, 2016; Moxinspike, 2022; White, 2022).

18. Links does implement a blockchain, but like many other projects it has been labeled "Blockchain In Name Only" (BINO)—a term I discuss in the next chapter (Kelly, 2019; Frederik, 2020).

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transformative potential from those merely "playing the game" remains challenging (Swartz, 2021, p. 13). The aid industry is no stranger to tech hype and marketing. Chapters 2 and 3 unpack the motivations behind aid organizations' adoption of blockchain in Jordan, demonstrating how genuine belief and credible expertise in its potential for fast, transparent, and cost-effective payments coexist with elements of blind faith, misplaced trust, and public relations strategy. I explain how humanitarian organizations operate in a competitive funding marketplace where new technology projects serve as key promotional assets, drawing in vital funding and attention from donors, who push for high-impact innovation. To meet this demand, aid organizations often attribute almost magical powers to technology, promising radical transformation while delivering minimal improvements.[19] In this book, we see that blockchain infrastructure is shaped not just by technical specifications, but through ongoing negotiations between marketing narratives, donor expectations, and on-the-ground material considerations.

Bookkeeping Human Needs

One of the most powerful myths about blockchain is that it steps in "where humanitarianism bends to politics" (Cheikosman, 2023), offering a neutral channel that avoids corrupt intermediaries and fragile banking systems. However, no blockchain is politically neutral. Like any infrastructures, they require a bundle of designers, maintainers, and technical tools, shaped by specific values, assumptions, and power dynamics. Rather than transcending politics, blockchains are embedded in thorny questions that have long structured humanitarian aid: Who gets what resources? Under what conditions? Who decides?

19. The pitfalls of humanitarian tech "neophilia" (obsession with novelty for novelty's sake) and "data hubris" have been critiqued for a decade (Read, Taithe, & Mac Ginty, 2016; Scott-Smith, 2016).

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These questions have long been managed through what Agier terms "humanitarian government"—where international organizations use technocratic practices to regulate populations like refugees, who are deemed surplus or threatening to the international order (Agier, 2011). In monitoring movement and rationing aid, humanitarian institutions shape not only refugees' survival at the point of emergency, but their ongoing everyday lives. These populations are governed over time through regimes of spatial, legal, and bureaucratic containment, enacted in coordination with host states. Ostensibly humanitarian practices, as Mbembé suggests, produce spaces of differential exposure to harm, where some lives are sustained only at the threshold of survival, while rendered more vulnerable to neglect, injury, abandonment, and premature death (Mbembé, 2019).

In refugee camps, responsibility for managing survival is often shifted onto resident populations whose access to resources, mobility, and legal protection is tightly constrained. Under conditions of chronic underfunding, aid organizations increasingly promote the "self-reliance" and "resilience" of aid recipients.[20] Rather than signaling the withdrawal of intervention, these terms describe an administratively managed outcome, produced through a dense arrangement of incentives, restrictions, and conditional access to assistance. Governing self-reliance in this way requires that refugees' needs, behaviors, and eligibility be rendered legible, comparable, and auditable.

In this book, I argue that, rather than as a radically novel or impartial tool for aid delivery, blockchains should be understood within a longer lineage of humanitarian bureaucratic systems:

20. Gatter's ethnographic research, also in Jordan's Azraq camp, unpicks how humanitarian discourses of "self-reliance" and "resilience" operate less as gateway to empowerment and more as a technique of governance that makes refugees responsible for surviving conditions of enforced immobility, under-resourcing, and surveillance. By celebrating acceptable forms of resilience (compliance, waiting, adaptation), aid organizations justify the withdrawal of structural support and public funding while obscuring how refugees quietly resist these constraints (Gatter, 2025).

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from the auditable accounts and survey statistics of the 1860s to today's quantified needs assessments, remote sensing, vulnerability scoring algorithms, and biometric identity profiles.[21] These systems collectively contribute to the "bookkeeping of human suffering on a world scale" (Glasman, 2020, p. 2).[22] They inform humanitarian appeals and response plans, legitimize international funding flows, and structure operational decision-making. As Azoulay's analysis of aid in Palestine demonstrates, an enduring bureaucratic focus on basic needs can recast ethical obligation and political responsibility as a problem of effective goods delivery, gradually displacing broader rights claims with the targeted distribution of rations and supplies (Azoulay, 2019, p. 450). Likewise, blockchains mediate how aid organizations and their commercial partners govern access to financial resources through conditions, classifications, and verification procedures. In doing so, they institute a particular notion of accountability defined by the seemingly objective technical properties of ledgers, metrics, and auditability.

Since the 2016 Grand Bargain agreement between major donors and aid organizations, direct payments have become the preferred aid mechanism rather than providing goods and services—bags of rice, flour, medical assistance, and so on.[23] Understood as an

21. "Data-gathering and fundraising have been commensurate and structuring technologies of all humanitarian efforts since the 1860s at least" (Read et al., 2016, p. 1317). Information infrastructures have always been part of the professional, accountable practices of aid workers (Macias, 2020, p. 336). They include needs assessments; statistical benchmarks such as the Global Hunger Index and the Integrated Food Security Phase Classification System; and anthropometric techniques like the Mid-Upper Arm Circumference (MUAC) band, which is used to measure malnutrition.

22. As Glasman puts it, "The way humanitarian agencies compare societies, measure suffering, and aggregate individual pain into universal social categories matters. This rationality not only shapes humanitarian workers' everyday practices and the chances of those whose survival depends on emergency relief—it has also become an intrinsic part of world politics, and it informs our perception of distant societies" (Glasman, 2019, p.1).

23. Cash transfers in humanitarian aid have deep historical roots, beginning with the Red Cross during the Franco-Prussian War (1870–1871). The theoretical foundation for cash transfers was strengthened by Amartya Sen's work in the 1980s, leading

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economic multiplier, cash payments inject value into local economies rather than flooding them with goods, which discourages production. By allowing recipients to make their own purchasing decisions, cash transfers grant more agency than conventional aid distribution, marking a shift away from the aid sector's paternalistic legacies (ODI, 2015).

Notably, cash payments are also cheaper than other aid delivery mechanisms. This is important. As humanitarian needs surge globally while aid budgets shrink, organizations face mounting pressure to cut costs and demonstrate accountability. Even before the 2025 clampdowns on international aid budgets, the aid industry has operated under imperatives of "value for money" and "ruthless prioritization."[24]

The Links project in Jordan exemplifies humanitarian aid's dual function: care and control. Humanitarian payment infrastructures do not simply distribute money. They regulate access to resources and impose conditions on recipients, according to assumptions about human needs and behaviors. Aid organizations determine who qualifies, under what criteria, and with what restrictions.

While "unconditional" payments could support wealth redistribution, donors often prefer "conditional" aid that requires recipients to meet benchmarks such as school attendance, work participation, or health checks.[25] This frames recipients as active

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to his Nobel Prize in Economic Sciences. Cash transfers gained widespread adoption in Latin America during the 1990s, and their use has grown significantly in the past decade as evidence of their effectiveness has mounted (Millán et al., 2019). Cash has become a prominent and institutionalized modality within the aid industry's localization agenda. However, at the time of writing, their expansion appears to be slowing. Overall humanitarian funding cuts, shifting donor priorities, political preferences for more visible forms of aid, and persistent (if often unfounded) risk perceptions have contributed to renewed reliance on in-kind assistance, rations, and vouchers, leaving the future trajectory of cash transfers uncertain (CALP, 2025).

24. Before Trump's aid cuts, see articles in *The New Humanitarian* on UN calls for difficult decisions about targeting aid (Lilly, 2024; Loy & Worley, 2025).

25. Ferguson's ironically named book, *Give a Man a Fish*, examines in detail the "distributive politics" of conditional vs. unconditional aid payments, and how

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participants in their own development and encourages market participation.

Critics argue that conditional payments shift responsibility for poverty onto individuals rather than addressing the structural inequalities, including unfairly regulated markets and institutions, that produce it. Conditional cash transfers are widely criticized as reinforcing the idea that people must behave "productively" to deserve basic support. They can also deepen inequalities by favoring those already able to meet conditions, while excluding more marginalized groups. Like colonial-era "civilizing" narratives, contemporary humanitarian aid can reproduce biased judgments about who deserves assistance and under what terms.[26]

The bookkeeping systems underpinning humanitarian aid payments, while indispensable for triage in contexts of conflict and disaster, frequently reproduce social inequalities. Aid organizations classify and rank populations using metrics such as bodily capacity, gendered labor roles, household consumption, sexual and reproductive practices, and financial histories to determine vulnerability and deservingness.[27] These classifications are

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unconditional assistance has changed the nature of poverty, labor, and aid (Ferguson, 2015).

26. These critiques build on research showing that contemporary aid policies often treat poverty as a problem of individual behavior rather than structural inequality. Scholars argue that conditional aid reflects broader neoliberal and colonial legacies in which assistance is tied to market participation, moral discipline, and racialized judgments about deservingness, rather than to redistribution or institutional reform (Gabor & Brooks, 2017; Kish & Leroy, 2015; Ladhani & Sitter, 2020; Peck & Theodore, 2015; Roy, 2010).

27. In refugee camps, ethnic classifications and gendered designations like "head of household" reinforce existing power dynamics, while refugees themselves have minimal power to contest imposed categories or define their own identities (Cheesman, 2019). In 2018, Rohingya refugees protested UNHCR data systems that designated them as "Myanmar nationals," denying their ethnic identity and citizenship claims (Ahmed, 2018). This resistance exemplifies how refugees often oppose classifications that, while designed to recognize and support, could unintentionally facilitate their forced return to a hostile country or weaken their political status (Taylor & Mukiri-Smith, 2019).

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not neutral: They are political, gendered, and racialized, shaped by assumptions about worthy or productive human investments that reflect Western market norms rather than locally defined priorities. Bookkeeping human needs thus entangles recognition and inclusion with exclusion and control, situating aid within broader geopolitical processes through which wealthy donor states prioritize certain populations, crises, and futures over others.

Humanitarian assistance has long been intertwined with security and foreign policy objectives, deployed to stabilize regions deemed risky, manage populations framed as undesirable, deter migration, and contain radicalization while simultaneously advancing donor countries' economic interests and soft power.[28] Aid allocation is also shaped by institutional incentives: resources are often directed toward populations perceived as "easy to help," where measurable short-term outcomes can be produced to satisfy donors and secure continued funding (Krause, 2014, p. 4).

Blockchain systems do not bypass these dynamics. In the Links project in Jordan, blockchain technology is used to record eligibility, monitor transactions, and enforce compliance within a women's cash-for-work scheme. Like earlier accounting infrastructures, the technology structures how aid is distributed, justified, and rendered legible to donors. Indeed, bookkeeping is an essential part of organizations' storytelling to donors and publics about human needs and needs met.[29] This storytelling proves their value for money and secures their corporate survival.

Rather than emancipating aid recipients from the power dynamics of aid distribution, the digitalization of aid payments has often reinforced them. Long before blockchain, humanitarian

28. Refugee camps and detention centers are prime examples of humanitarian spaces where normal rights are suspended and populations are permanently precarious. In concert with state and security actors, aid organizations maintain order while preventing disruption to mainstream societies.

29. Big data is now an essential component of long-standing quantification practices used to explain and justify humanitarian work. Donors assess projects and allocate funding on this basis (Glasman et al., 2024, p. 332).

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organizations experimented with mobile money, prepaid cards, and e-voucher systems as solutions to poverty alleviation. These payment infrastructures were generally seen as faster, safer, and more transparent than physical cash, resolving the logistical and security challenges associated with delivering bags of cash into humanitarian spaces. At the same time, they brought surveillance and remote management in place of direct engagement with beneficiaries: "Rather than invoking the community solidarity that underpinned earlier forms of participant development, these smart technologies now call forth dependent communities of users permanently enrolled in prototyping the technologies that govern them" (Duffield, 2019, p. 22).[30]

Digital payments can be less risky and less labor-intensive for humanitarians to implement, but studies highlight their limitations.[31] In promising empowerment by direct payments, they impose new everyday requirements on aid recipients, prescribing limited ways of receiving, storing, and using money. Refugees and asylum seekers—in Jordan and everywhere—are usually locked into restrictive financial circuits where their spending is monitored, controlled, and conditioned on specific economic behaviors. As we will see later in this book, aid recipients are usually only allowed to use digital money in predefined ways, with approved vendors, and within set spaces and time frames. This is the great irony of financial inclusion projects: While promoting beneficiary empowerment, they often embody "financial encampment"—marginalized groups are confined by design, segregated from

30. Duffield (2019) argues that the earlier model of direct humanitarian action was characterized by NGO-led, on-the-ground interventions that aimed to hold sovereign power accountable. The political room for maneuver of humanitarian agencies was then restricted with the War on Terror, limitations imposed by donors, and UN managerial control. These shifts help explain why humanitarian organizations now favor "cybernetic" approaches.

31. For Bernards, "the embrace of fintech is an uneven and error-prone response to the deeply embedded limits of financial infrastructures and the challenges of engineering markets in the context of precarious incomes" (Bernards, 2022, p. 154). See similar accounts (Alami, 2025; Donovan, 2018a; Natile, 2020; Tazzioli, 2019).

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mainstream economic services, and by no means liberated from the underlying causes of their financial exclusion (Dhawan & Zollmann, 2023).[32]

In this book, we see how blockchain is adapted to align with broader goals of securitized infrastructure projects in humanitarian settings—biometric ID systems, electronic ankle tags, e-border gates, and drone surveillance—that regulate the mobility, resources, and economic activity of refugees.[33] Private technology and security companies deliver these systems. As the aid industry becomes more embedded within financial circuits where recipient data generates commercial profit, humanitarian organizations risk compromising historic principles of neutrality and independence.[34] Data from vulnerable populations in "emerging markets" becomes a valuable commodity.[35] Even when tech companies' humanitarian partnerships are not explicitly profit-oriented, they benefit from infrastructure investment and adoption, reputational advantages, and opportunities to wield influence. Bookkeeping is entangled with state systems

32. Baradaran (2020) argues that financial exclusion stems from deliberate design decisions, not neutral market forces. Rather than offering alternative products like microcredit, the mainstream financial system itself requires reform. In the final chapter of this book, I identify fundamental flaws in humanitarian economies that must be addressed before any financial technology can meaningfully tackle refugees' economic exclusion.

33. The use of new technologies in the governance and control of refugees and migrants is well documented (Amnesty International, 2024; Mahmoudi, 2025; Meaker, 2024; Molnar, 2021, 2024; Weitzberg, 2024). Civil society groups like Amnesty Tech catalog human rights infringements associated with the adoption of commercial technologies, particularly at border zones.

34. Critics suggest the involvement of tech and surveillance companies in humanitarian aid compromises its original principles (Sandvik et al., 2017). Surveillance companies like Palantir—which provides data analysis tools for both the World Food Programme and ICE deportations in the United States—are gaining legitimacy as humanitarian actors (Taylor, 2021). From an infrastructure perspective, whoever owns the rails of payment is in a position to profit (Maurer, 2015; Swartz, 2015, 2020).

35. See studies examining how private companies harvest and commodify aid subjects' digital footprints (Gabor & Brooks, 2017; Lemberg-Pedersen & Haioty, 2020; Tazzioli, 2019).

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of identification and migration management, conditioning and monitoring refugees' access to resources and mobility. We cannot expect that blockchains automatically help people overcome global digital inequalities when they follow in a long line of infrastructures that have entrenched them.

At their core, blockchains are shared databases designed to verify, facilitate, and record transactions. In humanitarian contexts, they serve as accounting systems for human needs, planning and tracking aid flows and monitoring recipient behavior. Rather than transcending existing power structures, blockchains reconfigure the long-standing practice of humanitarian bookkeeping, determining which populations and forms of suffering merit response and under which conditions. While proponents celebrate blockchain's transparent, neutral, decentralized accounting, this idealized vision obscures humanitarianism's dual politics of care and control. Transparency is rarely oriented toward aid recipients themselves: Accountability goes upward, to donors, states, and implementing actors, rather than downward to the communities whose lives are being logged, scored, and conditioned through these systems. New payment infrastructures like Links raise urgent questions about how marginalized communities' everyday transactions and habits are rendered visible, to whom, and with what consequences.

Studying blockchain's implementation in humanitarian aid thus provides a critical lens for understanding contemporary transformations in both the aid sector and the broader digital economy, where Majority World settings routinely become the test bed for new technologies (Subramanian & Hassan, 2024). The central question becomes whether blockchain—despite its origins in radical, decentralized, privacy-preserving systems like Bitcoin—ultimately challenges or reinforces harmful trends for the most marginalized groups. I show that blockchains risk deepening existing patterns through expanded surveillance, more rigid calculations of human needs, abdications of institutional responsibility, and automated restrictions on how money is used. For

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many, blockchain-based finance represents an optimistic future for those failed by conventional monetary systems (Hassan, 2025). But rather than straightforwardly delivering economic emancipation, this technology can lock precarious, low-income communities into constraining financial networks that further limit rather than expand their choices.

Multiple Accounts

This book juxtaposes multiple accounts of the same human blockchain experiment, tracing how it was understood and enacted across different social and institutional locations. These accounts are drawn from my fieldwork with Syrian refugee women and frontline aid workers in Za'atari and Azraq camps, as well as from interviews and ongoing exchanges with aid industry professionals and technology developers working in Amman, online, and across transnational humanitarian and financial technology ("fintech") spaces.

Immersion in the refugee camps formed the foundation of this research. From there, I built out a set of complementary methods—focus groups, interviews, and document analysis—selected pragmatically in response to the constraints and affordances of different settings and stakeholders.[36] This approach allowed me to supplement and "scavenge" knowledge (Seaver, 2018), navigating gaps in the network to follow how ideas, decisions, assumptions, and practices traveled—where they gained traction, where they stalled, and where they became opaque.

36. For example, I tracked and analyzed online materials about Links, including their web pages (historical versions are available on the Wayback Machine [webarchive.org]), public articles, press releases, YouTube videos, webinar presentations, and old Meetup.com pages. Beginning with established relationships within the Links team and by using relevant conferences, webinars, reports, and mailing lists as a way of following discourses and identifying informants, I gathered a snowball of connections with aid and tech industry professionals. Informal discussions and interviews with this wider network of aid and tech industry participants informed my analysis of blockchain's implications.

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The knowledge produced through this approach is necessarily situated and partial. Rather than treating these limits as methodological shortcomings, I engage them reflexively. Ethnography's strength lies in weaving partial insights into plausible coherence (Knox & Nafus, 2019), without trying to smooth over differences in perspective, power, or access. Attending to these frictions makes it possible to illuminate how small places and local priorities intersect with broader agendas and big issues.[37] Blockchain's technicalities, aid institutions' jargon, and refugee camp economies may appear complex and confusing or simply common sense, depending on one's position in the network. Ethnography traces how these arrangements are learned, justified, domesticated, and lived in practice, guided by its long-standing injunction: to make the strange familiar and the familiar strange.

Doing ethnography means becoming familiar with new scripts—whether Arabic, blockchain technicalities, aid industry acronyms, or codes of behavior—with the help of many guides and gatekeepers. Learning fledgling Arabic was essential for my fieldwork in Jordan, though language skills alone cannot erase power dynamics in humanitarian research.[38] Refugee studies often

37. Localized settings—like Jordan's refugee camps—are not to be dismissed as marginal and limited; rather, they are analytically productive "small places" through which wider structures and agendas ("big issues") become visible (Hylland-Eriksen, 2001).

38. Beginning to learn Arabic was a gradual and often frustrating process, especially with a stubborn British accent. I reached a level of basic proficiency sufficient to build trust with participants, and my conversational ability improved throughout the fieldwork. It is important to recognize, though, that language proficiency does not automatically guarantee authentic research experience or reflect careful, ethically sensitive research approaches (Brankamp, 2018). When white Western researchers "give voice" to marginalized groups, the power imbalance is inherent. They take up a position of extraction and dominance—speaking for, about, and above (Simpson, 2007; Todd, 2018). Participant-led methods can never fully mitigate this: "There is no innocent ground to stand on" in elite Western academia (Helm et al., 2023; Raghuram & Sondhi, 2023, p. 10). Telling the stories of Syrian women and aid workers reproduces white scholarly hubris and privilege. At the same time, these stories are frequently overlooked, reduced to survey data, selectively quoted, or subsumed into depoliticized marketing narratives of humanitarian impact and success. This book seeks to hold this

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FIGURE 2. A focus group discussion held at the Azraq camp Women's Center.

benefit white Western academics and aid organizations while marginalizing local contributors such as translators, who are rendered invisible in research outputs (Sukarieh & Tannock, 2019). I strive to write in a way that treats research participants and collaborators as equals, acknowledging their ongoing contributions throughout the research and writing. Research on blockchain's

tension rather than resolve it. I aim to offer an honest example of the enduring power of ethnography to record history (Khachab, 2025), particularly where intersectional disadvantages—colonial legacies, gendered and racialized power relations, precarious citizenship—systematically write those experiences out of the record (Cabrita, 2023).

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implementation involved close collaboration with Jordanian researchers Dina Batshoun and Deena Dajani, who were crucial in facilitating, transcribing, and translating the focus groups with refugee women in Azraq and Za'atari camps, creating an inclusive research environment, providing new insights and expert opinions, and reflecting with me on events and ideas. Together, we produced field reports for aid organizations that directly influenced their decisions.[39]

The in-depth insights in this book are hard won. It took several years to establish and maintain access to the Links project and navigate the highly securitized camps where it unfolded. This research demanded persistent relationship-building, negotiating complex legal and bureaucratic barriers, and adapting to shifting security protocols that often limited observation and documentation. An extended fieldwork timeline proved essential, revealing patterns and contradictions that would have remained invisible in a shorter study.

Aid organizations are cautious and risk-averse, tasked with protecting vulnerable subjects but also guarding their politically neutral reputations, public funding sources, and sensitive commercial information. Aid professionals were not just subjects of study but vital collaborators who shared, guided, shaped, and sometimes blocked my access, logistics, insights, and experiences. While charged with safeguarding others, humanitarians themselves often operate under conditions of vulnerability, working in insecure settings, facing threats, surveillance, burnout, and labor precarity. I honor my research agreements by using pseudonyms for all people and organizations. Where necessary, I protect identities by combining stories based in the data in the form of "composite narratives" (Willis, 2019). Targeting critique on specific organizations

39. For instance, evidence from one of our field reports prevented Links from delivering digital-only currency, which would have disabled access to cash and severely limited women's financial autonomy in the camps. These field reports presented significant ethical challenges: Insights from the research were cherry-picked in an institutional report, which circulated widely. The research both challenged and, in this case, legitimized the aid intervention.

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risks missing the forest for the trees—the patterns in how humanitarian innovation operates across the sector. This book balances protecting sensitive and identifying information with accurately conveying ethnographic details and lived experiences.

The Bottom Line

Overall, *When Blockchain Meets Aid* aims to give a rounded picture of places and people involved in making and using experimental financial technology, grounded in real human experiences. The empirical chapters foreground the perspectives of (i) aid managers and tech developers devising the system, (ii) frontline aid workers maintaining it, and (iii) refugee women enduring it. With every chapter, I aim to deepen our understanding of how blockchain infrastructure redefines the distribution of power among different communities. We encounter the ambivalences of financial technology in aid: its dual role in delivering care and imposing control on an everyday level.

Chapter 2 ("Dreams") follows the Links project manager, Sam, and his team as they design one of the world's first humanitarian blockchain networks. The chapter reveals how blockchain dreams of "trustless" transactions, decentralized coordination, and enhanced privacy come with great promise, but ultimately fail to materialize. When large international aid organizations adopt new financial technology, they must balance bureaucratic conventions, concerns around resource scarcity, conditions imposed by aid donors, local financial institutions' prerogatives, and state-led securitization agendas. Meanwhile, the technology slots into preexisting patterns of economic restriction and control in Jordan's refugee camps. Links consolidates the authority of large international organizations and their private-sector partners over global governance information, resources, and decision-making.

Chapter 3 ("Labors") follows Aisha and fellow frontline aid workers in Jordan, charged with maintaining the Links payment infrastructure. While blockchain is marketed as a revolutionary,

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autonomous system, this chapter reveals how its functioning depends on extensive human labor, marked by uneven technical expertise and knowledge gaps. The Links blockchain replicates existing professional hierarchies by design. Frontline humanitarians are excluded from accessing the blockchain ledger, and their role in delivering aid payments is outsourced to companies and tech, including eye-scanning machines. Aisha and her colleagues work to get things right for refugees, but now they mainly manage Excel spreadsheets. Through their mundane data work, they enable the blockchain implementation but are alienated from it. Ignorance and myths surrounding blockchain among local humanitarians allow their aid organization to make overblown claims about Links. The marketing of the blockchain project elides the additional burdens that adopting new payment infrastructure places on frontline workers and refugees.

Chapter 4 ("Costs") follows Eman and fellow refugee women who, as residents of Jordan's camps, lack basic resources, choices, and freedoms. When the Links blockchain is imposed on them, it is an invisible infrastructure shaping access to paltry yet vital funds. Links institutes a rigid, restrictive payment system that they characterize as *mish baraka*—in Arabic, not bountiful, not dependable, not blessed. The moral-spiritual framework of *baraka* emphasizes incalculable goodness, life-giving value.[40] Through this framework, we understand that, in these camps, what really matters to people is not money's spending power, but its contribution to the shared work of survival. The blockchain payment infrastructure comes at a qualitative, *human cost*: It depletes rather than enhances the perceived value of aid by disrupting collective financial management routines. Biometric checks and digital assets render money's value intangible and individualized. Links unintentionally introduces new burdens while failing to address fundamental issues of poverty and precarity in refugee camps.

40. *Baraka* is a slippery term, holding multiple context-dependent meanings and translation possibilities, as I discuss in the chapter.

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The accounts from women I spent time with challenge dominant narratives about financial technology's emancipatory potential, revealing how blockchain infrastructure can reinforce rather than reduce existing patterns of economic exclusion and dependency on aid. Ironically, women repurpose paper till receipts as ledgers, helping each other with paper accounting, to mitigate the costs imposed on them by new financial technology.

At the time of writing, the aid industry is under threat. Budgets are tighter than ever as European and American donors prioritize national self-interest over international solidarity. Technocratic approaches are on the rise, based on strict accounting, cost-effectiveness, and the ruthless prioritization of human needs. Humanitarian activities are increasingly outsourced to machines and commercial actors. The quality of the quantity is at risk: in other words, the public provision of consistent, dependable support to crisis-affected people.

When Blockchain Meets Aid argues that while this technology promises to improve aid delivery, it reinforces patterns of control, dependency, and exclusion. Some readers of this book will shudder to learn that the ideals of economic freedom and anti-authoritarianism associated with blockchain's very invention are negated in blockchain's first major humanitarian implementation. Blockchains are not inherently liberatory or transformative. While their outcomes are certainly not guaranteed successes, they are not predetermined failures either. This story remains in flux. Questions remain about digital money's future role in mediating global inequalities and human survival. Refugees and critical aid workers challenge the technologies imposed on them by articulating alternative values and priorities, calling for truly transformative aid systems that adapt to people's needs rather than serving more powerful stakeholders.

Chapter 5 ("Balancing the Books") considers how aid organizations could better align their essential infrastructures around the priorities of those living and working at the front line. I suggest that it is possible to imagine a more equitable future: one in which

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frontline communities have greater autonomy over the decisions that shape their lives; in which aid organizations establish clear guardrails on the authority and influence delegated to commercial intermediaries; and in which humanitarian interventions strengthen, rather than erode, the existing capacities and routines people rely on to sustain life. Such a future would reckon honestly with the human costs of innovation.

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