Insider and Outsider Cultures in Web3

"In this accessible yet deep book, Alexia Maddox draws on her years of research into digital cultures to give us a critical exploration of Web3. Pushing past both hype and dystopian predictions, Maddox uses her digital sociological imagination to show how cryptocurrencies, peer-to-peer networks, and blockchains are responses to legitimate critiques of the current state of the internet. The result is a call for all of us to become active shapers of emerging digital technologies."

***Robert W. Gehl*,**
Author of 'Weaving the Dark Web' and 'Social Engineering'.

"Maddox creates a clear new language to connect the promise, past, and present of the internet with emerging Web3 realities that will guide our connected futures. Web3 technologies and cultures are accessibly narrated through vivid stories and details, while practical implications are rigorously researched. Maddox paints a stark yet accurate picture of how Web3 creates new exclusions and inclusions for a society currently adrift in digital change and inequalities; her work offers new hope for how communities can architect their own paths of collective attention towards owning, writing and reading the future."

***Luke Heemsbergen*,**
Author of 'Radical Transparency and Digital Democracy'

Insider and Outsider Cultures in Web3: Data Ownership, Transparency and Privacy

BY

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Emerald Publishing Limited
Emerald Publishing, Floor 5, Northspring, 21-23 Wellington Street, Leeds LS1 4DL.

First edition 2025

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-1-83797-796-3 (Print)
ISBN: 978-1-83797-795-6 (Online)
ISBN: 978-1-83797-797-0 (Epub)

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About the Author

Dr Alexia Maddox is a Leading Sociologist of Technology, specialising in the exploration of digital frontiers and sociotechnical transformations, also known as social change. As the Director of Digital Education and Senior Lecturer at La Trobe University, she brings a wealth of interdisciplinary experience to the forefront of education futures.

Dr Maddox's academic journey mirrors the evolution of the internet itself. Her research has traversed the landscapes of digital communities, smart cities, and the cutting edge of emerging technologies, including Web3, generative AI, and immersive environments. With a particular focus on human-technology encounters, she offers invaluable insights into how emerging digital cultures and practices shape our collective future.

A pioneer in adapting research methodologies to the rapidly changing digital landscape, Dr Maddox's work is characterised by its innovative approach to studying digitally embedded populations. Her expertise spans a wide range of topics, from the social implications of blockchain technology to the nuances of digital forms of activism and resistance.

Dr Maddox's recent publications include a government-facing report on digital infrastructures for future cities and scholarly articles exploring the intersections of technology, society, and policy. Her work serves as a crucial bridge between academic research, industry innovation, and public policy.

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Acknowledgements

I wish to acknowledge the land on which this book was written, the traditional lands of the Dja Dja Wurrung people of the Kulin Nation. I pay my respects to their Elders past, present, and emerging. I am grateful for the nurturing embrace this land has provided me while writing this work.

I would like to express my gratitude to the many individuals who have contributed to my intellectual journey and, more directly, to the content of this book. I have had the privilege of engaging with numerous members of the Web3 community, both in conversation and through research. Their generosity in sharing their experiences and perspectives has been invaluable, and I hope I have done justice to their contributions.

I am indebted to the scholarly community that has supported me throughout this work. In particular, I would like to acknowledge Dr Monica Barratt, Professor Heather Horst, Professor Supriya Singh, and Associate Professor Robert Gehl, who have been instrumental in deepening my understanding of the cultures within these spaces, ethnographic ways of understanding the technology, and the nature of money itself.

My time at the Blockchain Innovation Hub at RMIT provided me with an intellectual community that helped refine my perspective on Web3. Professor Chris Berg, a Co-Director of the hub at the time, provided the working title that shaped this book. Dr Darcy Allen and Professor Sinclair Davidson reviewed excerpts of this manuscript, generously sharing their expertise and constructive criticism. Dr Julian Waters-Lynch offered invaluable insights into entrepreneurial ecosystems, helping me frame my observations of Web3 entrepreneurs. Dr Max Parasol further aided in grounding my work in the thinking and practices of Web3 entrepreneurs. Paul Stanley reviewed the case study of Bitcoin as legal tender in El Salvador, offering a tech industry perspective.

Beyond specific Web3 colleagues, my collaborators, including Dr Naomi Smith and Dr Luke Heemsbergen, have helped me apply an external and critical lens to my work. Dr Smith also reviewed the concept chapter of this book and collaborated with me on the larger work behind the Art NFT case study. She has kept me honest and honing the sociological craft. Thank you for that, Naomi.

I thank my current colleagues and collaborators, Dr Scott Alterator, Dr Stefan Schutt, and Dr Clare Southerton for sharing their progressive understandings of digital spaces and what is possible within them. In doing so, they have sensitised my thinking through Indigenous and feminist perspectives towards

what our digital space could be when diverse voices are at the table. These perspectives and our conversations have opened my futures thinking in new and unexpected ways.

For inspiration on the cover design, I extend my thanks to Sally Piper and Daphne Piper for their remarkable visual design language, which helped me see another dimension of this story.

David Semetsky generously gave his time to editing this work, bringing consistency and coherence to my prose. Dr Erin O'Dwyer mentored me across the book development process and kept me on track. I also utilised Anthropic's generative AI chatbot Claude.ai to help ensure clear communication for the book's audience. While this AI tool is a valuable non-human collaborator, all final decisions on content and phrasing remain my own.

The perspectives and conclusions drawn in this book, along with any unintended inaccuracies, reflect my own understanding and interpretation of the subject matter. I have no doubt that this will evolve as people engage with me from what I have written here.

For me, this book represents a culmination of the past decade of practice and an attempt to translate the meaning and value of this immersion for readers. I owe a great debt to the researchers who have built the field of internet research. They have inspired and informed the direction of this book and helped me articulate its key contributions to the discussion on the future of the internet. The work of Professor Annette Markham has been particularly influential here.

Throughout this decade-long journey, my friends have been an unwavering source of support, encouragement, and inspiration. Their patience, understanding, and belief in me have been indispensable to the completion of this work. I am deeply grateful for their presence in my life and their indirect but significant contribution to this book.

Finally, I'd like to extend my heartfelt gratitude to you, the reader. Your interest in this work and willingness to engage with these ideas is what gives this book its purpose. Thank you for joining me on this exploration of Web3 and the future of the internet. I hope you find the call to action held in these pages inspiring for your own journey.

Chapter 1

Introduction

Abstract

This chapter introduces the book's purpose: to explore the niche technology space of Web3 and use it as a lens to reflect on the internet's future. I'll discuss the internet's current state and key issues and then move into a definitional tour of Web3 and its underlying technology. The book's core argument is presented: Web3 provides tangible social proof of what people want for the internet's future. I'll examine current challenges such as privacy concerns, unclear data ownership, and lack of transparency in online systems, which create power imbalances between technology controllers and users. The book argues for striving towards a more equitable and transparent digital future. This chapter serves as a starting point, offering insight into my decade-long research. It aims to familiarise readers with the case study approach and Web3 terminology used throughout the book. A chapter-by-chapter roadmap is provided to guide readers through the exploration of Web3 and its implications. Additionally, this chapter introduces my writing style and voice, preparing readers for the deeper analysis to come. While grounded in sociological knowledge, the chapter aims to make Web3 accessible and spark readers' curiosity, encouraging them to pursue their own inquiries into this emerging field.

Keywords: Web3; internet history; game theory; blockchain; metaverse

Introduction

Web3 technologies such as blockchain-based cryptocurrencies have attempted to forge disruptive pathways through existing institutions and prompt us to tackle important questions around the future of the internet. At its core, Web3 is aspiring to be the next immersive and decentralised iteration of the internet, built upon blockchain technology and its token affordances. It enables developers to create decentralised applications (dApps) that run without the need for a central

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doi:10.1108/978-1-83797-795-620241001

authority, allowing users to interact without giving away their personal data and making them less susceptible to censorship. Web3 incorporates advanced features such as smart contracts and has been defined by waves of new applications, including cryptocurrencies, Initial Coin Offerings (ICOs), Non-Fungible Tokens (NFTs), Decentralised Autonomous Organisations (DAOs), and dApps. While transparency, privacy through encryption, decentralisation, peer-to-peer interactions, individual ownership (sovereignty), and being natively digital are common core principles of most Web3 technology definitions, these principles are not always fully realised or desired within every product or service developed using blockchain.

In this book, I invite you to explore the complex and rapidly evolving world of Web3 technologies through the insider–outsider framework, which brings together three complementary lenses. Through the study of insider–outsider dynamics, and the case studies that explore their real-world instantiations, I argue that Web3 is a niche technology space that provides tangible social proof for what people want the future of the internet to look like.

First, I will draw on a community studies lens to examine the insider–outsider tensions that coalesce and become visible through events in the Web3 space. This conceptual field is my old stomping ground; indeed I have written an entire book on this (Maddox, 2016). These dynamics shape the visions of Web3 presented in the book and effectively frame the community dialogue about the future of the internet. I see Web3 as a digital frontier, with all the frontiering – and even digital terraforming – mentality that comes with it. This perspective also brings into focus the socio-technical milieu of Web3, where people and technology coexist, interact, and influence each other. It reveals the transformative friction between emerging technologies and established institutions. The book examines this dynamic by unpacking insider perspectives within the Web3 community and how these internal logics intersect with broader public attitudes towards the role of existing and emerging technologies within society.

For readers versed in academic discourse, this approach accounts for the social shaping of technology. Neves et al. (2023) eloquently articulate this concept through their application of Strong Structuration Theory (SST) to sociotechnical interventions. Their approach articulates the complex interplay between individual agency, social structures, and technological elements. This conceptual rigging provides a nuanced understanding of how personal actions, societal norms, and technological affordances collectively shape and are shaped by emerging digital landscapes like Web3. Their work provides the theoretical backing for how to understand the ways this book will explore Web3's evolving ecosystem. I think it helps specifically to support understandings of how insider perspectives, outsider reactions, and the technological interface itself collectively shape and are shaped by these emerging digital landscapes.

Next, I'll take a technology-focused approach, rooted in innovation studies, to highlight the Web3 entrepreneurial ecosystem. This perspective will place Web3 within a broader social context, examining regulatory environments and public perception that shape its adoption barriers and facilitators. Viewing the Web3 ecosystem through the lens of the technology adoption curve (also known

as technology diffusion), illustrates the uncertain path of technology acceptance across digital societies and social groups. This approach allows us to pinpoint potential barriers and friction points in adopting Web3 technologies within business and social practices. Considering Web3 in terms of the adoption curve and insider–outsider dynamics illuminates the long tail of technology adoption through its social appropriation. This appropriation manifests through social logics that domesticate technology, defining its usefulness, consequences (both positive and negative), and lifespan. It's at this intersection of technology and culture where unintended consequences may arise, shaping the future of Web3 and its impact on society.

The third lens deployed through this framework is that of inclusion. This lens scopes out from the particular to the conceptual, responding to larger questions that move from digital to financial inclusion and consider how existing social forces and inequalities shape and influence the possible action space of Web3. As a sociologist, I find this perspective particularly compelling, as it offers a unique vantage point within the discourse of Web3. This lens becomes especially potent as our exploration extends into the realms of future inclusion and more-than-human worlds, illuminating facets of Web3 that might otherwise remain obscured.

The first two lenses, community dynamics and entrepreneurial ecosystems, are firmly rooted in practice, offering actionable insights and strategies for those engaged in the Web3 ecosystem. These lenses, along with real-world case examples, contribute to a discussion of policy considerations raised within the unique sociotechnical milieu of Web3. The third lens, inclusion, takes a more speculative approach, inviting readers to imagine and explore the possibilities of a more equitable digital future. By examining Web3 through this lens, we can better understand how existing social forces and inequalities shape the potential outcomes and impacts of these technologies on society. The combination of practical insights and forward-looking speculation aims to provide a grounded understanding to support the discussion of policy implications and challenges that arise within the Web3 landscape.

The approach held in these pages is neither utopian nor dystopian in its orientation towards the role and impacts of technology in society; instead, it is critically hopeful. Inside the dystopian walls of a surveillance society, I believe that it remains crucial to look for the fissures of hope through which we can see an alternative to what we have and make future dreaming possible. Web3 will neither destroy nor save us, but it does have unique affordances that shape how we can do what we do and offers a counter vision or critique to these ways of doing. While the rapid acceleration of technology innovation and diffusion has become a runaway train, it is important that we engage with this process. Through active engagement, we can shape the values that inform how technologies develop and how they provide different ways for us to envision the future of the internet, the technological architecture underpinning digital societies and socialities.

Whether you are a technology enthusiast, an entrepreneur, a policymaker, or simply curious about the future of the internet and its impact on society, this book aims to provide a comprehensive and thought-provoking guide to navigating the Web3 landscape. By striking a balance between technical accuracy,

practical insights, and imaginative speculation, I hope to inspire readers to actively engage in shaping the future of Web3 technologies and the world they are creating. The insider–outsider frame is used to explore social inequalities, differences, and divergences, and how these affect patterns of socio-technical organisation within broader economic, geographic, and socio-cultural contexts. This approach offers a nuanced, sociologically grounded perspective on the Web3 phenomenon, revealing patterns that might otherwise go unnoticed.

Throughout this exploration, I will offer a touch of personal perspective. By using relatable analogies, real-world examples, and a conversational tone at times, I aim to break down complex concepts and ideas into digestible pieces while maintaining the necessary depth and nuance. I do draw from a wide range of published literature, news media commentary and other online sources to evidence and illustrate the insights presented in this book. Sometimes, I admit the scholarly style of writing and evidencing that I have been trained in gets a bit heavy going. I beg your clemency on this. We get there in the end. While I will occasionally use technical terms like 'sociotechnical milieu' to describe the dynamics between technology and society, I will always strive to explain these concepts in accessible language to ensure the diverse readership of this book can engage with the material.

The Future of the Internet

In January 2022, Tim Berners-Lee, inventor of the World Wide Web (WWW), started to talk about the need for personal data ownership, a passion-point for Web3 proponents (Robinson, 2022). This focus of activity is a direct reaction to the different forms of online surveillance now rampant (social, corporate, and governmental), targeted advertising practices, and the current model of Web 2.0 in which platforms own, surveil and repackage the data of their users, often in exchange for free services or just by default. Who we are perceived to be in this environment, as a (prod)user, consumer (prosumer) or citizen, is a direct result of what data about us is produced through platform interactions and how meaning is made from it. We are seen or imputed through algorithmic lenses. In his unpacking of the digital-self online, Cheney-Lippold (2017) describes how companies use algorithms to construct our digital identities from available data in order to 'know' and thus target us. He explains that these persona profiles are constructed by algorithms that both create and control the datafied versions of ourselves, with real-world impacts (also covered by Burrows & Gane, 2006). He highlights, however, that these 'just-in-time' identities are not consistent or coherent, by observing that

> with hundreds of other companies similarly assigning each of us different 'genders,' 'races,' and even 'classes,' there is no single, static sense of us but rather an untold number of competing, modulating interpretations of data that make up who we are. (Cheney-Lippold, 2017, p. 29)

Sociologically, our actual identities are fluid and context-dependent; we constantly adjust which aspects of ourselves we present based on our social environment, a

practice known as code-switching that is ethnographically documented in this great book by Jeffrey Lane (2019) on teenagers and social media. Interestingly, this fluidity is mirrored in the digital realm, where technological platforms construct fragmented, 'just-in-time' identities of us. While we maintain a relatively coherent sense of self across contexts, albeit mutable, these digital representations often lack consistency across platforms. In both cases – our personal identity management and tech-constructed digital identities – only partial aspects of our full selves are presented at any given time.

Given these dynamics, what vision of the future of the internet can address the issues Web 2.0 technologies trigger over power and control of data ownership, identity coherence and consent for data use, while addressing automated forms of social inclusion and exclusion that the broader digital environment raises? Speaking at a technology summit on the part technology can play in shaping a better future, Berners-Lee discussed people's concerns about cybercrime and the web being used to manipulate them through targeted messaging (Robinson, 2022). These concerns have also been deeply considered in the scholarly literature and public discourse around digital surveillance (Albrechtslund, 2008; Campbell & Carlson, 2002; Mann et al., 2003) and social media messaging manipulation through misinformation/disinformation (Allcott et al., 2019; Landon-Murray et al., 2019; Shu et al., 2017), audience targeting (Trott et al., 2021), and deepfakes (Chesney & Citron, 2019). The public awareness of these issues has been increased through global media events such as Edward Snowden's whistleblowing in 2013 surrounding the National Security Agency's (NSA) big data approach to mass surveillance in the United States (Lyon, 2014) and the Cambridge Analytica voter surveillance scandal in 2018 demonstrating interference in the 2016 US presidential election and Facebook's irresponsible data-sharing practices (Berghel, 2018). While US centric, such events and concerns occur in most countries (White, 2020). Watershed events like the Cambridge Analytica scandal tend to bring to public attention the voices of privacy champions such as the Electronic Frontier Foundation in the United States. These organisations seize such moments to spotlight critical issues underpinning our current internet landscape, while simultaneously leveraging the heightened awareness to make significant inroads in lobbying both governments and corporations about the collection and processing of our digital footprints.

In his technology summit talk, Berners-Lee prefaced his introduction of personal information pods (Solid pods) as a technical solution to data ownership on the internet by highlighting the privacy issues raised by people's data being used for inappropriate purposes by corporations to target and manipulate them (inrupt, 2023). He also flagged the platform-based data silos and data ownership issues that prevent users from utilising their own data as they might wish. His vision of the future of the internet imbues the individual with a high level of control over their personal data online, their digital traces. He argues that this approach will build trust and lead to greater sharing of data to drive innovation and address the key problems the world now faces. Berners-Lee articulates his vision of the future of the internet as a web of data that covers the full range from public data to personal data. On the other side of this equation, he argues that the artificial intelligence (AI) and machine learning applied to this data for social sorting need greater openness and transparency.

A dystopian vision of the future of the internet can be easily found in scholarly literature, popular press and popular culture that regularly rues the rise of social media, and its surveillant, at times addictive or toxic, and always-on nature. Critics (reasonably) chafe against the monopoly power that internet companies such as Amazon, Meta, and Google hold in most parts of the world.[1] In response, governments have scrambled to both harness and regulate the online environment, with the General Data Protection Regulation in Europe being the latest attempt to do so at scale (EUGDPR.org). At the individual level, people exercise their own forms of activism and personal control through platform exits, privacy practices, collective organisation around acts of resistance, and efforts to hold firms accountable within the public domain. However, the encroaching surveillance capitalism described by Zuboff (2019) and the prevalence of forms of bias in algorithmic content moderation and automated decision-making processes are just some of the at times opportunistic, maladjusted or glitchy elements (or bugs) that persist and pervade our digital lives. Maalsen (2024) offers a nuanced perspective on our relationships with digital technologies, framing them as 'digital oddkin' with whom we cohabitate. She identifies three key types of relationships: mutualistic, commensal, and parasitic. This framework helps us understand the complex and often ambivalent nature of our interactions with digital technologies, from the beneficial aspects of smart home devices to the potential for exploitation and harm. Just as algorithmic bias and surveillance capitalism shape our broader digital experiences, these intimate technological relationships in our homes reflect similar tensions between convenience and privacy, assistance, and intrusion. These micro-level interactions in our domestic spaces are, in fact, microcosms of the larger systemic issues at play.

These impacts of platform capitalism are far-reaching, extending beyond our homes and personal devices to reshape societal structures and exacerbate existing inequalities. In her discussion of the ways platform capitalism intersects with racial capitalism, McMillan Cottom (2020) observes the socio-political regimes of exclusion, inclusion and obfuscation-by-privatisation that result. Boldly she states:

> Platforms produce new forms of currency (i.e., data) and new forms of exchange (e.g., cryptocurrencies), and they structure new organizational arrangements among owners, workers, and consumers (see 'prosumers'). Even more important for the study of race and racism, platforms introduce new layers of opacity into every facet of social life. (McMillan Cottom, 2020, pp. 442–443)

So, while technological advancements promise connectivity and progress, they simultaneously usher in new forms of surveillance, detrimental habitual practices, and monopolistic control. McMillan Cottom's observation cuts to the heart of

[1]With the exception of China, which has its own versions of these companies for online sales, social media, cloud data storage, enterprise software and search.

this dilemma, revealing how platforms not only reshape economic structures but also introduce unseen layers of complexity into our social fabric and homes. Her insight underscores the far-reaching consequences of platform capitalism, particularly in perpetuating and obscuring racial and social inequalities. As we grapple with these challenges, it becomes clear that the future of our digital world hinges on our ability to critically examine and reform these systems, ensuring they serve the interests of all, rather than exacerbating existing societal divides.

We are discussing an emerging, imperfect, and perpetually evolving digital environment constituted by heterogenous agendas, pragmatism, idealism, existing socio-economic and political conditions, and a computational ontology. Drawing on Maalsen's (2024) framework of 'digital oddkin', we can understand this environment as a complex ecosystem where our relationships with digital technologies shape our experiences of them. These relationships can be mutualistic, commensal, or parasitic, reflecting the ambivalent nature of our interactions with digital systems.

I intentionally use *maladjusted*, *opportunistic*, or *glitchy* to describe the detrimental aspects of the digital environment. These words are technically correct and don't rely on legal definitions, regulatory frameworks or a unified moral or political compass to be meaningful. They also align with Maalsen's notion of 'parasitic' relationships, where technology can exploit or harm its users. Ultimately, this discussion is about power and control, with money and influence being subset actors of these two dimensions. The varying nature of our relationships with digital technologies – from beneficial to harmful – reflects these power dynamics at both individual and societal levels. These are the stakes, and our lives, the planet, and our interconnected (posthuman) futures are the commodity or resource being traded. With access to the internet being generally considered a basic human right in digital societies (Article19, 2021), this is no understatement. We must recognise our power to shape our digital world and its impact on our wellbeing. Without active intervention, we risk perpetuating the status quo: a digital realm that reinforces existing social inequalities and exacerbates our destructive relationship with the planet. Like many innovations that came before, left unchecked, our digital future may amplify our current challenges rather than alleviate them.

I argue that with the (albeit patchy for some and inaccessible for others) embedding of the digital in our everyday lives – from wellbeing and consumption through to citizenship and political participation – we should be aware of the datafication of everything, how these data are used, by whom and for what purposes. I say 'should' because there are a wide range of reactions that people hold towards this reality, from denial and apathy to a lack of awareness and, across the spectrum, to deep conspiracy. You may recognise yourself on this spectrum. No judgement from me. While I would argue that there is no possibility of a concerted all-knowing organisation or group that has the power to shape our digital lives, the environment is too contingent and unpredictable for this; there are powerful actors who seek to shape parts of it towards their own vested interests rather than the public good (for a real-world example of this, see the work of Smith & Burrows, 2021). If they do cite the public good as a motivator for their actions, then it is probably a wishy-washy, watered-down version of one that benefits the few over the many.

Creating an inclusive digital environment that benefits everyone requires a focus on accountability, transparency, and empowerment. However, these vital qualities must be openly cultivated to emerge in our current tech landscape. The rapid pace of technological development, coupled with high demand for digital tools and an advanced entrepreneurial ecosystem, comes with substantial rewards for being first to market. Meanwhile, regulators struggle to keep up with the social and environmental impacts of emerging technologies. Because they are experimental and unproven, we don't know what they will end up looking like or what their social impacts will be. In this context, we must actively work towards these goals to ensure a digital future that serves all of society, rather than just a privileged few. Without deliberate effort, we risk perpetuating a system that favours speed and profit over inclusivity and social benefit. That will not end well.

But What is the Internet? A Detour

Now, I've discussed at length the challenges of our current internet and even offered a little introduction to what Web3 is, but are you really with me here? Emotively, maybe, but technically? When I have attempted to explain to lay audiences Web3 dynamics as decentralised technologies that utilise peer-to-peer (P2P) architectures based upon principles of transparency and privacy, I often find that I have assumed that they know what the internet is. Which, usually, they do, but only from the perspective of how they use it every day. This view is very different from understanding the sedimentary layers of how the internet and computing have developed over time. For example, we will need to situate Web3 in the context of the incumbent Web 2.0 experience, which was, in turn, a development upon the basic layer of Web 1.0. Web 1.0 was, in turn, the first version of the WWW that provided an interface (in the form of a Web browser) that harnessed the distributed architecture of the internet and made it useable for a broader group of users. So the Web is not the whole of the internet, for example.

This distributed architecture was designed to make the internet resilient to attacks or traffic surges. Because Web3 design principles of decentralisation parallel the original distributed design of the internet, going back to the beginning is less a historical lesson than it is an introduction to systems thinking. The classic visual for this can be found in Fig. 1.[2] This image was created in the early 1960s by Paul Baran, an engineer who worked in the US 'think tank' at RAND corporation, in consideration of the structure of a communication network that would allow several hundred major communications stations to talk with one another after an enemy attack (Baran, 1964, p. 1). Targowski (2005) notes that this work was prompted by the Cuban Missile Crisis, which highlighted the vulnerability of the United States to potential nearby Soviet missile bases. In response, the

[2]I will revisit this visual in the concluding chapter of the book, so keep it in mind as a little map to refer back to when we get there.