Chapter 23
Web 3 Challenges:
A Systemic Analysis

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ABSTRACT

This chapter highlights the need for a systemic, multi-disciplinary approach to understanding Web3's development. By disaggregating Web3 into interrelated networks of actors that hold distinct interests and beliefs, this chapter aims to describe and map Web3 to advance a more systemic understanding of its order and functioning. While presenting Web3 as a black box, the work underscores the importance of considering both the inherent nature of the technology itself and the broader societal context in which it operates and interacts with. Employing a Science, Technology, and Society lens, the work combines industry insights with a holistic approach to conceptualize the values, interests, and risks associated with Web3. The research holds that systemic challenges flow from Web3's inherent socio-technical and early-stage nature, and that its development is neither solely technologically determined nor entirely reliant on social actors. Instead, Web3's trajectory results from a complex interplay of its technological nature, societal values, stakeholder interests, and external (f)actors.

INTRODUCTION

We are witnessing the *coming into being* of Web 3, both in the technological realm and far beyond. Web 3 establishes a distributed network using blockchain and cryptocurrencies (Wan, et al., 2023), hereby representing a paradigm shift (Sadowski & Beegle, 2023) in the trust properties of technology, relationships, and societies at large by shifting power away from centralized intermediaries towards decentralized networks. Blockchain technology is able to fundamentally transform wealth transmission and the boundaries of organizations (Freeman et al., 2020), and states, hereby challenging existing power structures by actively questioning their future role and reason for existence. Moreover, the ongoing shift that Web 3 brings about will profoundly transform the relationships among users and platforms, of forces and relations of production, and of the global economy as a whole (Wan et al., 2023). Indeed,

developers and early adopters argue that Web3 has the potential to reorganize and democratize how value is distributed to bring about a fairer world (Adams et al., 2020). In contrast, skeptics argue that Web 3 is characterized by mythology and hype which clouds judgment and that the sector ultimately relies on idealized values embedded in its cultural and technical architecture (Chohan, 2022). Surely, Web 3 is actively shaped by various social actors and networks that bring about their own interests and beliefs. Therefore, it is necessary to technically, practically, and more broadly take an overview of the actors and forces shaping Web 3.

In this chapter, it is argued that understanding the trajectory of Web 3 is crucial for grasping its opportunities and challenges. Hereto, the work proposes a systemic, multi-disciplinary approach to grasp Web 3's development. By dissecting Web 3 into interconnected networks, the work aims to map its functioning and order, fostering a holistic understanding. Acknowledging Web 3's paradoxical nature as a black box, the work argues that analyzing Web 3's inherent nature and the broader societal context are both key to fostering an understanding of the trajectory of the space. Employing a Science, Technology, and Society (STS) lens, the work combines industry insights with a comprehensive analysis to conceptualize Web 3's values, interests, and risks to ultimately highlight various challenges flowing from external sources, as well as inherent challenges arising from Web 3's socio-technical and early-stage nature. The ambition of this work is not to advance the theory of socio-technical systems or to provide a conclusive discussion on the nature of Web 3, blockchain, and their various underlying assets. Nor is it a goal to provide an exhaustive discussion on the various (systemic) challenges Web 3 is coping with. Instead, the work is meant to help provide new insights into Web 3 as an emerging socio-technical construct and may allow researchers and (aspiring) industry professionals to better understand the Web 3 ecosystem and its very development.

This chapter's analysis is based on a comprehensive study of Web 3, aiming to delve beyond its surface and uncover its underlying foundation. This approach is motivated by a noticeable gap in the academic literature. As posed by Nabben (Nabben, 2023), few analytical frameworks exist to address the complex nature of Web 3, leading to deficiencies in our understanding of Web 3 as a bound-breaking ecosystem. To fill this gap, this chapter adopts the theoretical lens of STS to provide an analytical framework for understanding the emerging field of Web 3. Indeed, one of the challenges in comprehending Web3 lies in the need for more clarity regarding the distinctions between various technologies, their interrelationships, their alignment with societal visions and the beliefs of various actors, and their role within the ever-evolving ecosystem that is fundamentally characterized by a range of diverging interests. Indeed, it is not always clear how Web 3, blockchain, and cryptocurrency assets are different, what they mean, how they relate to each other, and how they plug into tightly held social visions (Sadowski & Beegle, 2023) expressed and kept by different industry stakeholders. Besides, still in its nascent stage, this ecosystem seems to sometimes overlook the systemic risks and challenges that hinder mass adoption. The misalignment between ambitions and outcomes arguably contributes to skepticism towards Web 3 from external actors. A sense of uncertainty, characterized by the diffusion of Web 3, presents a critical juncture for comprehending how the space navigates its aspirations and apprehensions regarding the future.

This work seeks to go beyond the surface of Web 3 in order to gain a systemic understanding of the ecosystem's underlying foundation. The methodology and observations stem from independent research on Web 3, from experience working within a Web 3 company (which has not endorsed or supported this article), and from founding a company that by its nature seeks to serve key stakeholders in the Web 3 ecosystem with regard to their business and funding efforts. It must be noted that this chapter does not advocate for any specific legal framework or any policy guideline whatsoever. Instead, it merely

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