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About the Author

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Shermin is the founder of Token Kitchen. She previously founded BlockchainHub Berlin and directed the Research Institute for Cryptoeconomics at the Vienna University of Economics. Shermin studied information systems in Vienna and filmmaking in Madrid. Under her pseudonym kamikat.se she has also published her creative works. An Austrian with Iranian roots, she now lives on an olive farm in Portugal, where she works at the intersection of technology, agriculture, art, and social science.

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Shermin Voshmgir
March 2025

Preface

When I began to work on the third edition, I underestimated the extent of the undertaking. What I initially anticipated as a few months of work evolved into a three-year project. Shortly after starting, I realized that the scope and depth of necessary revisions for an updated third edition were far greater than initially anticipated. Consequently, the manuscript expanded, and I soon found myself behind schedule. The crypto landscape had matured rapidly, and there were so many more topics to cover. Eventually, it became clear that my task had evolved; I needed not only to broaden the scope but also to delve deeper into the subject matter. The substantial growth of the book led me to initially divide the third edition into three distinct volumes: "Money, NFTs & DeFi," "DAOs & Purpose-Driven Tokens," and "Web3 Infrastructure." Following the publication of the first two volumes—Money, NFTs & DeFi and DAOs & Purpose-Driven Tokens—I observed lower sales, which I attributed to the strength of the first and second editions, where all crypto topics were comprehensively covered in a single volume. As I was finalizing the Web3 Infrastructure part, I decided to revert to my original strategy of combining all three volumes into one.

For this third edition, I also experimented with AI tools. While their utility for research proved somewhat mixed, they were exceptionally helpful for copy editing. I also used AI to condense the text of the already published volumes–Money, NFTs & DeFi and DAOs & Purpose-Driven Tokens–in order to create a more compact third edition that integrates all three volumes into one book. These tools proved particularly effective in refining my sometimes verbose language, enabling me to compress the text to approximately 60 percent of its original length without sacrificing depth or scope—though the process was not without its complexities. I used ChatGPT, Claude and Gemini. The tools were very effective in streamlining certain sections, but struggled with topics that required more nuance. In these cases I reverted back to my original writings. Ultimately, the synergy between AI tools and my own writing and editing process produced superior results compared to what either could have achieved independently.

Regarding the structure and content of this book, the first part primarily explores the technological fundamentals of Web3 infrastructure. While this book is intended for a general audience–many of whom might be primarily interested in application-level use cases–understanding the crypto-economic fundamentals of Bitcoin, Ethereum, and other blockchain networks is crucial for comprehending blockchain systems and their game-changing applications. The economic dynamics of decentralized networks depend on value capture mechanisms that are deeply embedded at the infrastructure level, influencing incentives and governance across the entire ecosystem. Without understanding how Bitcoin and other blockchain networks redefined digital ownership, identity management, and network coordination, it becomes challenging to make sound investment decisions, develop effective applications, or establish appropriate regulatory frameworks.

The goal of the first part is to strike a balance—being specific enough to convey the core crypto-economic principles while avoiding excessive technical detail. It also introduces key building blocks of different blockchain architectures, explaining how

design choices impact security, scalability, decentralization, governance and privacy across blockchain ecosystems. Understanding these fundamentals provides a necessary foundation for later discussions on how tokenized applications, decentralized finance, digital identity, and governance models operate within this evolving landscape.

As money and other digital assets have become an increasingly native feature of the Internet, easily programmable with just a few lines of code, the second part of this book is a cornerstone for understanding the scope of tokenization and its impact on money, finance and the real economy. The first chapters introduce the concept of tokenization, its various use cases, and explore the history of money and finance. The central question: Can so-called cryptocurrencies and other tokenized assets replace money as we know it? In public debate, these questions often spark highly contentious discussions, with arguments frequently shaped by one's personal definition of money. Debates about what constitutes "real" money can sometimes take on an almost religious dimension, where opinions are rooted in ideology or partial knowledge rather than objective analysis.

A significant challenge in understanding the impact of Web3 and tokenization is the prevalent lack of financial literacy, a subject often absent from curricula in most schools worldwide. Many students graduate from high school, and even college, with little to no understanding of what money is, where it comes from, or how financial markets function. When I studied business administration at the Vienna University of Economics, I graduated in 1998 without truly understanding what money is or how it is created. While some economics courses covered aspects of money, such as the classifications of government-issued money (M1, M2, M3, etc.), I was completely unaware of the history of money, the different types of monetary systems, or the fact that modern fiat money is not primarily printed or coined but is predominantly created by private banks through the issuance of credit. Conversations with international colleagues and friends who also graduated from business and economics programs at universities worldwide suggest that their experiences were similar. The financial literacy I have today is almost entirely the result of personal research and self-education over the past two decades, rather than what I studied at university nearly 30 years ago. My understanding of finance expanded exponentially when I was forced to grapple with Bitcoin, Web3, and tokenization, making these concepts more relevant and accessible than any formal education I had received.

This knowledge gap in money and finance has led to significant information asymmetries, hindering individuals to make informed financial decisions. It may also explain why retail investors with limited financial experience are often more vulnerable to scams and fraudulent schemes. Unfortunately, history is filled with examples of financial deception, and the crypto industry is no exception. How can people make wise investment decisions when financial literacy remains insufficient or even non-existent—even among professionals working in the banking sector? While I strongly believe that financial regulation plays an essential role in consumer protection, I also believe that the first step should be breaking the cycle of ignorance by introducing financial literacy, which is why I dedicated the second part of this book to this topic.

The final section focuses on DAOs and the purpose-driven tokens that steer the actions of their participants. Beginning with Bitcoin, this section critically examines the

pitfalls and potentials of decentralized autonomous and semiautomated coordination over the Internet. I explore how Proof-of-Work introduced a novel organizational model based on trust by math rather than trust by legal contract, paving the way for a range of decentralized infrastructure networks that emerged over the years, all governed by one or several purpose-driven tokens that steer collective action. The first two chapters outline Web3-based decentralized organizations—their origins and impact from perspectives such as history, cybernetics, political science, economics, and complex systems. Since there is no one-size-fits-all approach to designing decentralized organizations, I found that theory alone was insufficient. To provide a more tangible understanding of best practices and pitfalls, I selected six use cases, analyzing them through a design thinking framework that I developed specifically for this book. The goal was to help uncover common interaction patterns and illustrate how token design varies based on the purpose and governance principles of an online community.

Designing incentive tokens that align individual actions with a collective goal presents an optimization challenge. It requires a balance between the goals and constraints of various stakeholders while ensuring the project's long-term sustainability. A P2P payment network like Bitcoin has vastly different requirements than a P2P data exchange (Ocean Protocol), a P2P telecom network (Helium), or a P2P stable token (MakerDAO). Stakeholder preferences, governance constraints, and market mechanisms must be tailored accordingly. The analysis of these use cases is, therefore, primarily qualitative. While quantitative analysis is valuable, it only makes sense when it can be contextualized. Metrics like market cap or gross network value mean little without first understanding a token's purpose, industry dynamics, stakeholder structures, and governance models. My goal, in the analysis of these use cases, was to provide the conceptual design thinking framework that is necessary to evaluate the effectiveness of protocol design critically rather than focus on raw financial metrics.

In analyzing the use cases, I encountered two primary challenges: research limitations and scope management. Except for Bitcoin, the governance structures and token design of all other use cases that I analyzed changed frequently and significantly, making it difficult to track developments. Moreover, many use cases lacked proper documentation, or were chaotically documented—an ironic reality for organizations that claim public accountability. Additionally, the terminology across ecosystems varied greatly, making a standardized vocabulary for this book a challenge. Where possible, I tried to harmonize the terminology used by each protocol, to make the book more readable. The second challenge was maintaining depth of analysis without excessive detail, as each use case could have warranted an entire book of its own, yet too much detail risked overwhelming first-time readers.

As for my personal experience, having completed this third edition also marks the culmination of a ten-year journey, which began with the BlockchainHub in Berlin back in 2015. At that time, the community was smaller, concepts were new, and everyone was trying to find appropriate words for this novel Internet that was still too abstract to grasp. Books on crypto were almost nonexistent and meetups served as the primary venue to learn from those who were building the first protocols. When I started to write the first edition of Token Economy in 2017, the crypto landscape was just beginning to take shape. It was a time before DeFi Summer, before the NFT craze, before the surge of scalability solutions, before CBDCs and before governments began to consider Bitcoin as

part of their reserves. It was also before presidents started to rug pull their constituents with celebrity coins and meme coins. The vision then was of a profoundly self-sovereign and decentralized web. In this third edition, while I still write about what Web3 was initially conceived to be, I find myself observing a starkly different reality. Many services that were meant to embody decentralization have, in practice, become recentralized. Most people don't control their tokens because they don't have a wallet. Instead, they rely on custodial services of centralized exchanges. Protocol developers are faced with KYC and AML regulations that could censor their operations, and most people still mistake CeFi services for DeFi. It seems that pragmatism has, in some ways, replaced idealism in this evolving crypto landscape. I hope this book strikes a balance between then and now, idealism versus realism, as well as depth and breadth–while still providing valuable insights without overwhelming readers who are new to the world of crypto.

Shermin Voshmgir, April 2025

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