

The First Principles of the Web3 New Economy

I. The "1995 Moment" of Blockchain

1.1 The Distributed Ledger Revolution

Accounting serves as the backbone of human economic activity. Every significant transformation in accounting practices has been accompanied by an upgrade in human economic systems, exerting a profound impact on human society.

The 1.0 version of human accounting can be traced back to the clay tablet single-entry bookkeeping of Sumerian society in Mesopotamia around 3500 BCE. This rudimentary form of bookkeeping recorded lending relationships that developed through temples, facilitating inventory checks and teaching people how to maintain a balance between income and expenditure. This marked humanity's first attempt to observe the world in a quantifiable manner and manage its economic activities, laying the foundation for credit money.

The evolution of human accounting to its 2.0 era began in the 1300s with the invention of double-entry bookkeeping by European commerce and industry. This methodology integrated seven critical elements: the art of writing, arithmetic, private property, monetary symbols, credit, long-distance trade, and capital. It established the principle that "every debit must have a corresponding credit, and the two must be equal." Double-entry bookkeeping significantly improved the protection of capital providers' interests (primarily banks and investors), facilitated the aggregation and circulation of societal capital, and shifted the economic observation focus from a balance of income and expenses to a balance of assets and liabilities, as well as profits and the appreciation of shareholder equity. This method represented a substantial leap forward in the commercial civilization of humankind, playing a pivotal role in the development of the modern corporate system and the creation of the global financial system.

The 3.0 version of human accounting emerged with the blockchain technology introduced by Satoshi Nakamoto in the 2008 Bitcoin whitepaper. Blockchain technology enabled distributed ledger in a trustworthy and transparent manner, making the transfer of value as convenient and efficient as the transfer of information, independent of any intermediary institutions. Tokenization resulting in digital currencies and digital assets not only changed the unit of account but also promoted global capital flow and liquidity aggregation. Economic and financial activities have broken through the geographical boundaries of sovereign states, continuously

expanding into the digital realm. Human division of labor and collaboration patterns are undergoing massive transformations, empowering individuals, restructuring organizations, and ushering in the flourishing rise of the Web3 new economy.

1.2 Maturation of Blockchain Infrastructure and Explosion of Blockchain Applications

Blockchain infrastructure capable of supporting large-scale applications has essentially taken shape. Since 2023, Bitcoin ecosystem and its Layer 2 solutions have demonstrated enormous potential for innovation. Ethereum has progressively evolved from its original monolithic structure to a roadmap that includes the Rollup-centric approach, modular blockchains, the Cancun upgrade, and future developments like account abstraction and chain abstraction. High-performance Alt Layer1s are also continuously improving, with their ecosystems growing stronger and more vibrant. Furthermore, many developers are diligently working in niche areas, such as the development of fully onchain game engines, the practical implementation of Zero-Knowledge Proofs (ZK), and breakthroughs in fully homomorphic encryption.

The barriers to blockchain application development are continually being lowered. Application projects can compare DApps, Rollup Apps, Layer3s, and App Chains in terms of scalability, decentralization, autonomy, and security, choosing the most appropriate technical solution based on their needs. A variety of open-source tools designed to reduce the difficulty of application project development, donations from different ecosystems, as well as platforms and communities for developer interaction and learning, are making Web3 application development more convenient and efficient.

Digital assets are integrating into the mainstream financial system. The approval of a Bitcoin spot ETF by the U.S. Securities and Exchange Commission in 2024 marks a milestone in the development of the Web3 new economy. This allows digital assets to connect with a broader range of users and liquidity, securing a place in the mainstream financial markets. The tokenisation of real-world assets and securities (i.e., RWAs and STOs) will further integrate digital assets into the mainstream financial markets.

1.3 Embracing the '1995 Moment' of Blockchain

In the 1990s, the advent of the World Wide Web and the decommissioning of the NSF NET backbone marked the beginning of the commercialization of Web 1.0. The '1995 moment' was a pivotal time when the internet shifted from system and architectural development to the expansion of application platforms. Most of the global apps and internet platforms, including Amazon, eBay, Yahoo, and Google, were founded within this decade. Looking back, the factors that contributed to the internet's '1995 moment' include: advancements in technological infrastructure, a commitment to the principles of open-source, an explosion of creativity, and a significant influx of capital.

The blockchain sector appears to be on the dawn of its own analogous '1995 moment'. Sixteen years of technological maturation, a vibrant and active developer community, the emergence of generative artificial intelligence, the upcoming Bitcoin halving, and the progressive integration of digital assets into the mainstream financial system — all these elements are converging to fuel a "Cambrian explosion" in blockchain applications. We believe that the next decade promises unprecedented innovation in the blockchain sector, catalyzing the creation of vast economic value within the Web3 new economy.

II 、 All Value Can Be Tokenised

2.1 The Value Principles of the Web3 New Economy

The new Web3 economy is a "borderless economy." Constrained by factors such as technology, transaction costs, the radius of trust, and the enforceability of contracts, most traditional human economic activities are bounded; on a smaller scale, they are limited to a single enterprise or industry, and on a larger scale, to a single country, necessitating complex trade relationships to form a unified market. Built on the decentralised nature of blockchain, trustlessness, and the enforcement of contracts through smart contracts, the Web3 new economy inherently possesses characteristics that transcend time, space, organisations, industries, and even judicial jurisdictions. As an open and transparent global public ledger, blockchain supports the creation and circulation of value without borders, making it the most suitable ledger system for the Web3 new economy.

The Web3 new economy is characterised by high fixed costs and low or even zero marginal costs. This principle distinguishes the Web3 new economy from the traditional economy. Within the Web3 new economy, the construction of the protocol layer and infrastructure demands significant fixed costs. However, once established, the application layer's utilisation of the protocol layer and infrastructure incurs low or even zero marginal costs. This not only accelerates the development of Web3 applications but also ensures that more value is accrued at protocol and infrastructure levels.

2.2 Digital Currencies

In the new Web3 economy, as the method of bookkeeping shifts from centralised to distributed, the unit of account transitions to digital currencies. In the banking account systems based on traditional bookkeeping methods, the unit of account is fiat currency. In the internet account systems that rely on network registration accounts and bank accounts to support electronic payments, the unit of account is platform currency linked

to fiat currency. Within distributed ledgers, the unit of account is digital currency, primarily categorised into the following three types.

Digital fiat currencies, also known as Central Bank Digital Currencies (CBDCs). Digital fiat currencies are digital currencies issued by central banks, belonging to the monetary base (M0). Essentially, digital fiat currencies are the digital form of cash.

Institutional digital currencies, represented by stablecoins. In the mainstream financial system, central banks are responsible only for issuing base money, while commercial banks create money (i.e., deposit) based on base money through credit activities and the multiplier effect, forming broad money (M2). Stablecoins are created by commercial institutions rather than central banks and fall within the M2 category.

Native digital currencies, including the native tokens within blockchain protocols (such as Bitcoin and Ethereum), as well as native tokens of smart contracts built on standards like the ERC20 protocol. Native digital currencies are issued through algorithms, not associated with fiat currencies, and represent the most innovative form of digital currency. There is a certain overlap between native digital currencies and the utility tokens that will be introduced later.

2.3 Digital Assets

With the introduction of new units of account, a new category of assets, digital assets, has emerged within the Web3 new economy, primarily divided into the following four types.

Utility tokens represent virtual goods. The purpose of utility tokens is to obtain the right to use virtual goods; hence, utility tokens are essentially fractionalised rights to use virtual goods.

Security tokens represent fractionalised ownership of a company. Traditionally, company ownership is converted into shares. With the application of distributed ledgers, company ownership has led to the creation of security tokens through tokenisation.

Digital tokens, i.e., NFTs. In the real world, to verify the identity of individuals and institutions or their relationships with each other, it often requires the certification of multiple independent institutions. In the digital world, relying on independent third parties for identity verification becomes difficult. NFTs, as tools for self-verification, hold significant value. NFTs are not only proofs of identity and qualifications but also of work, contributions, as well as rights and powers, and can even become self-verifying tools for anything in the digital world.

Tokenisation of real-world assets, i.e., RWAs. Real-world assets including real estate trusts, credit assets, securities, and funds can be issued to investors in token form. A portion of RWAs can be listed and traded on digital asset exchanges, while others can be traded between institutions in token form.

It is necessary to distinguish between several concepts related to digital currencies and digital assets. First, digital currencies and digital assets are tokenised products and do not include currencies and assets that are part of the traditional financial infrastructure, based on traditional account systems and double-entry bookkeeping, although they are also in digital form (see Part Four). Second, crypto assets are a subset of digital assets. According to the definition by the Basel Committee on Banking Supervision, except for digital fiat currencies, all other digital assets fall within the category of crypto assets. Third, data assets originate from the data market. On one hand, data assets are unrelated to both traditional financial infrastructure and Web3 financial infrastructure, typically stored in traditional databases, and can be structured or unstructured; on the other hand, they are easily replicable, can be used by multiple people at the same time without causing consumption or diminution, and ownership is difficult to clearly define, exhibiting characteristics of a public good to a large extent. Digital currencies and digital assets, however, have clear ownership, with related transactions reflecting changes in ownership, making them typical private goods.

III. Individual Empowerment and Organisational Restructuring

Technology drives society, and technology reshapes the future. The productivity revolution triggered by the Web3 new economy will inevitably lead to the innovation of production relations, first manifested as individual empowerment and organisational restructuring.

3.1 The "Rise" of Individual Capabilities

Network state, that is, a network space transcending time and space. The Web3 new economy is built on the connectivity and re-connectivity of billions of computer users, creating a new social space—a global, free, and timeless network space, which can be termed as a "network state". On one hand, digital technology surpasses geographical boundaries, decouples economic functions, and breaks the geographical restrictions in traditional employment relationships, allowing employees and employers to live and work outside of the same jurisdiction. On the other hand, the global nature of the digital economy transcends the boundaries of sovereign states, accelerating the trend towards global division of labour and crowdsourced collaboration. As user groups become digitised and virtualised, an increasing number of

economic activities take place within the network state. This will fundamentally change the cost of information and transactions, thereby completely altering the logic of economic and business activities. The influence of global factors will increase, while that of regional factors will decrease. The Web3 new economy is not confined to users of a certain country or place; it opens up greater business opportunities for a global user base.

Sovereign individuals, that is, individuals whose abilities surpass those of organisations. Web3 and AGI will significantly enhance the productivity of individuals with special skills and talents. Most artificial professional boundaries will be broken, and the need to follow the ten-thousand-hour rule to learn new knowledge will no longer exist. People will be able to acquire any professional knowledge such as law, medicine, programming, and art with lower thresholds and costs. The economic value of memory as a skill will decline, while skills in information synthesis and creative application will become more important. This will inevitably disrupt the existing power structures and management models of economic activities. The advantage of corporate organisations in terms of information and transaction costs is diminishing, capital taxes will decrease under competition, the economy of scale that maintains the long-term existence of companies will no longer exist, and the phenomenon of lifetime employment will disappear. Meanwhile, sovereign individuals are rising, will control more economic and social resources, and will reshape the way resources are allocated. Within the network state, survival rules based on individual autonomy will thrive, and sovereign individuals can expect to achieve both autonomy and excess returns. In the future, most wealth can be created and earned anywhere, consumed and traded anywhere, and commercial institutions will need to adapt to the development of sovereign individuals, enabling them to realise their maximum value.

Digital nomads, living wherever the "pasture" is. In 1997, Tsugio Makimoto, the former CEO of Hitachi, introduced the concept of digital nomads, referring to those who earn first-world levels of income through the internet but choose to live in places with the cost of living of developing countries. The Web3 new economy has accelerated the development of this lifestyle. With the emergence of network states and the rise of sovereign individuals, talent flow, knowledge sharing, and cultural collisions among transnational virtual communities are happening on an unprecedented scale and efficiency. For example, in the experimental mobile community Zuzalu, conceived by Vitalik Buterin, talented individuals from the fields of cryptography, bioscience, philosophy, politics, and art from around the world actively join. A series of spontaneous topics emerge in the community, covering cutting-edge issues such as longevity, public goods, zero-knowledge proofs, synthetic biology, and network states. After living together for two months as a human group, they disperse, spreading pioneering ideas around the world. In February 2024, the Japanese government opened the "Digital Nomad Specific Activity" residence status to IT workers worldwide, allowing visa-free entry for six months.

The phenomena emerging around the world, seemingly random, accidental, and distributed, are underpinned by the logic of the new modes of living and production

spawned by the Web3 new economy. They represent the combination of fluidity and aggregation, the digital space and local culture, and the integration of globalisation and individualisation.

3.2 Transformation of Business Organisations

In the Web3 new economy, business organisations need to rethink the organisational models of human-machine collaboration and redefine the division of labour and cooperation among intelligent agents.

We are pleased to observe that OpenAI has adopted a unique equity structure. Initially, OpenAI was a limited company, but there was a cap on the profits for all shareholders. Currently, OpenAI has established a limited company with a profit cap for all shareholders, creating a unique governance structure where both non-profit and for-profit entities coexist. OpenAI will ultimately become an open source, permissionless, and trustless infrastructure, universal to humanity like the internet's TCP/IP protocols. This architecture is highly innovative and would be difficult to design within the existing models on Wall Street. Only Silicon Valley tech companies with increasing digitalisation, like OpenAI, would adopt such a structure. They understand their social responsibilities and, in the AGI era, how to alleviate concerns about monopolies and the excessive profits enjoyed by a small number of people through a novel framework for profit distribution and property rights licensing.

In the Web3 new economy, all blockchain protocols are open source, free, permissionless, and trustless. Anyone can use them, anyone can fork the original protocols, and anyone can build their own applications on top of the protocols without needing any approval. A key difference between blockchain protocols and open-source organisations is the built-in utility tokens, which standardise and fractionalise usage rights. Utility tokens capture the network's utility value, thereby facilitating economic incentives and profit distribution. This mechanism design perfectly matches the value characteristics of the digital economy with high fixed costs and low marginal costs.

The status of markets for ownership rights is declining, while the status of markets for usage rights is on the rise. The industrial economy gave birth to markets for ownership rights, where the transaction involves ownership rights (equity), and the institutional foundation is shareholder capitalism. Under shareholder capitalism, the corporate system reflects the equity structure, with all shareholders' interests being shares, and these shares are traded on stock exchanges. The digital economy, on the other hand, has given rise to markets for usage rights, where the transaction involves usage rights, and the institutional foundation is stakeholder capitalism. Under stakeholder capitalism, non-profit organisations and open-source organisations become mainstream. Usage rights cannot be represented by shares but can be tokenised, and the resulting utility tokens can be traded on digital asset exchanges.

IV. Global Financial Infrastructure 2.0

4.1 Web3 Financial Infrastructure

The Web3 financial infrastructure, a product of distributed ledgers and distributed accounting, fundamentally differs from traditional financial infrastructure based on conventional account systems and double-entry bookkeeping. Traditional financial infrastructure supports currencies and financial assets, including central bank currency (excluding cash), commercial bank deposits, internet payment account balances, as well as stocks, bonds, and commodities recorded in central securities registries or custodian accounts. Essentially, all these represent values indicated by account balances within the traditional account system. The circulation and trading of these currencies and financial assets are fundamentally based on debit and credit operations in accounts according to double-entry bookkeeping. The Web3 financial infrastructure supports digital currencies and digital assets, facilitating their registration, recording, custody, issuance, circulation, trading, clearing, and settlement. Digital currencies and digital assets are tokenised values with property rights characteristics, primarily manifesting as "possession equals ownership" and "settlement upon transaction (or payment) ."

The Web3 financial infrastructure represents the version 2.0 of the global financial infrastructure. At its core, the essence of the financial system is states and transactions. The state is reflected in the distribution of various assets and liabilities among participants in the financial system at a given point in time, while transactions represent activities within the financial system over a period of time, driving updates to the state. The state and transactions of the financial system can be recorded either through traditional account systems or via distributed ledger systems. It is only by elevating to this level of understanding that the innovative significance of the Web3 financial infrastructure can be appreciated. The Web3 financial infrastructure possesses many superior characteristics in terms of management methods, transactions, clearing, settlement, and privacy protection.

First, enhanced openness. Anyone or any institution, as long as they adhere to the blockchain protocol, can use it without needing permission and without the need for trust. This is a significant manifestation of democratization and inclusivity of finance.

Second, fundamentally anonymous but supports controlled anonymity. Compared to traditional financial infrastructure, Web3 financial infrastructure can better protect user privacy, ensuring each user's sovereignty over their data. Web3 financial infrastructure can adapt to financial legal and regulatory requirements concerning "Know Your Customer" (KYC), Anti-Money Laundering (AML), and Counter-Terrorist

Financing (CFT). This is the foundation for the integration of digital currencies and digital assets into the mainstream financial system.

Third, peer-to-peer transactions, with settlement upon transaction. With the support of Web3 financial infrastructure, any two individuals, no matter where they are or whether they know or trust each other, can conduct value exchanges conveniently and securely without relying on any third party. This will significantly upgrade human collaboration modes and expand market scope.

Fourth, transactions are inherently cross-border. From the outset, Web3 financial infrastructure supports the global allocation of financial resources, price discovery of financial assets, and management of financial risks.

Fifth, the value carrier and programming logic (i.e., smart contracts) merge into one, introducing programmable functionality to transactions, enhancing the composability of activities on the blockchain, and supporting innovative modes not previously possible in traditional finance. The innovation driven by smart contracts has been fully validated in the market of the NFT and DeFi sectors.

Sixth, high security. The distributed ledger is public, and combined with cryptographic and consensus mechanisms, it ensures the security and immutability of transaction records; anyone can download the ledger to verify transaction outcomes. Asymmetric encryption ensures that only the private key holder can control the associated digital currencies and digital assets.

The Web3 financial infrastructure is naturally suited to the digital-native economic system. Firstly, in the digital-native economic system, activities such as asset issuance and trading are entirely digital, with no national boundaries, necessitating a financial infrastructure that supports the massive free flow of assets and a high degree of value interconnectivity. The Web3 financial infrastructure supports the most efficient global value network. Secondly, the decentralised nature of blockchain eliminates the issues of high intermediary costs and the need for a strong trust foundation present in traditional financial infrastructures. In the Web3 financial infrastructure, users have better guarantees for their asset sovereignty, data transparency, and transaction security. Thirdly, the digital-native economic system is based on a usage rights economy, where network effects are the channels for maximising the value of usage rights. The Web3 financial infrastructure promotes the liquidity and efficiency of the usage rights market.

4.2 The Web3 new Economic Ecosystem

The Web3 new economic ecosystem revolves around digital currencies, digital assets, and related commercial applications and activities, comprising mainly three components.

Primary market activities for digital currencies and digital assets. This is the source of the Web3 new economic ecosystem, involving the generation and issuance of various digital currencies and digital assets listed in Part II. These digital currencies and digital assets represent different values, have different application scenarios, suit different investor groups, and are subject to different regulatory frameworks. Primary market activities mainly meet three needs: first, the financing needs of the project side; second, the liquidity needs of existing investors; third, the needs of building networks and promoting ecosystem development. The success of the Web3 new economy hinges on quality digital currencies and digital assets, which cannot be separated from professional work in legal compliance, tokenisation, technological development, and market expansion.

Secondary market activities for digital currencies and digital assets. The core of the secondary market is the trading platforms for digital currencies and digital assets. They provide liquidity for digital currencies and digital assets, facilitate price discovery and resource allocation, allow investors to enter and exit the market flexibly, and support risk management. Currently, the secondary market trading of digital currencies and digital assets is active and diverse. Professional practitioners and regulators play a crucial role in ensuring the legality of transactions and the normal operation of the market. Regulatory authorities prevent market manipulation and protect investor interests by establishing and implementing strict market rules, maintaining market stability and transparency. Effective regulation also helps enhance market confidence, attract more participants, and promote the maturity and development of the entire digital finance ecosystem.

Industry services for digital currencies and digital assets. These services primarily include blockchain technology support, issuance processes, legal advisory, project consulting, and licensed financial services, providing necessary support and connections for the efficient operation of both primary and secondary markets. Industry services cover the entire process from the launch to the completion of transactions for digital currency and digital asset projects, with the aim to ensure that every step complies with industry standards and the interests of participants. During the preparation and issuance phase of a project, the focus is mainly on market analysis, token mechanism design, and compliance review, aiming to ensure the project's launch and smooth operation. Professional technical service providers are responsible for building and maintaining trading platforms, ensuring their security and efficiency. As application projects gradually materialise, legal and auditing teams provide regulatory compliance and financial transparency support, while cryptographic security experts and anti-money laundering agencies ensure the security and legality of transactions. Data analysis and consulting agencies offer in-depth market insights and strategic advice, enabling participants to make informed decisions in a complex and volatile market. Overall, the common goal of these services is to provide a stable, efficient, and

transparent operating environment for Web3 industry participants, promoting the healthy development of the entire industry.

V. Conclusion: The Future-Oriented Web3 New Economy

The Web3 new economy is set to steer the global economy into a more open, efficient, and inclusive future, thereby enhancing the prosperity and progress of humankind.

In serving the real economy, the Web3 new economy will promote the efficient allocation of resources and stimulate industrial innovation and economic growth vitality through more efficient and transparent currency and asset circulation as well as financing methods. The distributed nature and programmable functions of the Web3 new economy will provide emerging technology companies and projects with a flexible and low-cost development environment, accelerating the transformation and application of technological achievements.

In terms of promoting financial development, the Web3 financial infrastructure, as the global financial infrastructure 2.0, is naturally suited to the digital-native economic system. It can break through the geographical and temporal limitations of traditional financial services, making financial services more globalised and interconnected. This offers new opportunities for the integration and innovation of global capital markets.