

Origins and Future Directions: An Exploration of Trust Issues in the Blockchain-powered Metaverse

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Abstract: Trust forms the cornerstone of the modern financial system, serving as its core, its essence, and its ultimate challenge. In the era of the metaverse, the traditional principles of stability that govern both the physical and economic worlds are being fundamentally disrupted. Within this transformative context, the pursuit of economic growth and social stability hinges increasingly on the establishment of trust. Trust underpins consensus, facilitates collaboration, enhances efficiency, and governs the allocation of resources. Historically, trust evolved from interpersonal relationships in face-to-face societies, to the monetary trust embedded in market economies, and now to the decentralized trust mechanisms enabled by blockchain technology. In the digital landscape of the metaverse, where decentralization is key, blockchain emerges as an indispensable solution to the problem of trust, offering the potential to drive economic prosperity and foster social progress.

Keywords: Trust; Metaverse; Blockchain; Platform Economy

1. Introduction

Professor Zhou Qin, in his lecture *The Logic of Blockchain, NFTs, and the Economics of the Metaverse*, remarked that "trust is the ultimate solution" and expressed his aspirations for a future world where we, as humanity, achieve the ideal of having a society built on the honesty of "cats that speak the truth". But why is trust the core, the essence, and the ultimate issue of the financial system? Why, under the current backdrop of the rapid rise of the metaverse, continuous advancements in blockchain technology, and the flourishing platform economy, must we place such significant emphasis on the role of

trust? What role has trust played throughout human history, and where might it lead humanity in the context of emerging phenomena such as blockchain economies? These are the very questions this paper seeks to explore and address.

2. The Metaverse's Need for Trust: Conclusions from the Metaverse 3.0 Theory

2.1 Defining the Concept of the Metaverse

The metaverse is a concept that has recently garnered immense attention, with much of the focus on its "novelty"—its virtual spaces, transcending of reality, and reliance on digital technologies. However, Professor Zhou Qin made a striking observation: the metaverse is not something entirely new, but rather a process of evolution progressing from 1.0 to 3.0, with the metaverse 3.0 approximately aligning with the narrow definition of the term "metaverse". Yet, owing either to the metaverse's status as a nascent idea or its function as humanity's imaginative vision of an as-yet-unrealized future, the academic field remains divided on its definition, offering a range of interpretations. Professor Zhou Qin identifies metaverse 1.0 as the real, physical world, while Professors Zang Zhipeng and Xie Xuefang view metaverse 1.0 as the construction of a virtual material infrastructure layer [1]. Other definitional paradigms include the replication theory (the metaverse as a mirror of social activities), the interaction theory (the metaverse as an interactive space blending virtuality and reality), and the integration theory (the metaverse as a multidimensional digital system integrating multisensory experiences and various technologies). From my perspective, a philosophical understanding of the metaverse is where consensus may be achieved: humanity has persistently pursued knowledge of the laws of the universe and the principles

that govern the world. From Newton's Three Laws to Maxwell's Equations to quantum mechanics, this quest has involved both grounded innovation and bold flights of imagination. The metaverse represents an advanced stage in the fusion of reality and imagination. Its evolution is, in essence, humanity's ongoing journey to explore the universe and the nature of existence. With this understanding, it becomes clear what underpins Professor Zhou Qin's sweeping and expansive conclusions regarding the three stages of the metaverse. The following discussion will continue by analyzing the physics and economics theories that support humanity's progress toward the metaverse 3.0 stage, as defined by Professor Zhou Qin.

2.2 Theory of Metaverse 3.0

According to Professor Zhou Qin, most of us are currently situated between phases 2.0 and 3.0, or even at a transitional 2.5. However, visionary scholars have already developed profound insights into physics and economics that have dramatically reshaped our understanding of the world. These insights both dispel the mysteries surrounding the metaverse and drive the emergence of transformative technologies.

Theorems such as Noether's and Bell's Inequality challenge the notions of a conserved universe, breaking the certainties of a world governed by forces and energy conservation, and opening up an infinite array of possibilities for the future. Metcalfe's Law, which posits that the value of a network is proportional to the square of its number of users (meaning N connections can generate benefits proportional to N^2), has greatly accelerated the growth of the network economy, highlighting the boundless potential that networks and sharing bring to the human world. Simon's concept of "bounded rationality" shifts the focus from "economic man" to "social man" [2], significantly enhancing economic theory's understanding of the individual. Evidently, future economic development will place greater emphasis on the individual, extracting "people" from mere symbols and imaginations to present them in their personalized essence. Coase's theory suggests that a firm's size is determined by market transaction costs, though he also concedes that private transactions cannot

entirely solve resource allocation issues [3]. This paradox inspires further understanding of the network platform economy, where the transaction costs are ironically dictated by the size of the platform itself. The Coase Paradox of 1937 finds its responses in today's platform economy. Similarly, questions concerning financial uncertainty continue to await answers from us—the architects of the network and blockchain economies.

2.3 The Metaverse's Need for Trust

The contemporary world is a realm fraught with uncertainty. The universe is no longer governed by conservation laws, financial instability is on the rise, and the extent of bounded rationality is an incalculable variable. New phenomena emerge ceaselessly, and the balance between virtuality and reality brought about by the metaverse perplexes humanity. How, then, do we find "certainty amid uncertainty"? The answer lies in one word: trust. Trust is certainty—unique and eternal.

One of the metaverse's pivotal mechanisms is the dynamic allocation of resources, where resources flow to wherever one chooses to go. This ingenious principle serves as an efficient method of resource distribution. Yet, since the metaverse is conceived as a "virtual mapping and digital replication of the real world" [4], this very rule applies equally in the physical world. Before trust, all is uncertain; with trust, resources converge. It is for this reason that Professor Zhou Qin posits, "Wealth flows from trust".

However, such analogies and mappings alone may not sufficiently demonstrate the preeminence of trust. This paper will proceed to delve deeper into the concept of trust, attempting to establish its sufficiency and necessity through further analysis.

3. Why is Trust the Ultimate Solution?

3.1 Necessary Condition: A Historical Conclusion

To establish that trust is the central, essential, and ultimate issue, we must first hypothesize what happens in its absence. History and reality have repeatedly shown us one undeniable fact: without trust, progress is impossible.

But what exactly is trust? Trust is a feeling, an agreement that may not manifest on any

material level. To uncover its essence, we must trace it back to its simplest origin: the small-scale, limited, and interpersonal level of trust between people. In small face-to-face societies, humans naturally engage in social interactions and build trust based on kinship and proximity. According to the principle of the "differential mode of association" [5], individuals develop trust toward themselves, their blood relatives, and their close neighbors and friends, forming concentric ripples of trust and consensus through mutual influence and word of mouth. Trust leads to consensus, consensus enables coordination, and coordination drives efficiency. This dynamic both highlights the advantages of face-to-face societies and exposes their limitations. The rippling trust of the differential mode of association extends outward like waves, but diminishes and fades as it moves further. The inherent limitations of this localized and exclusionary community trust prevent small societies from achieving large-scale collaboration and breakthroughs in productivity.

Nevertheless, this logic provides clarity: trust leads to consensus, consensus leads to coordination, and coordination leads to efficiency. Without trust, consensus cannot be achieved; without consensus, efficiency is lost; and without efficiency, societies ultimately face stagnation and obsolescence. History is rife with such examples: in 476 AD, the Western Roman Empire fell to the Germanic tribes because it lacked foundational trust, resulting in the collapse of its private property rights and mechanisms of consensus. On the other hand, ancient China saw the flourishing of its agrarian civilization under the consensus mechanism of "All under Heaven belongs to the king; within the borders, all are the king's subjects."

The lessons here are threefold. First, throughout history, obtaining trust has depended on externalized consensus mechanisms. Second, a consensus mechanism without an underlying foundation of trust remains futile. Third, without trust and its accompanying consensus mechanisms, there can be no prosperity—only decline. As technology advances, we can observe that humans, consciously or unconsciously, are continually attempting to adjust the foundations of trust. Examples of this include

system-based trust through monetary exchange [6], as well as blockchain-based trust, which will be explored later in this paper.

It is worth noting that regardless of how trust evolves or how its foundations are adjusted, its core essence remains rooted in human relationships. No matter how currency, algorithms, or technologies transform and progress, humanity remains the central subject of these discussions. The unparalleled significance of trust lies in its intrinsic connection to people—it cannot exist independently of them.

3.2 Sufficient Conditions: The Benefits of Trust

From the perspective of production, trust fosters consensus, which leads to collaboration, ultimately enhancing efficiency. In terms of distribution, trust fundamentally serves as a method of resource allocation.

Allocation is a timeless concept. A fundamental principle of civilization is that resources cannot be gained through annihilation but must be allocated. Whether consciously or not, human societies have always been engaged in resource allocation and adapting these methods over time.

Initially, allocation occurred within organizations, with the family being the earliest form. Marriages established families, adjusted relationships of trust, and exchanged resources. Markets followed, showcasing immense potential for capital flow, resource mobility, contract creation, and value enhancement—enabled by trust in currency that facilitates large-scale transactions among strangers. Finally, networks emerged, offering decentralization, richer relationships, and abundant energy, reducing transaction costs and building transactional trust among individuals. The network economy thus reveals limitless possibilities.

It can be concluded that resource allocation and trust are two sides of the same coin. Both originate in familial organizations and small communities, develop through currency and markets, and find revitalization on network platforms.

The modern market economy is built on centralized trust, primarily the financial trust generated by commercial banks [7], which greatly enhances resource allocation efficiency beyond traditional societies reliant on external

trust in familiar relationships. Yet, historical financial crises have shown the risk of centralized trust being manipulated by institutions, undermining confidence in financial certainty. Centralized trust falls short of the true trust society envisioned in decentralized systems. Peyrefitte argued that a trust society is the foundation for economic miracles, development, and social prosperity [8]. We aspire for such a society where resource allocation and trust can genuinely enhance economic and social progress.

4. Blockchain as a Generator of Trust

A trust-based society often feels like an almost utopian ideal. However, one path points us toward this vision: decentralization.

4.1 Decentralization

Decentralization aligns with human instinct, much like the pursuit of freedom. Yet, freedom does not equate to safety. On the contrary, centralization initially emerged because its authority and expertise provided people with a sense of security and trustworthiness. However, in the absence of technological or systemic oversight, a central authority may manipulate data and betray trust. Moreover, excessive centralization dampens the freedom of interpersonal interactions and hinders the establishment of robust relational networks, thereby restricting certain facets of economic growth [9]. The foundation of human trust requires both ample freedom and sufficient security. This implies the necessity of discovering an optimal balance between centralization and decentralization—or, more specifically, a mechanism that simultaneously optimizes the liberating nature of decentralization while ensuring security through powerful technological safeguards.

4.2 Networks, Platforms, and Blockchain

Before the advent of blockchain technology, the internet had already given rise to solutions aimed at resolving issues of trust through the shared economy and platform economy. Examples abound: shared bicycles addressing point-to-point transportation, Pinduoduo linking transactions to shared interests, and Jack Ma's creation of platform-based trading systems where third-party governance rules build trust for transactions between strangers. These innovative experiments unveiled a new

code to address trust challenges: decentralization, peer-to-peer transmission, relational networks, and consensus mechanisms.

Blockchain subsequently emerged as part of this evolution. Fundamentally, it operates as a platform upon which enterprises and institutions engage in cross-boundary technological and economic collaboration, building contracts, sharing risks, and increasing profits. In essence, blockchain is a decentralized database network. By employing distributed ledgers, encryption algorithms, and peer-to-peer transmission technologies, it ensures data is tamper-proof and traceable [10]. It proves instrumental in addressing the issue of trust between strangers in the digital realm and holds even greater potential in the future metaverse, where people may engage in transactions with completely unknown entities beyond the screen.

Blockchain is the product of decentralization and network platforms converging. It fully integrates with the shared economy and platform economy. It represents the dual resolution of liberty and security—offering an answer to the perennial problem of trust. In essence, blockchain is a generator of trust.

5. Conclusion and Outlook

Trust is an ancient and ultimate proposition. From the perspective of production, trust brings consensus, consensus brings collaboration, and collaboration brings efficiency. From the perspective of distribution, trust represents a mode of resource allocation.

From the interpersonal trust of familiar societies, to monetary trust in market economies, and now to decentralized platforms and blockchain trust, trust has always accompanied the historical process of human society. It will bring economic prosperity and social development, so we must face the core position of trust and understand the dependence of the metaverse on trust.

In the broader context of the metaverse, it is difficult for people to seek certainty in identity, finance, or even the universe. However, relying on decentralized blockchain platforms, we can still find "trust" in this world. Trust is one of the pursuits of being human, as it is connected to the pursuit of freedom and security. When trust is realized, sharing becomes possible, the shift from economic

individuals to relational individuals is achieved, and the ultimate trusted society, a "utopian" organization, becomes a reality. This is our expectation, and this expectation has a path to follow.

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