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## Networks, Cryptography, and the Next World to Come

An Everlasting American Techno-millennarianism?

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To understand the nexus between networked cryptography and American religiosity, it is essential to embed this inquiry within the broader context of religious imaginaries associated with communication networks in nineteenth-century North America and their evolution into the spiritual landscape of the twentieth century. Throughout United States history, network imaginaries have exerted a substantial influence, engaging in a continuous dialogue with the evolution of religious thought, attributing eschatological expectations to networks, and ascribing them with a profound sense of ultimate purpose and significance. This investigation finds its ultimate context within the early techno-libertarian communities of 1990s California, pivotal in shaping the design, development, and objectives of networked cryptography online, ultimately giving birth to cryptocurrencies and the blockchain protocol.

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In 2020, the famous techno-ideological press organ of the Bay Area *Wired* published an article titled “Bitcoin Was Always a Religion” referring to the religiosity surrounding “crypto communities” (Kelly 2018). Indeed, cryptography and cryptocurrency have given rise to communities fueled by manifest religiosity and eschatological rhetoric. By potentially bypassing all intermediaries in economic or social interactions, the cryptographic protocol embedded in the blockchain promises to provide humanity with a (human) trustless, transparent and immutable architecture of communication in cyberspace, freeing individuals from the bondage of any external authority: what Nick Szabo (1997) already envisioned in the late 1990s as the “God protocol.”

California, particularly the San Francisco Bay Area, is unquestionably the location of a kind of post-Christian secular religiosity devoted to technological progress driven by science fiction, millenarianism (Davis 1998), and New Age spirituality (Aupers, Houtman, and Pels 2008; Zandbergen 2010, 2012). However, this syncretic mix of religious schemes, prophetic futurism, and science fiction narratives makes it difficult to characterize this symbolic system as a religious one *stricto sensu*. I prefer to use the notion of “religiosity,” which refers to a specific and more diluted form of experience as Georg Simmel pointed out (1998, 18). Religiosity can still be informed by historical religions but can also emerge spontaneously from local causes, to paraphrase Durkheim ([1912] 1994, 49). A category such as “religiosity” is moreover particularly relevant to characterize the fluidity of the religious phenomena in the United States.

The cryptocurrency creation context and its core idea were fundamentally that of a new digital world imagined and designed in 1990s California (Brunton 2020). Irreducibly associated with the revolution of personal computer networks promoted by the pioneers of the internet, cryptography and cryptocurrencies were among the main tools to realize the disruptive potentialities of the internet. But the prospect of spreading cryptography to the masses in order to make cyberspace “the new home of Mind” (Barlow [1996] 2003, 27), freeing individuals’ interactions from any external coercion, had to wait almost twenty years to be reanimated with the international deployment of blockchains and Bitcoin in 2008. Indeed, since the turn of the millennium, the emergence of platform capitalism driven from Silicon Valley has transformed the internet into a vast market for service provision that relies heavily on the exploitation of users’ freedom to interact and generate data online.<sup>1</sup> In a way, blockchains, cryptocurrencies, and the so-called Web 3 reactivate in a radical new socio-technical context the expectations of early crypto activists to make cyberspace a totally free place of exchange, interaction, and communication.

In order to understand the relationship between networked cryptography and a hypothetical specific American religiosity, this question must first be integrated in the larger framework of the religious imaginaries surrounding communication

networks in nineteenth-century America and their extension into the new spiritual landscape of the twentieth century. Indeed, network imaginaries have wielded considerable influence throughout the course of United States history, persistently engaging in an ongoing dialogue with the evolution of religious thought. This engagement contributes to the attribution of eschatological expectations to networks, bestowing upon them a sense of ultimate purpose and significance. This question is finally contextualized within the early techno-libertarian communities of 1990s California, who played a significant role in shaping the design, development, and objectives of the networked online cryptography that gave birth to cryptocurrencies and blockchain protocol.

To understand this kind of technological religiosity within the specific cultural context of the United States, it is necessary to make some preliminary remarks. First, more than any other Western industrialized country, the United States has offered religious discourse a unique territory of emancipation. The Bill of Rights has contributed to providing fertile ground for the proliferation of religious rhetoric across the country. The constitutional protection of religious speech enshrined in the First Amendment shares of course elective affinities with the religious roots of American Protestantism. This is not only due to Protestants' sympathy for religious tolerance but also because liberal and orthodox Calvinist theologies have always been oriented towards the secular world (Troeltsch [1911] 1991, 61).

More importantly for the purpose of this article, the First Amendment has structured the American public sphere as a free market of ideas. It has created a symbolic sphere where religious, political, and scientific discourses can compete or merge in various configurations without seeming inappropriate.<sup>2</sup> The "public theology" of the American "civil religion" analyzed by Robert Bellah (1973) and the merging of millenarian Protestantism and the American technological sublime surrounding the Second Great Awakening (Miller 1965, 269–313; Nye 1996, 43) are typical examples amongst others of this interlacing of religious and secular discourses.

Religious discourse can infiltrate any type of secular discourse, whether for ideological purposes or as an expression of sincere faith. The tension between ideological and sincere uses of religious discourse is a major difficulty in appreciating its substantive religious nature. Many European observers fail to discriminate this tension due to their own frameworks, assimilating all uses of religious rhetoric in the American public sphere as manifestations of true and sincere faith. In the case of blockchains, the massive stream of religious discourse surrounding them (with expressions such as "God protocol," "crypto evangelism," "crypto guru," "Bitcoin Jesus") makes it difficult to distinguish their ideological features from their substantive ones. Practical evangelism and individual conversion, like the "orange pill" scenario (**Figure 1**),<sup>3</sup> are two further recurring features in the effort of crypto gurus to foster the adoption

of complex and often unintelligible cryptographic protocols by the common man in everyday interactions.

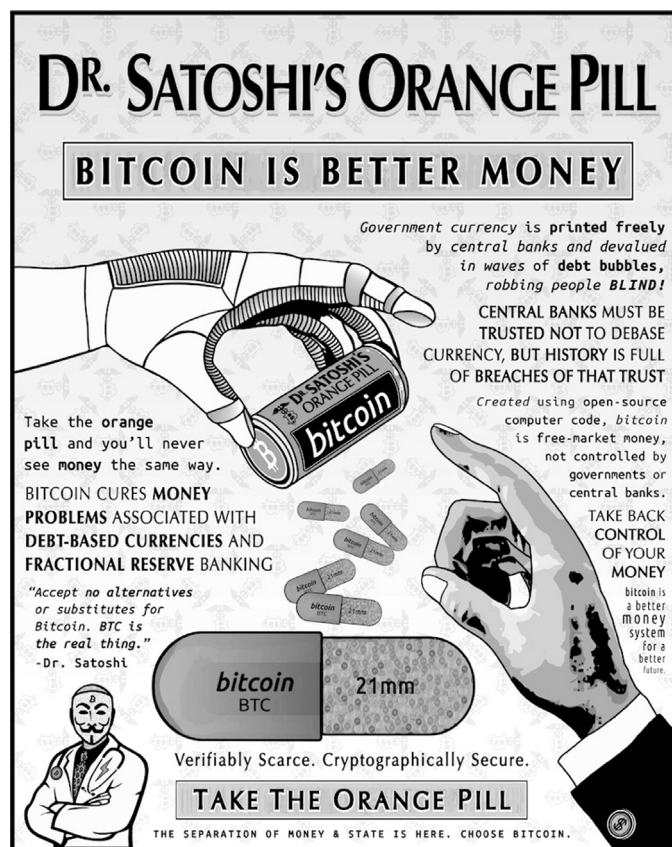


Figure 1: “Take the Orange Pill,” courtesy of Bitcoin artist Lucho Poletti.

The *Wired* article cited at the beginning of this article is a good illustration of the tension between ideological and sincere uses of religious discourse. Even if it deals with the true non-confessional congregation of Bitcoin founded by crypto entrepreneur Matt Liston, this “church” called 0xΩ was in fact a pseudo church, a kind of religious trolling, even if, from a utilitarian point of view, a pseudo church can incidentally accept donations free from federal taxation. Despite this explicit ideological use of religion,<sup>4</sup> albeit exotic from a European point of view, there are certainly religious patterns from the American spiritual ground associated within crypto communities. Indeed, not only has the First Amendment allow for the proliferation of religious discourse across the country, but it has also left open the dialectic between secular history and spiritual thought and, more precisely for the purpose of this article, between religious and technological imaginaries.

## Networks, Cosmogony, and the New World

Even if blockchains are a relatively recent technology, their purpose was at the heart of the early personal computer revolution promoted by the

underground cyberculture of the San Francisco Bay Area. This revolution was to be accomplished by exploiting all the decentralizing potentiality of networked personal computers, giving birth to a radically new economic and social order. This expectation is in fact deeply rooted in American history, where artificial networks have always been associated with the prospect of a new order of times.

Indeed, economic and social transactions ensured by technological networks have played a major role in the symbolic and material design of the New World.<sup>5</sup> In spite of railroad and telecommunication networks having allowed the American elite to establish their hegemony across the country and far beyond (the everlasting frontier), their deployment momentum was always celebrated as the prospect of a recovered unity that would bind individuals in an unmediated fashion (Carey 1989, 113–41). This vision was still largely informed in nineteenth-century America by liberal protestant theologies and liberal political philosophies walking hand in hand.

Unlike continental European countries, where artificial networks were the embodiment of an anticlerical materialistic movement promoted by pioneers of civil engineering like Claude Henri de Saint-Simon and his disciples (Desroche 1968; Musso 2007), networks in the American nineteenth century still heralded the coming Christian millennium (Miller 1965, 275; Marx 1968, 214). For Saint-Simon, these networks were the bases of a new human-centric religion (Saint-Simon [1825] 1969), but in America, they were still the concrete means to achieve Christian unity (Pucheu 2009). For Johnathan Edwards, the prominent protagonist of the first great religious revival, the reticulation of the world by ship and civil roads suggested the practical actualization of the mystical Body of Christ, which had hitherto been allegedly embodied in the Roman Catholic Church. Thanks to this reticulation, writes Edwards, “all the world shall then be as one church, one orderly, regular, beautiful society. And as the body shall be one, so the members shall be in beautiful proportion to each other. Then shall that be verified in the Psalm 122:3: ‘Jerusalem is built as a city, that is compact together’” (Edwards 1857, 333).

According to Edwards, the *corpus christi* was to be achieved by the voluntary communion of religiously enlightened individuals. As illustrated by the theological concept of willinghood (Miall 1848), Edwards promoted a unification exclusively based on the willingness of individuals driven by their own reason. Communication networks were considered the providential means to achieve this voluntary unification, binding people independently from any central power. Since the beginning, the American religious landscape was dominated by congregations fleeing European persecutions and rejecting centralization by giving an imperious role to individualistic rationality. For most puritans, the foundation of a religious or political community lies in the contract made by individuals enlightened by their own reason rather than by an overarching authority like the Roman Catholic Church or a central government.<sup>6</sup> In a way,

the decentralized and libertarian scheme of Congregationalist ecclesiastical government promoted by Protestants sowed the seed of an individualist anarchism that infused and still infuses the American mind.

From a political point of view, communication networks were also seen as the alternative to centralized government by providing a harmonious distribution of power in all their ramifications. Associated with the organicist metaphor imported from European philosophy, the vision of the nation as an “organic machine” to be built by design was at the heart of American demiurgic enterprise in the Jacksonian era. Because networks are boundary objects situated between biological and artificial realms, their design was closely linked to that of an organism exhibiting self-organization, autoregulation, and life-like behavior. The deployment of this project across the American wilderness provided its definitively eschatological flavor, as this wilderness was the symbol of a world at degree zero of Creation, as illustrated by the famous Lockian aphorism “in the beginning, all the world was America.” Americans were manifestly mandated by God to begin the world again thanks to the providential application of steam and electricity (Miller 1965, 293). The networks made of artificial canals, roads, railroads, and telegraphs were both agents of wilderness domestication and of the design of an organic machine-like “nation system” (Marx 1968).

In the narrative of the new beginning (or Second Creation) that characterized nineteenth-century America (Nye 2003), networks appeared as a natural extension of the country-wide union already suggested by the providential natural pattern of the American landscape. Technological networks were not envisioned as an artifact but more as the result of a partnership between civilized man and God in the creative process of nature. As the great Unitarian orator of the Jacksonian era Edward Everett (1870, 147) asserted: “We shall be met by the general vague objection, that it is impossible, by artificial works, to divert commerce from its great natural channels. There are two kinds of natural channels—one sort made directly by the hand which made the world; the other, constructed by man, in the intelligent exercise of the powers which his Creator has given him. It is as natural for a civilized man to make a railway or canal as for a savage to descend a river in a bark canoe.”

For Everett, artificial networks were manifestations of the progress of Creation, which was central to the liberal and natural theologies and notably to the Unitarians, who dominated the highly elitist divinity school of Harvard in the nineteenth century. This dynamical progress of Creation, irresistibly oriented toward salvation, could be observed for most Unitarians in the cosmological evolutionary process recently discovered by naturalists (Savage 1876; Benz 1963). As illustrated in Everett’s quotation, Unitarians—like John Fiske (1895), who popularized Charles Darwin and Herbert Spencer evolutionism in America—located technology-enhanced civilization at the highest level of the natural

order. In a contribution to the *Atlantic Monthly*, the transcendentalist minister David Atwood Wasson offered a bright illustration of that phenomenon of naturalization:

Half a dozen rivulets leap down the western declivity of the Rocky Mountains and unite; four thousand miles away the mighty Missouri debouches into the Mexican Gulf as the result of that junction. Did the rivulets propose or plan the river? Not at all; but they knew, each, its private need to find a lower level; the universal law they obeyed accomplished the rest. So is it with the great human streams. Mighty beginnings do not lie in the minds of the beginners. History is a perpetual surprise, ever developing results of which men were the agents without being the expectants. (Atwood Wasson 1858, 512)

Civilized man embodied by Americans, concluded Atwood Wasson, “give[s] the world joy of a new and mighty artist to plan, a new strong artisan to quarry and to build in the great architecture of humanity” (Atwood Wasson 1858, 512).

If communication and transportation were irreducibly linked before the nineteenth century to the point of being interchangeable notions (as significantly the notion of commerce), the telegraph broke this identity by making the interactions—“intercourses” in the nineteenth century’s vocabulary— independent from “the physical movement of people and things” (Carey 1989, 143). If transportation networks were literally blood vessels, organic society was now be endowed with a nervous system that would animate humanity as a unique and whole body. “Is it a fact—or have I dreamt it,” wrote Nathaniel Hawthorne in 1851, “that, by means of electricity, the world of matter has become a great nerve, vibrating thousands of miles in a breathless point of time? Rather, the round globe is a vast head, a brain, instinct with intelligence!” (Hawthorne 1851, 283). In the same line, the Unitarian reverend Henry Whitney Bellows asserted at the celebration of the recent Atlantic telegraph deployment:

We have hitherto lived in a hemisphere, and now live on a globe—live not by *halves*, but as a whole—not as scattered members, but as the connected limbs of one organic body, the great common humanity—and thus we are able to compass for the first time, as a popular thought, the conception of one life, one history, one all-embracing, all inter-linking Providence—the establishment of a common, a right, and happy understanding among all nations, tribes, climes and interested, until the world humanity shall move as the globe itself moves, all together; and the race be, as individual is, vitalized by a spinal cord animating all its limbs, harmonizing all its movements, and giving coherency, energy and unity to its whole being. (McClenachan 1863, 245)



Expressions such as “highway of thought,” “iron nerves,” and “almost sentient nervous system”<sup>7</sup> made it possible to resolve the negative dialectic between artificial and biological realities and deepen the process of naturalization. Moreover, telecommunication networks opened a totally new way of thinking about communication processes. Information and communication technologies’ imaginaries are not just fancy images related to material artifacts: they offer models that shape the way humans can think about relationships and communication processes in their broader sense (Kittler 1999). Still imbued with eschatological rhetoric, telecommunication networks inspired new conceptions of immaterial and spiritual communication. Modern Spiritualism and the possibility of communication with the beyond, for instance, was a direct consequence of the materialization of the dualistic body/mind model offered by the telegraph (Sconce 2000, 13). The same is true of the rise of mesmerism, telepathy, and telekinesis, which were linked to the discovery of electromagnetic properties, of which the telegraph was the first application (Brittan 1854). Telecommunication has enabled humans to envisage and give credit to new concepts related to the relationship *modus operandi* between body and mind, mind and mind, and mind and matter (Thurschwell 2001, 12).

All that enthusiasm filled with eschatological rhetoric and spiritual feelings never ceased to animate networks’ imaginaries in the United States. From telegraphs to the television network, from satellites to computer networking, what we now call information technologies were thought of as the heralds of a new step in the progress of Creation, now more and more assimilated with a teleological evolutionary process. “Techno millenarianism” therefore is deeply rooted in the American mind, even if it increasingly took on a secular expression detached from the Christian referents in the beginning of the twentieth century.

### **The Prospect of a New Edge**

In the United States’ short history, techno millenarianism associated with network imaginaries has shown its constitutive ambivalence: artificial networks can draw an organic unity as well as be deleterious instruments of social control (or social engineering) in the hands of conservative government and greedy corporations. The libertarian counterculture that emerged in California in the late 1960s was in a way a reaction to that contradiction. Mario Savio’s famous seminal speech describing the oppression exerted upon individuals by governmental institutions and the big industry of his time explicitly refers to the machine metaphor (in Rosenfeld [1964] 2012, 216–17). Somehow, the dream of an organic machine unifying humanity had lost its vitalistic features to give birth to a dehumanizing technocratic enterprise crushing individuals in its gears.

Consubstantial to this counterculture posture, a new spiritual awakening took place in the heart of California: the New Age movement and what scholars designate more globally as new religious movements (NRMs). Mainly

supported by younger generations, NRMs emerged as a reaction to the Vietnam War, the domination by religious and political conservative thought, technocratic rationality, and Fordist industry. If it is problematic to assert, like William G. McLoughlin (1978), that the rise of NRMs alongside the libertarian counterculture initiated by the Beat generation could be identified as a fourth Great Awakening in American religious history, it must be admitted that they were symptoms of a shift in the traditional American belief system. The NRM phenomenon grew tremendously between the 1960s and the 1980s before finally vanishing in the late 1990s. They nonetheless deeply informed postmodernist culture. Above all, they contributed to enshrining individual sovereignty as the touchstone of Western culture.

This new religious spirit was not totally original. For instance, it shared the transcendentalists' quest for an unmediated relation to God embodied in nature or, more globally, in the cosmos. It also owes credit to the emergence of therapeutic and healing techniques of salvation of the late nineteenth century. Swedenborgianism, mesmerism, spiritualism, theosophy, Gnosticism, and other esoteric knowledges and practices were revisited in the flourishing Californian "cultic milieu" and "spiritual market" (Campbell 1972) of the NRMs. Asian and Eastern philosophies—already imported by Ralph Waldo Emerson, Helena Blavatsky, and, later, the Beat generation (Campbell 2007)—merged with the libertarian spirit that roamed California to give rise to what can be called a syncretic post-Christian eschatology. Deepening the idea of an inner divinity located within the self (already suggested by transcendentalism), individual consciousness was now thought of as the seat of the coming millennium. In a way, the redemptive figure of Christ was itself contained within the self, while His glorious return (the millennium) was to be seen as the metaphor for the awakening of individual consciousness inscribed in a teleological cosmic process. Healing practices, para- and trans-psychology, and the techniques of personal development like those professed by the Human Potential Movement<sup>8</sup> together promoted an internal revolution giving "access to our inner divinity" (Hanegraaff 1996, 46) and presaging the first step toward the fulfillment of a broader cosmological plan: the expansion of individuals' consciousnesses into a holistic unification. As the French sociologist Françoise Champion asserted, the New Age movement and NRMs can be envisaged as a "religion of mystical and relationship quest," the recovery of an all-encompassed cosmological interconnectedness (Champion 1989, 167).

In this view, artificial networks were associated with vitalistic images of an organic and holistic unity of mind and matter as illustrated by the so-called Gaia hypothesis (Lovelock 1979). A unity hitherto hampered by political, religious, and scientific obscurantism. Driven by conspiracy theories, New Agers envisioned reality as a falsification deliberately maintained by the establishment. This anxious feeling of falsification grew with the specter of

the control of society linked to the Watergate affair, the War on Drugs, and the growing means of surveillance of the FBI, the CIA, and the NSA in post-war America. Through the utilization of occult practices, ranging from channeling and meditation to shamanic journeys and the exploration of altered states of consciousness through psychedelic experiences, adherents of the New Age movement sought to emancipate their individual consciousnesses. In doing so, they aimed to gain access to a holistic understanding of the “big picture” and unleash their unrestricted capacities for personal growth and self-expression.

Already depicted in 1963 by computer pioneer Joseph Licklider (1963) and his “intergalactic computer network”, the internet emerged in this specific cultural momentum. Favored by successive massive government funds, California had been at the forefront of the electronic and digital revolution since the middle of the twentieth century. This historical coincidence has favored the interlacing of libertarian counterculture and New Age spirit with the early development of personal computers and the internet (Turner 2006; Zandenbergh 2010). Envisioned as the concrete tools to operate the emancipatory quest of individual consciousness, the prospect of a planetary interconnection of personal computers met the early fascination of New Agers and young anarcho-libertarians with self-organization, autoregulation, spontaneous orders, and autopoiesis (Turner 2006, 11–41). These theories, synthesized through emerging scientific disciplines such as cybernetics, system and complexity theories, Prigogine’s dissipative structures, Francisco Varela’s autopoiesis, and others, conferred on the internet its teleological purpose. The old organicist metaphor equating society with an “organic machine” was now supported by scientific theories that further blurred the lines between living and non-living things (Wiener [1966] 1996), biology and society (Kelly 1994), and science and cosmology (Brand 1974, 9).

Terence McKenna and Timothy Leary, central figures of the 1960s psychedelic scene and soon-to-be prophets of the new computer age, illustrated this phenomenon of convergence specific to the nascent ethos of Silicon Valley. They were part of a more precise movement that emerged in the Californian underground cyberculture of the 1980s known as the New Edge, a contraction of New Age and cutting edge. An ancestor of *Wired*, the cyberculture magazine of the New Edge, *Mondo 2000* (previously entitled *High Frontiers* and, briefly, *Reality Hackers*), edited by Leary’s admirer Ken Goffman (a.k.a. R. U. Sirius), was one of the main press organs of this movement. Combining cyberspace, LSD, smart drugs, human-machine fusion, and space colonization with cosmological expectations, *Mondo 2000* offered a curious and often confusing technophile version of the New Age. In *High Frontiers* columns, Terence McKenna identified, for instance, computer networking as the agent of a radical cosmological shift: “Right now, nine million computers a month are being hooked into communication systems. This is the new global organism

which is taking shape. It is this organism which will survive. It's my conviction that the historical process creating these networks is mirroring intuitively larger cosmic processes. It is an actual intentionalization, or creation, of the *Overmind*' (McKenna 1987, 61).

This "Overmind"—a concept borrowed from the evolutionist Brahmanism of Sri Aurobindo (2010, 277–89)—shares obvious affinities with the natural philosophy of transcendentalists (such as Emerson's "Over-Soul") and furthermore with the "noosphere" of the French priest and evolutionary anthropologist Pierre Teilhard de Chardin (1955). The latter was also a recurring reference for the New Agers as well as for John Perry Barlow, the co-founder of the Electronic Frontier Foundation, assimilating the internet as the coming of Teilhard de Chardin's Omega Point. "The Point of all evolution to this point is the creation of a collective body of Spirit," wrote Barlow about the rise of the Internet (cited by Kreisberg 1995).

*Mondo 2000* was also one of the main popularizers of the science fiction cyberpunk genre that quickly became a label for New Edgers to refer to themselves as (Jude, Sirius, and Nagel 1995). Alongside Leary, McKenna, and other heirs of the beat generation, *Mondo 2000* offered a central place to cyberpunk writers such as William Gibson, Rudy Rucker, Bruce Sterling, John Shirley, and so on. The cyberpunk genre, pioneered by Gibson, projected the countercultural and New Edge ethos into near-futuristic scenarios of the techno-world to come. In landscapes saturated with computing technologies, smart drugs and biotechnologies, novels such as Bruce Sterling's *Islands in the Net* (1989) or Neil Stephenson's *Snow Crash* (1992) presented a techno-utopian version of communalism evolving and struggling in an anarchic society dominated by a multinational oligopoly.

Cyberpunk offers a raw image of this "collective body of the mind" evoked by Barlow, featuring individuals directly interconnected within the material network of cyberspace via their biological nervous system (Vinge [1983] 2001; Gibson 1984). But one major contribution of cyberpunk and the hard science fiction of 1990s California was the conception of the internet as a territory. Vernor Vinge's *True Names* ([1983] 2001) was one of the first novels to feature humans, detached from both their bodies and their civil identities, evolving through avatars in the demiurgic topography of virtual reality ("the other plan"). The words "cyberspace" and "matrix" (coined by Gibson (1984)), and later "metaverse" coined by Stephenson (1992)) had definitively consecrated the internet as a "new space awaiting to be appropriated by mankind" (Nye 2003, 21). Like the wilderness for nineteenth-century Americans, cyberspace constituted for the New Edgers a liminal space, a new frontier toward the next stage of humankind's evolution. Like the Americans' redemptive movement through the wilderness, the "cyberpunk cowboys" were, once again, the agents of a redemptive evolutionary dynamic, the redeemers of an old world—centralized,

coercive, and hierarchical—presaging a new one—decentralized, self-organized and horizontal.

For Leary, Gibson “has produced nothing less than the underlying myth, the core legend, of the next stage of human evolution” (1996, 54). Echoing Leary, Ken Goffman (Sirius 1988, 4) asserts: “I am the new species. Through my information and communications technology, I am about the process of building a Species Nervous System and a Species Mind.”

### **Crypto-Utopia**

Deeply involved in those countercultural movements mixing technological potentialities with eschatological expectations, a bunch of hackers from the most innovative companies of the new digital world (Xanadu, Amix, Sun Microsystems, Microsoft, Apple, Intel, Netscape, Xerox PARC, and so on) gave birth to one of the early virtual communities of the internet: the Cypherpunk mailing list. Founded in 1990 by John Gilmore, a famous libertarian activist and co-founder of the Electronic Frontier Foundation, and Timothy May, a physicist and retired Intel engineer (at the age of 34), as well as cryptographer Eric Hugues, the Cypherpunk virtual community was involved in the design and dissemination of online civil cryptography. It was a mission imbued with eschatological sentiments in the face of the threat of a cashless society (Real 1991, 16) and the specter of global surveillance raised by the prospect of widespread network computing. The Cypherpunks sought to somehow operationalize the criticisms and hopes of the Californian counterculture by advocating the advent of a techno-utopian New Edge.

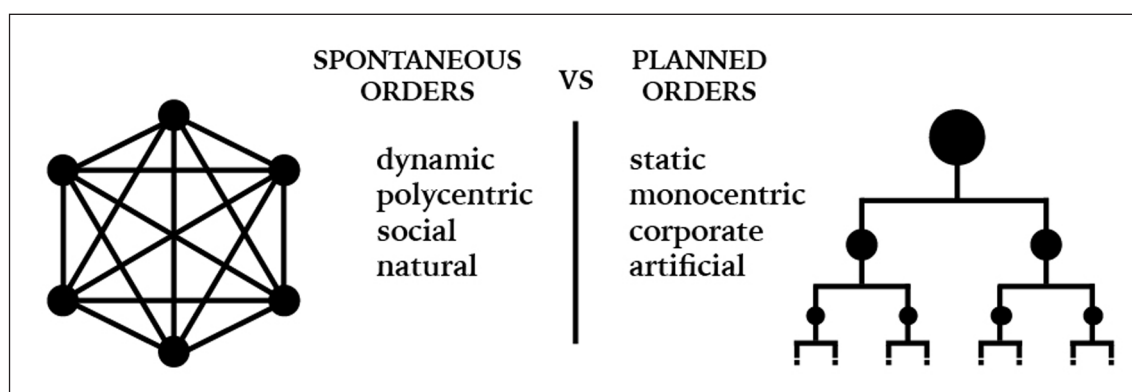
Coined by hacker and co-editor of *Mondo 2000* Judith Milhon, then in a relationship with Eric Hugues, “Cypherpunk” refers to both cryptography (“cypher” meaning “secret code”) and the do-it-yourself Cyberpunk ethos in keeping with the hackers’ leitmotif: “mistrust authority, promote decentralization” (Rucker, Queen, and Sirius 1992). Most of Cypherpunk’s prolific contributors were also members of another virtual community: the Extropians, who were about to institutionalize the now famous transhumanist movement. Also peopled by engineers, geeks, and technophiles immersed in science fiction (mostly male), the Extropian list was more speculative than the Cypherpunk’s and dedicated its exchanges to “exploratory engineering” (Drexler 1988) such as space colonization, cryonics, mind upload, artificial intelligence, biotechnology, and nanotechnology. Both communities shared the same libertarian references and gave a very clear teleology to networked cryptography: making the internet an absolute free space of economic and social interactions.

“We, the Cypherpunk,” wrote Eric Hugues ([1990] 2003, 83) in the “Cypherpunk Manifesto,” “are dedicated to building anonymous systems. We are defending our privacy with cryptography, with anonymous mail forwarding

systems, with digital signatures, and with electronic money.” According to the Cypherpunks, anonymous remailers and digital authentication will protect private interactions, while “digital cash”, as they called it, will bring the advantages of cash (anonymous, untraceable) along with those of electronic money (secure, portable, easy to stock and exchange), enabling transactions to be made without any overhanging authority worldwide, whether it be for tax collection or legal purposes (Finney 1993). Through the design and production of cryptographic protocols, including several unsuccessful attempts to create cryptocurrencies, the Cypherpunk list laid the technical and symbolic foundations for contemporary crypto-interactions enabled by the blockchains.

For the Cypherpunks—and particularly their central figure, Timothy May—digital cash, anonymous communications, and decentralized marketplaces enabled by personal computer networks will inexorably give rise to a new planetary order: that of online crypto-anarchy (May [1988] 2003). “The Net is an anarchy,” wrote Timothy May (2001, 33): “This truism is the core of crypto-anarchy. No central control, no ruler, no leader (except by example, reputation), no ‘laws.’ No single nation controls the internet, no administrative body sets policy.” By using anonymous authentication (a pseudonym endowed with a cryptographic public key) in place of civil identities, individuals will be free to interact, transact, and contract online, bypassing the legalist and regulatory power of states and large corporations worldwide. The state will no longer be able to exercise its legal monopoly of violence and coercion in matters of taxation, inflation, expropriation, prosecution, imprisonment, and so on. Reduced essentially to its coercive functions, Cypherpunks as well as the Extropians envisioned the state as an artificial machinery (including the large bureaucratic corporations) exclusively driven by predation on individuals’ private property (Hayek 1944). Fed with naturalist theories of anarcho-capitalism and individualist anarchism (Rothbard [1974] (2000); Friedman [1973] 2007), private property must be understood here as far beyond material ownership to extend to individuals’ bodies, consciousnesses, and living choices, only limited by the strict respect for other individuals’ properties. According to Cypherpunks, networked cryptography will liberate individuals from their bodily and civil identities (or “True Names,” as Cypherpunk called them in reference to Vinge’s eponymous novel), making the internet an unbridled, free, worldwide marketplace of ideas, goods, and services where notions such as “nation-state” will soon become irrelevant (May 1994). In a crypto-anarchy, wrote cryptographer Wei Dai (1998), “the government is not temporarily destroyed but permanently forbidden and permanently unnecessary. It’s a community where the threat of violence is impotent because violence is impossible, and violence is impossible because its participants cannot be linked to their true names or physical locations.”

People will choose what they want to produce and exchange, and with which crypto-identity, with complete freedom and transparency. At the same time, anonymous public reputation systems will force digital entities (pseudonyms) to honor their commitments in order to maximize their reputational capital (Friedman 2011, 31). Individuals will also autonomously determine the value of the goods and services they exchange. This will encourage the spontaneous emergence of markets, independent of any central planning (whether by the state or large corporations), based exclusively on the supply and demand of individual agents, faithful in this sense to the ideas of “catallaxy” and spontaneous orders distilled by the Austrian economic school. Like the cypherpunks, Extropians saw the free market in its pure form (catallaxy) as a natural process (**Figure 2**) that can characterize not only economic transactions but also social communication and biological interactions (Lavoie 2004), all animated by individual adaptive behavior driven by self-interest (Mises 1949). By setting competition as the norm for social relations, the Cypherpunks imagined an anarchic society where competing communities with different values and interests shared by their individual members would re-engage the evolutionary dynamics driven by natural selection hitherto hampered by collectivism and illusory social justice (Pucheu 2023).

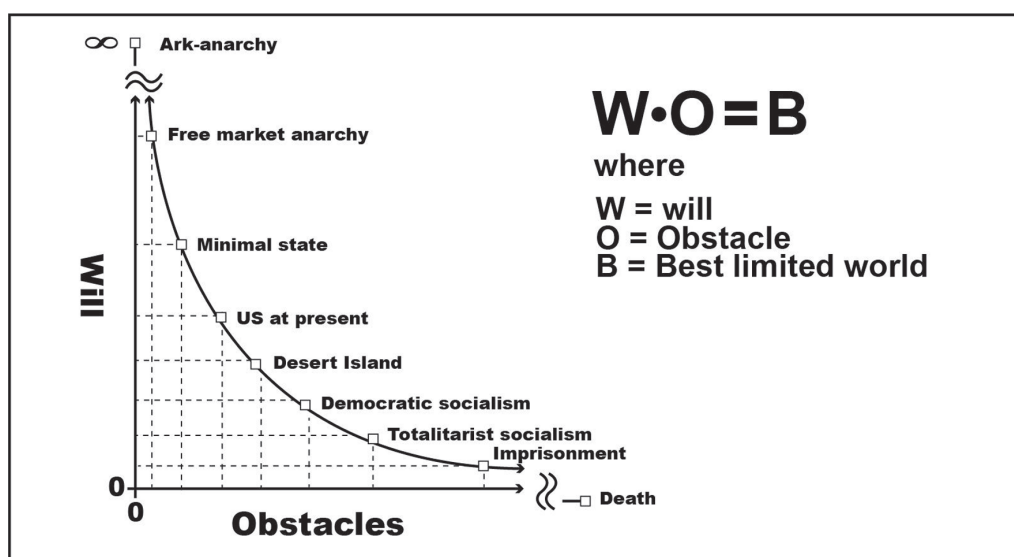


**Figure 2:** Spontaneous orders versus planned orders. Reproduction extracted from More (1990).

Smart contracts, which make possible the determination, validation, and automated execution of sealed contracts between individuals with no legal authority other than themselves, were part of the same design. At the heart of electronic private contracts, championed by early Cypherpunk and Extropian Nick Szabo (1996), is the idea of “privately produced law,” or “polycentric law”, defended by co-founder of the Extropian magazines Tom Bell (1991): the emergence of multiple competing legal systems that would provide the legal framework for the self-organizing principle of the crypto-anarchist project. As explained by Tom Bell, “as we race into an increasingly complex future,

the problem of allowing maximum flexibility and evolutionary potential for our species will press harder. Non-monopolistic legal systems, embodying the spontaneous order principle, appear to be an ideal way to ensure our limitless expansion” (Bell 1991).

From an Extropian point of view, central planning, bureaucratic organization, and scientific conservatism have dramatically impeded the free flow of an evolutionary process also manifest in technological progress (including that of the internet). Anarcho-capitalism is more than just a political program: it is the condition of possibility of the human’s “boundless expansion” across the universe thanks to technological progress, the ultimate evolutionary step toward posthumanism or “Ark-anarchy” (Figure 3; A 1990). The coming age of technological singularity (Vinge 1993) prophesied by the Moore law (the imminent emergence of a supra-human intelligence) and the no-less-prophetic Meadows report about the finitude of terrestrial resources (Meadows et al. 1972) were also central motives to accelerate this teleology.



**Figure 3:** The Ark-anarchy graph of reality. Reproduction extracted from A (1990).<sup>10</sup>

According to the Extropians, digital cash and denationalized electronic currencies (More 1995) will allow new decentralized channels of capital circulation, independent from the state and big corporations, that will accelerate exploratory engineering such as space colonization, human enhancement, and radical life extension. A “pure” free market will ultimately promote “intentional speciation” (Reilly 1995, 38) by unleashing technoscientific innovation without any legal and regulatory authority.

Taking control of evolutionary mechanisms was not an audacious and selfish enterprise for the Extropians but a desirable and necessary one with respect to the “internal teleology” of cosmos (Reilly 1995, 38). Urging this “intentional



speciation”, a notorious Extropian explained: “Teleology refers to the existence of purpose. I am not referring to an external teleology in a theistic sense or as the Final Cause of all, rather to internal teleology. Purpose never enters into the universe, it imbues it” (Reilly 1995, 38).

## Conclusion

Techno-millennialism associated with network imaginaries seems irreducibly linked, in United States history, with the everlasting desire to give birth to a New World. First associated with the prospect of re-establishing the Christian covenant, artificial networks were perceived as the concrete means to achieve the voluntary communion of dispersed individuals around the globe. In a way, the metaphorical unity associated with the mystical body of Christ incarnate by the Roman Catholic Church has been transfigured into the deployment of artificial networks, giving rise to an “organic machine” linking humanity as a single and whole body.

In what might be called a natural theology of technological progress, the antitrinitarian and liberal Unitarian elite of the Jacksonian era contributed to naturalized artificial communication networks, perceived—in the untouched landscape of the wilderness—as the pursuit of the creative process of nature. Transcendentalists, born of the Unitarian matrix, accentuated the pantheistic trend of their natural theology. But they also incarnated a romantic and seminal countercultural movement in the face of Unitarian rationalism. Without rejecting technological progress, they integrated communication networks into their quest for a global spiritual unity while opposing the interests of greedy capitalism and imperialist ideology.

Similarly, the rise of countercultural and neo-religious movements radiating out from California into post-war America was an expression of the rejection of technocratic rationality and scientific and political conservatism. Informed by new science such as cybernetics and system theories, the architecture of networks, whether artificial or natural, was interpreted as a broader cosmological process related to self-organization. The seekers of a mystical quest for a global, holistic unity of mind and matter have found in these theories the epistemology of their belief.

The rise of the electronic industry in post-war California encouraged the interweaving of these teleologies and spiritual beliefs with the early development of network computing. Blending technological potential with eschatological expectations, New Edgers, as they called themselves, were on the cusp of a revolution as dangerous as it was promising: the networked computerization of social and economic interactions. Amongst these New Edgers, the Cypherpunk virtual community imagined the communication protocols that would liberate individuals (and individual properties) from the bondage of statism, urged by the specter of a surveillance society. In what might be called a theology of individual

freedom, echoing to the NMR “self-religion” (Lambert 1999), Cypherpunks envisioned a society devoid of government control, wherein an unrestrained free market of ideas and things, enabled by decentralized computer networks, would promote an intensely individualistic and merit-based societal structure.

Deeply linked with the early transhumanists of the Extropian community, the prospect of crypto-anarchy was also the herald of another eschatology: posthumanism. According to Extropians, pure free-market, denationalized money and privately produced law will foster spontaneous orders that will promote and accelerate individual creativity as well as technological progress. It will ultimately give free rein to human ingenuity to take control of the evolutionary mechanisms.

Despite the efforts of the Cypherpunks to bring cryptography to the masses, computer networking has followed Chaum’s prophecy (1985), making the exploitation and surveillance of users’ data the cornerstone of digital capitalism. Decentralized networks and marketplaces have tremendously allowed the centralization of power in the hands of the digital oligopoly and data server owners. State governments, whether democratic or authoritarian, have also fully exploited the internet’s panoptic potential for surveillance and control. But 2008 brought cryptography and cryptocurrencies back into the spotlight with the deployment of Bitcoin. Invented by a mysterious cryptographic entity known as Satoshi Nakamoto, the Bitcoin protocol was closely linked to the Cypherpunk and Extropian communities from the outset. The Bitcoin white paper was published on a forum belonging to Perry Metzger, an early Cypherpunk and Extropian. Nakamoto developed Bitcoin until 2010 (before disappearing) alongside another famous techno-futurist libertarian, Hal Finney. The latter was also the first beneficiary of Bitcoin transactions. Having passed away in 2014, Hal Finney is now in cryonic suspension in the Alcor facility (run by the Extropians), taking a considerable quantity of Bitcoins (free from taxation and inflation and protected from the hypothetical disappearing of one or another fiduciary money) with him on his journey to the future.

WikiLeaks, founded by Julian Assange (a member of the Cypherpunks as far back as 1995), and the Amazon-style drug-selling platform Silk Road, which first popularized the use of Bitcoin, were in complete adequacy with the crypto-anarchist project. While WikiLeaks sought to show the hidden reality behind state and financial conspiracies (by “watching the watcher”), Silk Road was the archetypal decentralized, transnational black market built around anonymous reputational systems imagined by May ([1988] 2003) in his crypto-anarchist program.

The subsequent developments of these crypto-utopias have diverged significantly from their initial objectives. Anonymity and pseudonymity were only secondary motives (except for hackers and marginal users of the dark web) in the widespread use of Bitcoin. The integration of Bitcoin and blockchain technology

into the financialized capitalism prevalent in our current era contributed to reducing their popular use to that of crypto-assets. While anti-state and libertarian ideologies persist within the realm of crypto-communities (Golumbia 2016), the pursuit of capital accumulation appears to be the predominant driving force. Consequently, cryptocurrencies and blockchains have become extensively integrated into the fintech (financial technology) ecosystem, where large corporations and venture capitalists aim to enhance capital circulation.

Despite being built on peer-to-peer networks, blockchains have not been able to prevent the imbalanced concentration of power within specific nodes (De Filippi and Loveluck 2016). Originally based on the distributed power of networked personal computers, mining, for example, is now concentrated in industrial-scale mining farms. As Joe Baldwin (2018) highlights, the “fetishism of decentralized networks” has also contributed to eluding power relationships related to network materiality, as to offer an illusory (and partial) mapping of reality where individual developers can seem equal to multinational corporations: “decentralized network fetishism conceals relations and systems of domination, exploitation, and alienation. There is an illusion of circumventing economic power with decentralized nodes but what has emerged upon closer scrutiny is the corporate occupation of cyberspace in powerful and deep nodes.”

Despite these drifts, Cypherpunks’ and Extropians’ credos remain central to the crypto world. Celebrated as their founding fathers, Cypherpunk ethos still imbues many emblematic figures of these communities. Some notable “old” Cypherpunks and Extropians like Nick Szabo, Perry Metzger, Dean Tribble, and Mark Miller are still deeply involved in crypto projects like smart contracts or decentralized finance (DeFi). The contemporary crypto-gurus also seem to be following the path of the Extropians, investing massively with other digital capitalist leaders in radical life extension, reverse aging therapy, cryonics, and experimental pharmacology (Nabben 2021; Huberman 2022).<sup>11</sup> The rise of decentralized autonomous organizations (DAOs) in the DeFi ecosystem, and the “network states” recently proposed by crypto entrepreneur Balaji Srinivasan (2022), echo the Cypherpunk techno-communalism and the Extropian desire to open new channels of capital circulation independent from the state and big corporations. Several crypto-communities are effectively dedicated to finance projects in exploratory engineering promoted by transhumanists that states or “traditional” corporations do not want to finance, whether for legal or strategic purpose.

The contemporary emergence of the so-called Web 3 following the disappointments of the Web 2.0 seeks to redeem the internet from the pitfalls of platform capitalism. By reviving the hopes that inspired early crypto-activists, the “web of trust” promises to provide humanity a new realm of social and economic interaction with privacy as its cornerstone. Once again, techno-millennarianism seems to be on the rise.

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## Notes

- <sup>1</sup> A scenario that was already envisioned by the early crypto activists of the 1980s and notably in the seminal David Chaum (1985) article “Security without Identification: Transaction Systems to Make Big Brother Obsolete.”
- <sup>2</sup> This is contrary to the French context, where religious speech has been totally excluded from the public sphere and cannot compete or merge with any secular discourse. This does not mean that religiosity cannot still be a pattern of action, but it cannot be used as an explicit rhetoric, whether for political, economic, or scientific purposes.
- <sup>3</sup> The “orange pill” is inspired by the famous *Matrix* movie scene where the protagonist has to choose between two pills. By choosing the blue pill, he will continue to live in an artificial, fantasy reality, while the red pill (orange in the crypto world in reference to the main color of Bitcoin) will allow him to enter the “real,” unconstructed reality of the world. In Bitcoin communities, the orange pill is linked to the belief that once someone has fully understood Bitcoin’s value proposition, they become a maximalist and envision Bitcoin as the only store of value worth holding.
- <sup>4</sup> In the same line can be cited the (now inactive) non-confessional church Way of the Future founded by ex-Google engineer Anthony Levandowski, dedicated to the worship of a general artificial intelligence to come.
- <sup>5</sup> A period that can be circumscribed between 1776 (the declaration of independence) and 1890 (the official closure of the frontier) in which communication network deployment was at the heart of the early internal improvement policy and later the frontier’s expansionist phase.
- <sup>6</sup> If subsist in the Calvinist theologies a heteronomic God, depraved humans are alone in the secular world to accomplish their destiny in the idea—right or wrong—that they themselves made about God’s will.
- <sup>7</sup> Respectively extracted from *Harper’s New Monthly Magazine* 1873; Field (1866); Lossing (1873).
- <sup>8</sup> See, for instance, the synthesis from the Esalen Institute’s cofounder Michael Murphy (1992).
- <sup>9</sup> “A catallaxy is a special kind of spontaneous order produced by the market through people acting within the rules of the law of property, tort, and contract” (Hayek 1976, 109).
- <sup>10</sup> This graph presents a concise overview of the two cosmological polarities that America oscillated between in the 1990s: on one hand, entropy or death resulting from the absolute institutionalization of socialism, which would suppress individual wills, and on the other hand, the “Ark-anarchy” or post-human condition that would emerge from a gradual emancipation from statism in favor of boundless individual freedom.
- <sup>11</sup> The ephemeral city of Zuzalu, initiated in 2023 by Ethereum founder Vitalik Buterin to bring together “leading innovators in crypto, AI, governance, decentralized science, and culture” (<https://www.zuzalu.city>), offers another luminous illustration of these teleological confluences between the crypto world and transhumanism.

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