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The Blockchain Revolution

Contribution to GTI Forum [Technology and the Future](#)

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Whether we believe that technology itself has its own determinism or that it is shaped by material interests, there is always a residue of human agency to transform technological tools for the common good. A most unlikely candidate, the Bitcoin-generated blockchain can have transformative potential in this regard. The blockchain can be used as an essential tool to construct the next cyber-physical infrastructure that will allow humanity to produce for its own needs, while respecting planetary boundaries and our interdependency with the web of life.

Bitcoin is the recipient of many legitimate critiques by progressives. It was designed with Austrian economics and anarcho-capitalist values in mind, it is very energy-intensive in its production, and it is very unequal in its distribution of income and property, a distribution that is not accidental in view of the “oligarchic protocols” that it has chosen as incentives for its stakeholders.¹ But it is important to distinguish the existence of a global distributed ledger, i.e., an open and interoperable accounting and logistical system that can be used to coordinate production on a global scale, from its first iteration as the ledger of Bitcoin. We now have different post-blockchain distributed ledgers that attest to this, and a number of these ledger projects are operated not according to libertarian values and rules, but by integrating the insights of Elinor Ostrom.²

A ledger is first and foremost an accounting tool, recording transactions. This is obviously not trivial: the first accounting systems in Sumer, with temple administrations recording the flow of grain and debts, stand for the origins of the state apparatuses; the double-entry accounting system for private competitive units created by a Franciscan monk Luca Pacioli in the Italian

city-states stood for the emergence of private forms of capitalism which would eventually become dominant.

Blockchain ledgers have currently inaugurated various forms of post-capitalist accounting, which seem to be just as non-trivial:

- Contributory accounting, which can record, value, and recompense non-commodified forms of contributions to ecosystems and networks, signifies the recognition of value outside the commodity form; it is a crucial tool signifying a transition to contributory regimes of value³
- Flow accounting, such as the Resource-Events-Agents software, allows every transaction to be recorded as an event in a network, and has abandoned double entry; it is an accounting for externality-aware ecosystems, not externality-ignoring closed entities.
- Thermodynamic accounting directly records the flow of matter and energy into an accounting system, such as the systems pioneered by R30.org and the Global Commons Alliance, who use a “global thresholds and allocations” approach to determine the maximum allowed flow in particular contexts.

These ledgers are linked to tokens and intelligent current-sees which can allow for expanded and complex value regimes.⁴ We now have access to local currencies, which can protect and regulate local economies and domain-specific intelligent monies such as SolarCoin, generated by renewable energy, or FishCoin, which regulates the maximum volumes for the fishing industry.

Local-geographic currencies, domain-specific virtual currencies, and transformed nation-state currencies can coexist in a regime of socially and environmentally sustainable monetary biodiversity and a global regulatory currency that ensures the economy stays within agreed upon ecological limits.

With these tools at hand, integrated in a cosmo-global cooperative ledger, it becomes possible to transcend the violent competition between economic coordination systems that plagued the twentieth century.

Here is what we can then envision:

- The primary layer of human cooperation becomes “stigmergy,” the gift of the commons economy that has been operating successfully within the open-source economy for two dozen years by now: open and transparent systems allow participating producers to freely coordinate their work in view of the needs and possibilities of the ecosystem as a whole, without needing central command. Collective agreements then result from negotiated coordination. The agents of this are the contributive communities, and the for-benefit associations that maintain their infrastructure of cooperation.
- The secondary layer consists of the generative market exchange mechanisms, post-capitalist market forms that regulate genuine exchange within planetary limits; this is necessary for the flow of all the resources that need investment and need to be renewed. The agents for this are generative and cooperative market entities that add value to the commons economy. Commons Stack, focusing on commons regulations, and RadicalXchange, focusing on the creation of generative market systems, are among the initiatives dedicated to this.
- The third layer is the planning layer. This is where thermodynamic accounting systems come in, by rendering visible the flows of matter and energy in a economic system, and where the ruleset of “global thresholds and allocations,” allows for context-specific “maximums.”

To a skeptic, the description so far will sound utopian. What could be the agent of sufficient change that would lead to the adoption of such a global infrastructure?

Our answer is that the commoners are the agents of such a change, following cosmo-local models, which we see as the “third possible future” for humankind.⁵

The first future is the continuation of multicultural neoliberalism, as espoused by the World Economic Forum.⁶ It is a world run by public-private partnerships and natural asset investment vehicles, with weak national governments, strong transnational capital, and instrumentalized global NGOs. Its political preference is for alliances of the urban cognitive elites, organized under group allocation rules, which can be used to manage the unruly popular classes.

The second model is protectionist retreat, which aims for re-strengthening sovereign nation-states and attempts to control global flows of capital and labor to benefit a competitive nation. The danger of the second model is armed confrontation between states aiming for control of scarce resources.

The third model is the cosmo-local model: in this model, we aim for an intelligent relocalization, based on distributed manufacturing models, producing on demand using the maximum amount of biodegradable material. In such a model, local production units are linked to global open design communities, and a partner state, or “community state,” enables and empowers individual and collective autonomy at the local scale and guarantees the equality of contributory capacity. Local alliances of public authorities, the commercial sector, the formal civil society, and research organizations support commons-centric public initiatives; they are mirrored, in a fractal way, by similar transnational institutions that support a domain-specific commons institutions, which we call the “magisteria of the commons.”

We see these networked workers, organized in common third spaces, i.e., revamped makerspaces, as both local agents, rooted in their communities, and as agents that are linked to the global open design communities which are the vehicle of their social and technical knowledge. Barring or awaiting the emergence of political forces which can represent this cosmo-local order, the priority is to network the productive nodes and to construct the necessary transnational layer which can represent the counterforce to transnational capital. Partner state organizations are a vital link to facilitate the connection of local producers to the global streams of shared knowledge.⁷

Endnotes

1. To see how this differs from a commons-centric design, see the comparison table: “Contrasting the Propertarian Blockchain with Commons-Based Ledger Systems,” <https://docs.google.com/document/d/1RQXhk83jrRTuWXKzPC6R5pxcbm-hqA-WiRgsfjU9NIs/edit#heading=h.cfglx2edur25>.
2. The Commons Stack project, part of the Crypto Commons Alliance, is exemplary in this regard. See <https://commonsstack.org/>.
3. The P2P Value project found that 75% of the 300 studied peer production projects were using, experimenting, or researching such accounting conventions and tools. See https://wiki.p2pfoundation.net/P2P_Value.
4. The concept is from Arthur Brock, founder of the Holochain post-blockchain ledger, a open and p2p-based interoperable ledger system that doesn’t require a world computer but is based on the free interconnection of autonomous ledgers. See, for example, “the Metacurrency Myth,” *The World of Deep Wealth*, March 10, 2016, <https://medium.com/metacurrency-project/the-metacurrency-myth-8db61ed14fb8>.
5. Cosmo-local production models are described in a new book by the P2P Foundation, which contains 40 case studies of initiatives combining local material production with globally shared open designs: José Ramos, Sharon Ede, Michel Bauwens, and Gien Wong, *The Cosmolocal Reader* (Geneva: P2P Foundation, 2021), <https://clreader.net/>.
6. See Wesley Yang, “Welcome to Year Zero,” *Year Zero*, July 14, 2021, <https://wesleyyang.substack.com/p/welcome-to-year-zero>.
7. Michel Bauwens and Alex Pazaitis, *P2P Accounting for Planetary Survival: Towards a P2P Infrastructure for a Socially Just Circular Society* (Geneva: P2P Foundation, 2019), <https://commonstransition.org/p2p-accounting-for-planetary-survival/>.

About the Author



Michel Bauwens is the founding director of the P2P Foundation, which studies the impact of peer-to-peer technology on society. He is also research director of CommonsTransition.org and a founding member of the Commons Strategies Group. He has written a number of books and reports, including *Network Society* and *Future Scenarios for a Collaborative Economy* (with Vasilis Kostaki). He has crafted Commons Transition Plans for Ecuador and Ghent, Belgium, and advises SMart, a nonprofit that assists freelance workers in the creative industry.

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