

The Blockchain Age: Awareness, Empowerment and Coordination

It may be the next step in human, social, cultural evolution

There's a lot of hype surrounding blockchain technology. But the best ways to use it are still to come. Blockchain is often seen as a revolutionary technology. However, it even represents a possible means to reach the next level of human, social, cultural evolution. It can provide society with awareness and collective memory. It can furthermore boost creativity, innovation, coordination, sustainability and resilience, hence, enable an entirely new, efficient and trustable organization of the world's societies at large.

Human evolution depends on the ability to coordinate people with diverse interests and goals. When genetic favouritism (giving advantages to relatives) was partially replaced by direct reciprocity ("an eye for an eye, a tooth for a tooth"), societies reached the next level of cooperation. In the past centuries, cultural evolution has further progressed with the implementation of more sophisticated cooperation mechanisms such as "indirect reciprocity" (i.e. reputation- and trust-based systems). Now, with the invention of the blockchain and similar technologies, the next level of society appears to be within reach, as it is possible to establish trust in a peer-to-peer way even between selfish actors, without the need of intermediary institutions.

Blockchain is giving societies an unalterable ledger of our dealings with each other – a veritable registry, on the basis of which reputations can be assessed, and deceit can be unmasked. It is now possible to create collective awareness of how events are actually playing out and how they came about. Blockchain allows one to build a digital society, in which the legitimacy of interactions can be checked and verified.

Delft University of Technology has years of experience with primitive ledgers to record interactions. For instance, the BarterCast ledger records who shared Internet bandwidth with whom. Even when interactions are anonymous, such as in Bittorrent peer-to-peer file sharing environments, using interaction records it is easy to identify and discourage unfair, non-reciprocal use of resources in the system (here: bandwidth).

So, what does this ultimately imply for the way we may all interact in future societies? With the concept of decentralized autonomous organizations (DAOs), blockchain technology can not only cure all sorts of blown-up bureaucratic structures, by coordinating people, resources, and processes in more transparent and efficient ways. It will even allow one to build a new form of socio-ecological, liberal, efficient and democratic kind of capitalism. This will consider externalities of everyone's activities on their environment and others by combining blockchain technology with the Internet of Things. In such a way, it is possible to boost a sustainable circular and sharing economy, with a variety of incentives, i.e. new socio-economic feedbacks.

Evolutionary biology shows that human language has evolved to give us the ability to talk about each other. This has boosted survival in a life-threatening world. Next, social intelligence evolved. Now, blockchain technology may create a new basis of truth and

trust. A tamper-proof escape from lying, cheating, and hurting others would be a major leap forward in human evolution. We can do this now.

Today's world lacks memory and awareness of the reality we influence and which influences us. With blockchain technology this can now be changed. However, there are different ways of building a blockchain-based society. We must avoid to fall into the trap of a totalitarian post-privacy world, in which people may be suppressed and have to pay a price for each word used. If we want to see a world with a level playing field for everyone, we need to insist on *responsible* blockchain innovations and on using distributed ledger mechanisms for the greater good, rather than allowing them to be usurped and harnessed by a very limited group of people for private interests.

It is important to figure out (e.g. by means of multi-player online games or Virtual Reality experiments) what information should be disclosed to whom and at what point in time, while avoiding harmful information asymmetries. Human dignity, socio-economic diversity, and the outcomes of social self-organization may significantly depend on this.

The digital society we have in mind would offer protection and fair opportunities to all, while fostering collective intelligence, based on the sharing of knowledge and ideas. Openness, interoperability, fair access, and participatory opportunities would allow everyone to stand on the shoulders of others, thereby boosting a thriving society without avoidable shortages. This new digital age would empower everyone to be better informed and more innovative. With a subsidiary form of organization, it would allow everybody to participate in the co-creation of the spheres of life we care about, while helping us to coordinate our creative forces. By considering externalities, this can now be done in a way that minimizes harm to the environment and others while maximizing beneficial effects. So, what are we waiting for? Let's build the blockchain age together!

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