



Encrypted city

Description

Urban [metaphors](#) are powerful in the world of computing. The reverse is also true. Computing brings metaphors to bear on how we think of cities — as flows of data, networks, circuits, grids and an Internet of things, as if cities are made up of bits, memories (RAM), sensors, actuators, and with communication systems, inputs, outputs and operating systems. What does [blockchain](#) technology add to the metaphor pool? Here are some suggestions.

Stratification

The blockchain processes add *weight* to the geological analogy of stratification. In a blockchain, data gets layered in a time ordered sequence. The oldest is the deepest, with layers of data cemented by computationally byzantine [verification procedures](#).

Are cities like that? — in some respects. As well as physical stratification, people talk about cities as layers and accretions of memories, some of which are inscribed in the fabric of a place. We like to peel back the layers and watch translucent layers interact as they get scoured and replaced (as in a [palimpsest](#)).

But, at the same time some like to think of a city's memory strata as [immutable](#). Try as they might, those who would like to *hack* the past find resistance from the accretion of embedded layers. You cannot backtrack history. You can't change the past, some say.

Blockchains deploy a form of [Merkle tree](#): chaining data together through [hashing](#). The legitimacy of one thing depends on the legitimacy of another. Hierarchies are like that, and the structures of city governance. But so are informal relationships in communities. The good pupil inherits the respect accorded to her teacher, who in turn is deemed a good citizens by local shopkeepers, who are in turn legitimated by the (highly respected) chamber of commerce, etc. Eventually you alight on the Merkle root, the start of the inheritance train. Though, as in life generally, such [foundations often elude us](#).

Proof of work

This is the bizarre process by which nodes in the blockchain network contribute time and effort to solve extremely difficult and arbitrary [cryptographic puzzles](#), the solution to which gets printed into the blockchain to confirm the legitimacy of a block of transactions. A hacker would need to expend at least as much energy to access and change the data.

In the social realm, to expend effort is to indicate a commitment and to validate your intentions. Think of the circumstance where political campaigners go from door to door to chat up would-be voters. It's not always the reasoning that persuades people, but the fact that someone braved the weather and spent the petrol and shoe leather in an effort to come and talk to me. Would-be persuaders are even more persuasive when they invest effort in something — preferably related to the cause.

To expend effort is to prove that something is of value. Putting in the effort shows the strength of your conviction. There's an argument here justifying otherwise unprofitable and useless civic projects: follies, memorial statues, the pyramids, public art. That someone cared enough to spend valuable resources on the thing, strikes any city visitor as a statement that the city has values. There's care there.

Panopticism

Making something visible, or at least accessible in a public way contributes to trust. That's one of the attributes of the [distributed ledger](#) idea in blockchain technology. The structure and its content are visible to anyone who wants to inspect them.

Transparency is a watchword of good governance. It's a way of keeping people honest. In his *Utopia*, [Thomas More](#) said that people behave themselves as — everyone has his eye on you. • The ideal city was designed without places to hide. Much has been said about the city as [panopticon](#). As with digital surveillance, the blockchain idea amplifies the metaphor. But blockchain transactions are purposefully peer-to-peer, with the most private parts of the transaction encrypted, as long as you don't lose the key.



Encrypted realities

I stumbled across an [article about Monte Alban](#), the ancient Mexican city. The article calls Monte Alban the “encrypted city.”• The city ruins are marked with so-far undecipherable symbols and markings. The article also claims that the lines of the city’s geometry are similarly coded: “Whilst the lines alone could be dismissed as meaningless”! the numbers of proposed alignments add weight to the idea the city is encrypted with astrological information that would be easily deciphered by the High Priests of the city.”•

The blockchain city promises more. The city as distributed ledger lays everything out to be viewed, used, modified and accessed. But, like my bitcoin wallet, access is only granted to those with the [decryption key](#). There are lots of parallels here with the distribution of software and other online assets. You need the key to unlock the features you have paid for.

As any architect knows who has had to draw up a key schedule, a building is a system of locks and keys. So is a city “a matrix of locks, keys, vaults, security doors, cameras, contactless sensors, keypads, and pass codes” fixed and mobile. Under the blockchain metaphor, cities reveal themselves as hyper-encrypted “! and hashed “! and the city depends on that.

References

- Heyworth, Robin. 2014. Monte Alban: The encrypted city. *Uncovered History*, 16 April. Available online: <https://uncoveredhistory.com/mexico/monte-alban-the-encrypted-city/> (accessed 23 September 2017).
- More, Thomas. 1965. *Utopia*. Trans. Paul Turner. Harmondsworth, Middlesex: Penguin

Notes

- On the subject of *proof of work*, Chris Speed draws attention to the movie *Two Days, One Night*, in which someone about to be laid off work spends a fraught weekend trying to persuade others in the company not to vote her out, and to convince them to forgo the raise they would get if she left. To cut a long story short, it's the fact of her effort that persuades most of her colleagues to keep her on. See Speed, Chris. 2016. Practising the blockchain. *Fields*, 4 January. Available online: <http://chrisspeed.net/?p=1719> (accessed 23 September 2017).
- Picture above is of a door to an apartment block in Le Marais, Paris, 1 January 2015.
- The encrypted city is also the semiotic city. On the subject of semiotics see my post [Whatever happened to architectural semiotics](#). On mystery, see [Mystery philosopher fakes own death](#).

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