

fluid currency.

c.reyes

With *Non-Stop City*, Archizoom envisioned a high-tech Amazonia, a large continuous interior, an air-conditioned and artificially lit space with apartments as storehouses of memory. If we consider the Internet as an extra-urban layer, we might read cities as the realisation of this system, free in its itineraries and its choices; an urban system with no borders, housing a mass society with neither centre nor frontiers, where social dimensions become spatial dimensions multiplied *ad infinitum* beyond the limits of architecture and the interior. It is said that the emergence of the internet has also facilitated significant variations in modes of production, and the distribution of information and capital. Educated citizens have started to question how monetary systems work, and how they might be improved to respond to their own needs, quite aside from the interests of governments and the market (both of which are controlled by corporations).

Sometimes described by its enthusiasts as "the Internet of Money", Bitcoin is a platform combining cryptography and software to offer an alternative currency and payment-tracking system. It is made possible by a distributed network that both produces Bitcoins, and at the same time verifies each transaction taking place. Since they are wholly virtual, Bitcoins are not backed, nor controlled, by any government or corporation; allowing instant payments with nearly zero fees available to everyone with internet connection. As with gold, Bitcoins are recognisable, divisible and limited, but also much easier to transport. Although, just like the internet and its apparent virtuality, the processes required to create and exchange cryptocurrencies are done at a real-world site. Even the 'invisible' needs a physical infrastructure.

Mining Bitcoins is an energy intensive activity and requires sophisticated hardware. The vision of a single digital-money fanatic mining Bitcoins in the loneliness of a home computer is now consigned to (recent) history, and mining has moved to data centres and the cloud. Given that just over half of all the maximum

21 million Bitcoins that will ever be released, and that the value of a single Bitcoin has dramatically risen over the last months, mining has now reached an industrial scale. The market of mining is similar to that of the data centre industry, and has witnessed the rise of startups providing installations in locations with favourable climates or low-cost electricity, such as Iceland, Hong Kong, Canada and Washington. This is the start of an industry that could possibly take the next hundred years to exhaust the supply, and which relies on companies specialised in hyperscale computing, and geothermal and hydro-electric energy. Further, as M.Bedford Taylor notes in *Bitcoin and the Age of Bespoke Silicon*, the industry has facilitated the development of completely new machines, without the support of any major company.

In spite of so many advances, Bitcoin infrastructure still needs to become more energy efficient. The use of advanced liquid-cooling solutions has allowed the implementation of mining facilities in old industrial buildings (as has happened recently in Hong Kong). If it continues to grow, this industry could lead to the revitalisation of derelict industrial spaces, or the conversion of outdated data centre facilities.

At the world-scale, cryptocurrencies could support the market of remittances from migrating workers and eliminate bank commissions, allowing millions of people excluded from conventional banking into the system, accessing the Internet with their mobile phones.

In Archizoom's *Non-Stop City*, "the future dimension of the metropolis will coincide with that of the market itself".

We shouldn't perceive Bitcoin and other cryptocurrencies as money, but as warnings to the capitalist market and the nation state.

They are virtual experiments with physical inputs and territorial consequences; but also collective efforts to build fair exchange systems, driven by citizens of "the Fluid Metropolis" to come.

César Reyes Nájera is an architect and editor. He holds a PhD in bioclimatic construction systems and materials and is cofounder of dpr-barcelona.

money is the easy part.

e.baraona pohl

The distance between my screen and the moon is 384,400 km. Therefore, when this chart reaches the moon, each BTC will be worth 1,280 billion dollars.

Jeff Garzik

Sputnik, the first satellite, went into orbit in 1957. Since then, thousands of satellites have become floating extensions of our territories, with more than 50 countries participating in this spatial colonisation. From tiny CubeSats to enormous space stations, space is just another ambiguous territory for the expansion of political and economic power. But what's the relationship between this 'immaterial' territory and Bitcoins? In November 2013, Jeff Garzik (a Bitcoin developer) proposed sending Bitcoins into space, to be stored securely in the event the internet should be shut down. The idea was to use a small CubeSat like a space bank, a machine in constant communication with terrestrial Bitcoin computers via radio. However, the currency, which launched in 2009, has a troubled history — from the hacking of several exchange networks (which left debts of millions of dollars) to sophisticated money laundering schemes. The question that emerges is simple: in any case, is space actually a safer place for Bitcoin?

The economic and (geo)political implications of sending Bitcoins into space needs to be reconsidered. The relationship between money and speed has been analysed at length (as in Marije Meerman's recent documentary), where the most critical infrastructure is the opaque community of computer programmes managing the speed of financial transactions.

In this fictional territory, the importance of speed in the world of financial trading is radically transforming all traditional notions of value and ownership — as well as spatial radio frequencies.

By sending Bitcoins into space, it's possible that control over asset valuation in the Bitcoin environment

will ultimately come under the few big bureaucratic infrastructures controlling radio frequencies in space. In Garzik's plan, transactions will be done using radio frequencies from the CubeSat. Even if no nation owns the radio frequency spectrum, the importance of being independent from those responsible for administering radio in space should be at the basis of the project. Knowing that satellite bandwidth is really limited, each remote location should also be equipped with a telephone modem (the bandwidth available from space depends upon the number of transponders provided by the satellite).

The possibilities of creating an interplanetary economy are also being researched by the established and biggest financial networks, such as PayPal Galactic, who aspires to 'create a secure and functional space commerce system' (sic). In that sense, it is not so absurd to think that the group who sends the satellite with Bitcoins into space will join forces with a technological company able to increase the speed of that specific radio frequency, aiming to make it more competitive for trading and mining. Who will be the last in the queue? In the same way nations are fighting for control over Arctic territories, it is logical to think that having millions in Bitcoins in space will cause endless battles to reclaim the immaterial radio waves separating the CubeSat from the Bitcoin network on Earth. Frequency selection will be one of the biggest decisions on this plan. In 1967 the UN sponsored the "Outer Space Treaty", which established all of outer space as an international commons, forbidding states from claiming territorial sovereignty. However, under the same treaty each State that launches a space object retains jurisdiction and control over the object they put out there. It is, at least, thought provoking to think which kind of spatial legislation can be used by the Bitcoin network to make this project real.

Can the open and collaborative network of cryptocurrencies survive aside of the system? When the sky isn't the limit anymore, then money is really the easiest part.

Ethel Baraona Pohl is a critic and curator. She is editor of the *Quaderns* journal, and was Associate Curator for "Adhocracy." www.dpr-barcelona.com



The "In Bitcoin we trust" ATM, produced by Lamassu, converts over 200 national currencies into Bitcoins – anonymously and instantly.