

# ***Building the Blockchain: The co-construction of a global commonwealth to move beyond the crises of global capitalism***

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Karl Polanyi wrote in 1944 of a Great Transformation that drove the logic of markets into social life and created the conditions at once for fascism and for social democracy. We are now in a second period of global transformation. Neoliberalism has nearly everywhere dismantled institutions of social welfare, weakened labor and environmental protections, and undermined democratic control over the economy (Kotz and McDonough 2010). At the same time, the process of globalization has connected people transnationally both in practice and imagination (Falk 2000). Human creativity and innovation have been applied to the problem of global capitalism's undermining of democracy. Blockchain technology is one product of this effort that holds the promise of accelerating economic global transformation (Swan 2015). I intend to test the thesis that blockchains have the potential to make the Marxian promise of a post-capitalist, post-state democratic commonwealth a reality.

As an economic system, capitalism is experiencing both local and global economic crisis: A growing precariat, worsening climate change, a shift to the political extremes, continuous war and mass migration, mass extinctions, and much else (Robinson 2014). The *Transnational Capitalist Class* has responded to the social, political and economic crises created by capitalism with neoliberalism and a weakening of local democratic institutions everywhere (Sklair 1997; Robinson 2014). To the extent they are able, the global citizenry (Perez 2012) are increasingly seeking alternatives to participation in a system of increasing inequality and environmental destruction.

The global capitalist food system is producing negative outcomes. The economy produces enough food to adequately feed everyone yet millions of unnecessary deaths occur annually due to undernutrition and obesity

(Miller and Spoolman 2008; Lappé and Collins 2015). Ecosystems are being destroyed on a massive scale (Andersson and Eriksson 2010).

Under capitalism, currencies and financial institutions based on nation states have some serious drawbacks for users. The government can seize your assets, devalue the currency or restrict access. Electronic cryptocurrencies offer solutions (Böhme, Christin, Edelman, and Moore 2015). Within a cryptocurrency governments cannot freeze someone's wealth, users have increased privacy and greatly reduced transaction costs, transactions cannot be reversed so there is no risk of "charge-backs" and electronic currency cannot be stolen directly (Swan 2015).

The system of capitalist nation states as a governance system fails stateless people and refugees. Registries filed in the traditional manner with nation states are unequally available and secure across the globe. Depending on your physical location, you may or may not be able to register your marriage or adoption. If you are a refugee or living in an occupied territory, you may lack access to identifying documents. If your government is corrupt, you may not have access to a formal system of land and property transfer (Alison 2015).

The inability of traditional politics and policies to address fundamental capitalist economic crises has led to the emergence of many sophisticated and thoughtful social and technological initiatives that build power from the bottom-up and begin to suggest new possibilities for addressing the deep social, economic and ecological problems our world faces. Blockchain technology holds the potential to solve the problems associated with food, finance and governance (Swan 2015).

I propose a case studies analysis of applications of blockchain technologies that are being deployed as strategic alternatives to global capitalism. FarmShare, Fair.coop, and Bitnation are among the leading efforts to build blockchain communities for the food, currency, and identification sectors.

## **Three Crises of Global Capitalism**

Capitalism is generating increasing precarity, food inequality and instability, and undermining democracy on a global level (Robinson 2014).

### *Crisis 1: Increasing Precarity*

Capitalists seek to decrease the cost of labor through an increasing division of labor (Marx and Engels 1935). Globalization of world markets has increased the competition between capitalists and required an increase in the division of labor to reduce the costs of production (Shangquan 2000). Capitalists must sell commodities more cheaply and to therefore sell more commodities to a larger market to maintain a profit, and the price of commodities is decreasing (Robinson 2014).

John Maynard Keynes (1931) predicted the replacement of labor with machines and argued this would have a positive impact in taking the place of a struggle for subsistence, “man will be faced with his real, his permanent problem - how to use his freedom from pressing economic cares, how to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeably and well”.

Marx held a contrasting view. He argued that the competitive chase amongst capitalists to generate surplus value, which is always shrinking, will lead to increasing alienation of labor. “The wretchedness of the worker is in inverse proportion to the power and magnitude of his production” (Marx 1978).

The global precariat class is growing (Standing 2014). In countries across the globe, labor protections and unionization have been undermined and workers are increasingly engaging in temporary, multiple and unstable employment (Standing 2014). Forty-seven percent of U.S. jobs could potentially be replaced by machines within 10 - 20 years. (Frey and Osborne 2013).

Blockchain technology increases productivity by pushing the cost of production toward zero (Dew 2015). This involves an approach to structure and action first outlined by Marx, who wrote that as the relations of production change, so too must the social relations of society change (Marx 1904).

*“the social relations within which individuals produce, the social relations of production, change, are transformed, with the change and development of the material means of production, the productive forces. The relations of production in their totality constitute what are called the social relations, society, and, specifically, a society at a definite state of historical development”* (Marx 1935).

These jobs will be replaced with virtual labor created to automate knowledge-based tasks (Rifkin 2014). Automation necessitates even further productivity gains or entrance into larger markets (Marx 1904). Historical precedent suggests jobs lost to automation will be replaced with lower paying, repetitive and menial labor (Autor and Dorn 2013). Wealth will be increasingly concentrated and there will be increasing material abundance, yet consumers will have less income to purchase available inventory (Piketty 2014).

### *Crisis 2: Food Inequality and Instability*

The neoliberal dismantling of the social safety net, coupled with the loss of a stable source of income, is causing many families to face food insecurity (Lappé and Collins 2015). Removing food from the market will strengthen food security and protect the environment (Lappé and Collins 2015). When food is a commodity it is distributed based on the ability to pay rather than need. Under capitalism, the value in use value of food is not directly connected to its value in exchange. Investors can engage in price speculation of food as a pure commodity.

Contrary to the supply and demand ideology of neoliberals, the anarchy of private markets which are governed by self-interest, will not provide an adequate quantity of public goods, such as health, nutrition and hunger eradication. If something is non-monetizable, not able to be converted into

profit, then it is irrelevant, and positive externalities such as improved well-being, cannot and will not be captured by private actors.

Food and nutrition security are a global public good (Bratspies 2010). Actors building *the global commonwealth* express a new type of globalization which removes the basics of life from the market (O'Neil 2004). Food is a key part of this plan. Food is treated as a part of *the commons*, a public good that should be governed collectively.

Global capitalism's drive for increasing profit has distorted the food system. Supply chains have lengthened to absurd transnational lengths, gmOs are inserted into plant and animal dna with little understanding of the long-term consequences, pesticides are overused on mono-culture crops, common resources such as water are privatized through legislation, patents restrict the saving of seeds, and so on (Holt-Giménez and Wang 2011). The sum total of global capitalist commodification of food is that there has been a major limit to food as a commons.

Transnational supply chains have prioritized durability, standardization of form and packaging over non-economic attributes such as taste, nutritional content, seasonality, geographic suitability and biodiversity (Smith, Lawrence, Richards 2010).

Global capitalism has increased humanity's ability to produce more food with less labor, but the commodification of food by transnational monopoly corporations that dominate the industrialized food system are major drivers of malnutrition and environmental degradation (Lappé and Collins 2015).

Food serves as a multi-dimensional expression of culture and community, so it is a fulcrum in the global commonwealth's movement to create a new non-capitalist globalization. They believe food is a fundamental human right that should be guaranteed to every person on the planet regardless of wealth or citizenship. Food is a powerful motivator for social transformation and the convergence new blockchain technology with the preexisting food justice community could be a powerful catalyst for

democratic change in the global and national food system transitioning towards a food commons regime.

### *Crisis 3: Democracy*

“The existing bundle of technologies, saturated as they are in the mentalities and practices of capital’s search for class domination, contains emancipatory potentialities that somehow have to be mobilised in anti-capitalist struggle.” (Harvey 2014)

New technologies are accelerating the transformation to a freelancer economy (Hea 2013). The first wave of these platform technologies are not controlled by their community of users and they centralize power and profits for one corporate entity (Mansfield 2015).

The expansion of markets to a world scale has expanded a shared alienation of workers. “Only then will the separate individuals be liberated from the various national and local barriers, be brought into practical connection with the material and intellectual production of the whole world and be put in a position to acquire the capacity to enjoy this all-sided production of the whole earth (the creation of man) (Marx and Engels 1978). Blockchains are designed for the community to take power through decentralized and democratized economic activity (Swan 2015).

Will blockchains lead to a revolution? A revolution will not occur until the conditions of life are ready for a revolution. For Marx this will occur when two things happen: our “essence” as humanity has been polluted to such an extent that life cannot continue and we are able “to obtain food and drink, housing and clothing in adequate quality and quantity.” (Marx 1972). Blockchains hold the potential to shift the ownership of the means of production out of the hands of the capitalists into the ownership of the collective commons (Swan 2015). All products are social products because they are produced through social relations. Yet, under capitalism the owners of the means of production or instruments of labor make an individual claim to the social products. “This contradiction, which gives to

the new mode of production its capitalistic character, contains *the germ of the whole of the social antagonisms of today.*” (Engels and Aveling 1935).

As long as global capitalism continues as an historical form, neither education nor representative democracy will be sufficient to combat the social and power imbalances (Bello 2015).

### **The Co-Construction of a Global Commonwealth**

Capitalism enters cycles of expansion and contraction (Wallerstein 2016), and may we be in a *terminal crisis*. Terminal economic crises are the major event when regimes of accumulation collapse and are incapable of reproducing themselves (Arrighi 1994). Many believe that global capitalism is now in a terminal crisis (Robinson 2015).

In *CAPITAL in the Twenty-First Century*, Thomas Piketty (2014) writes that a market economy based on private property contains powerful forces of divergence, which are potentially threatening to democratic societies and to their foundational values of social justice. He argues that pure and perfect competition in global markets cannot alter the logic of capitalism, which guarantees increasingly faster rates of inequality, which he considers ‘terrifying’ in their implications, “Although the risk is real, I do not see any genuine alternative: if we are to regain control of capitalism, we must bet everything on democracy.” (Piketty 2014).

Walden Bello argues that our current form of democracy - liberal representative democracy - will not bring about a reduction in inequality. He says, “Of course they enshrine formal *political* equality and institutionalize majority rule. But they are ineffective at bringing about greater *economic* equality.” (Bello 2015).

Economic equality is not implemented because, as Karl Marx argued, economic power translates into political power (Amenta, Nash and Scott 2012). The U.S. liberal-democratic system is ideal for the 1 percent economic power elites who rule this country because it promotes the illusion of equality, granting this system an aura of legitimacy. Bello calls

for the institutionalization of people power where political participation is a constant activity (2015). Transnationally actors are consciously co-constructing a global commonwealth by building new systems. Transnational movement actors share Bello's desire for a redistribution of power to the public sphere.

### *Transition beyond capitalism*

The era of global capitalism in its current form is reaching an end (Wallerstein 2016). Social change agents want the next system to encompass an evolutionary change to a world-system based on abundance rather than a transition into a new phase of capitalist development based on scarcity (Chase-Dunn 2002).

Some believe that a new global Keynesian regime will arise to manage global capitalism's structural contradictions (Chase-Dunn and Roberts 2012).

While current crises and movements provide the sociopolitical opportunity for a transition from capitalism into a more egalitarian mode of accumulation, the New Global Left would need to become much more organized and effective in order to motivate significant collectively rational solutions to the contradictions of capitalism within the next few decades (Chase-Dunn and Roberts 2012).

### *Transnationalism*

A critical feature of contemporary capitalism has been the transnationalization of production. The evolution of global capitalism is both spurring a transnational social movement response and itself a response to resistance and rebellions from below (Chase-Dunn and Roberts 2012).

Transnational movements share the widespread belief among actors and organizations that global capitalism is reaching its natural ecological and political limits (Zizek 2015). Transnational movements prioritize a new

paradigm integrating the ecology of all life with social justice, an inner transformation of human beings away from competition and consumption towards full and authentic development, and the creation of new systems that will replace the current capitalist state (Chase-Dunn 2002).

Global capitalism had impacted communities everywhere and they are responding with various forms of local and transnational forms of resistance to neoliberalism and economic austerity by reclaiming economic security and power through the creation of a global commonwealth (Chase-Dunn 2002).

Resistance ranges in strategy and tactics from, *Tar Sands Blockade's* use of direct action, to student strikes, to government building occupations, etc. A few examples of the thousands of communities resisting global capitalism include: the *Abahlali baseMjondolo* shack-dwellers' movement in South Africa; the *Mexican Zapatista Army of National Liberation*; *Cooperation Jackson* in Mississippi; the international online group *Fair.coop*, and more. Many of these communities tend to have few institutional resources or revenue streams, and are working together by co-constructing powerful networks of global collaboration based on mutual aid. Yet, although these communities of resistance and transformation are part of a global discourse, they have yet to unite behind a global vision and strategy or recognize themselves as an economic class with similar interests.

Transitional movements are participating in the co-creation of a new concept of an *economic polity* that does not fit neatly within the constraints of previous theoretical frameworks.

### *Consciously building systems and not just institutions*

Transnational movements are working to build systems for the transition beyond capitalism. These actors are co-creating technological tools, cultural frameworks and institutions together into a set of relationships that are mutually beneficial and internally self-reinforcing.

"A system can be defined as a set of elements standing in interrelations" (von Bertalanffy 1968). Institutions can serve as systems of established and prevalent social rules that structure social interactions (Hodgson 2006). Each system is made up of smaller yet equally important subsystems. When one part of a system changes (or adapts to change), further change occurs, necessitating self-organization as the system tries to equalize itself to the new demands (von Bertalanffy 1968).

My research focuses on developing an analysis of this work on the creation of what I am calling a *global commonwealth*. The politics immanent in the transnational movement approach implies a global order in which economic democracy subsumes the state, what I am calling an *economic polity*, rather than the more common approach of the creation of a democratic global state to regulate and define the economy. I think this approach offers the best hope for challenging the pathologies of capitalism on a transnational global scale.

A global commonwealth is an ordered system of cooperative institutions created with structures that place them outside of and protected from conventional local and global capitalist markets. Production would be distributed but it would be organized at a local level in a system of global commonwealth production. Local micro-production would then be networked through global cooperation to improve production processes. Even though in the global commonwealth model, production would still be local, the social, political and economic organization would be global and oriented toward creating a sustainable abundance for everyone. The question is how to conceptualize and implement this convergence?

Political Economist Gar Alperovitz's (2012) *Pluralist Commonwealth* - a concept he originally devised in the 1970's - is an attempt to resolve theoretical and practical problems associated with both traditional state socialism and global capitalism. Alperovitz places the organizing emphasis on the reconstruction of communities the nation as a community that builds social and economic institutions of wealth democratization outside of capitalism.

Alperovitz argues that we should challenge all levels of de facto political power and the cultural implications of alternative institutional approaches. He advocates for an evolving mix of wealth-holding institutions which, in time, will facilitate a fundamental shift in the ownership of wealth. This approach is slow by design and would not require a major economic collapse of global capitalism for at least several decades, but if successful, the pluralist commonwealth model would slowly move the nation and the planet as a whole toward greater equality:

*“As population continues to grow, the model also moves in the direction of, and ultimately projects, a long-term devolution of the national system to a form of regional reorganization and decentralization - a strategic move important not only to democracy and liberty, but to the successful democratic management of ecological and other pressing issues. Along with the strong affirmation of community, the concept of ‘subsidiarity’ - that as a rule functions should be kept at the lowest level possible, moving only to higher levels when absolutely necessary - is a guiding principle throughout.” (Alperovitz 2012).*

We are now entering a historical moment where the sociopolitical opportunity for a transition from capitalism into a more egalitarian mode of accumulation is at hand (Chase-Dunn and Roberts 2012).

Transnational movements challenge and reject the public’s acceptance of the preconceived notion that the means of survival for any human being should be allocated on a strictly market basis. The inherent problem with neoliberal capitalism is that it treats markets as a product of nature instead of structured relations of power and domination. “Followed to its logical conclusion, neo-liberalism as a prescription for society would mean the end of social reciprocity, of collective redistribution of the social product, an end to the family and eventually to the species itself.” (Robinson 2014).

Blockchains are a new set of exchange institutions. They serve as a sub system within global capitalism, and hold the potential to expand democracy globally.

## **The Democratic Promise of Blockchains**

Blockchains are the technology layer being built on top of the internet. Blockchains are a decentralized ledger system. Strangers now are able to conduct transactions with each other without a third party intermediary, which is referred to as a *decentralized system of trust* (Swan 2015).

Information stored on the blockchain can never be erased and the blockchain can only be updated or altered by the consensus of a majority of the participants in the system. The most widely known blockchain application is the cryptocurrency Bitcoin. Blockchain technology makes Bitcoin *and all transactions* non-reversible, nearly impossible to hack, and decentralized (Swan 2015).

The blockchain offers a level of privacy for users who are pseudo anonymous. They have a public address, a long string of numbers and letters, but their names are not revealed. There is complete transparency, because everyone can see what transactions everyone else has engaged in and their balances right from the first block to the most recently completed block. The blockchain grows with every completed transaction and blocks of information are added to the blockchain in a linear, chronological order (Antonopoulos 2015).

Blockchain technology is being rapidly adopted by governments and financial and technology corporations. IBM, Wells Fargo, London Stock Exchange Group Plc., the European Central Bank, Accenture, Cisco, NASDAQ, Fujitsu, Intel, Mitsubishi have all introduced proposals for blockchain applications (Maras 2016).

The country of Estonia secures much of its banking infrastructure with a blockchain and has created a e-registry with Bitnation to place notarized documents on a blockchain. The Republic of Georgia is partnering with BitFury, a peer-to-peer asset transfer company, to design and pilot a blockchain land titling project (Shin 2016).

Blockchain technology will have a profound impact on the world economy (Swan 2015). At the January 2016 World Economic Forum sessions on technology enabled automation were tagged with the phrase, *Fourth Industrial Revolution*, the economic fusion of technologies blurring the distinctions between the physical, digital, and biological spheres.

Blockchain technology will allow entire sectors of the global economy to massively increase productivity. Decentralized Autonomous Organizations, DAOs, will be thought of as a new corporate form *without people* that programmed to execute a set of protocols. The possibilities of automation through smart contracts, self-executable programs, DAOs, will vastly reduce production costs (Vigna and Casey 2015).

Smart contracts automatically execute agreements made between people and property. In contrast to conventional forms of contractual agreement that might require a lawyer, trustless smart contracts do not need a third party. The blockchain can execute a wide variety of smart contracts associated with internet-connected property, often referred to as the *Internet of Things*. The Internet of Things, will allow machine-to-machine transactions that are autonomous.

The Internet of things (IoT) combined with blockchains is emerging with the potential to push large segments of economic life to near zero marginal cost in the years ahead. This will occur through automation on a massive scale. With the blockchain you have a gigantic ledger that's public. It's like taking this need for departments of people that have their own accounting functions and you can just put that into a shared system that does it irrevocably and perfectly.

The technology behind the IoT is the placement of sensors on almost everything. Sensor are being attached to offices, stores, vehicles, and even human beings. These sensors monitor natural resources, production lines, the electricity grid, logistics networks, recycling flows, and more. For example, when your dishwasher runs out of dishwashing liquid it can automatically go online and purchase more of your favorite brand from the lowest cost retailer. The machine in the retailer's warehouse will then

retrieve the item, package it and place it on a drone that will automatically deliver the package to your doorstep. This entire transaction occurring without any actual human engagement.

Through this process blockchains keep a record of the entire supply chain from the manufacturer, through the point of sale, to the end user which can be used to verify labor and environmental claims. This is an improvement over current ecolabel systems, which are difficult to monitor. Early adopters of the use of blockchains to monitor the supply chain include Providence and Skuchain.

Proponents of the IoT and blockchain technology say that finally social capital will become as important as financial capital, access will trump ownership, sustainability will supersede consumerism, cooperation will rule over competition, and "exchange value" in the global capitalist marketplace will increasingly be replaced by "sharable value" on the Collaborative Commons.

Proponents of increasing use of blockchain technology argue that it serves democracy as a model of distributed consensus without compromising privacy. They say we should maintain our health records, voting, ownership documents, marriage licenses and lawsuits on blockchains. level of democracy and objective "truth" to the digital world that even the physical world can't match. Decentralization of information gives no one government, individual or corporation absolute power online, and none of these entities can lie about past or current events.

The ethical mission statement can now be encoded into the DAO, creating an inviolable social economic contract.

It seems possible thanks to blockchain technology that the moment is near where humanity on a global level could be free from pressing economic concerns. Within a decade, blockchain technology will allow entire sectors of the global economy to scale productivity up in ways that were unimaginable in our lifetime.

“This era will be better for the simple reason that, thanks to digital technologies, we’ll be able to produce more: more health care, more education, more entertainment, and more of all the other material goods and services we value. And we’ll be able to extend this bounty to more and more people around the world while treading lightly on the planet’s resources.” (Brynjolfsson and McAfee 2016)

Blockchains hold the potential to empower communities in new ways in the global economy, but they also present potential challenges. The discussion regarding the potential problems of blockchains needs to be expanded. The instantaneous movement of assets including the ability of corporations to purchase land could severely undermine social review processes. The permanent and immutable nature of information on the blockchain could make divorce and the severing of contracts increasingly difficult. Additionally, DAOs may cause harm and safety mechanisms should be incorporated that allow the shuttering of a DAO that is acting as an independent entity. In the near future, consumers will need to be aware that they are not dealing with living breathing people, but rather a machine.

Also, we need to have a plan in place to maintain a reasonable standard of living for all those workers who lose their employment when blockchain enabled workplace automation leads to massive job losses. The Economic Report of the President (2016) report suggests jobs paying less than \$20 per hour will be automated and those in the \$20 to \$40 range will be cut by about one-third. How will blockchains transform social relations and democracy in the future?

The elements of individual contingency and agency are standing on transforming social and class forces. The various crises being created by global capitalism are creating openings in which political agency may now prevail over previous structural constraints to change (Robinson 2015). A market economy based on private property contains powerful forces of divergence, which are potentially threatening to democratic societies and to their foundational values of social justice (Piketty 2014). Pure and perfect competition in global markets cannot alter the logic of capitalism, which guarantees increasingly faster rates of inequality, ‘terrifying’ in their

implications, “Although the risk is real, I do not see any genuine alternative: if we are to regain control of capitalism, we must bet everything on democracy.” (Piketty 2014).

## **Methods and Cases**

This study uses qualitative and quantitative methodological approaches to explore to what extent does the 21st century technology of blockchains offer the possibility for undermining global capitalism and enabling the construction of a democratic global economic commonwealth?

This research is in the field of global studies. In this context, the case studies approach illuminates larger global processes as manifesting along a local/global continuum with unique spatial and conceptual framing (Darian-Smith 2015). Global studies research contains five key characteristics: transnationalism, interdisciplinary, rooting history to contemporary analysis, exploring critical perspectives, and fostering a new sense of “global citizenship” (Juergensmeyer 2011).

The multiple case study method because it is the appropriate method used to address descriptive research questions (Towne and Shavelson 2002). These communities will provide information in a real-world context providing an invaluable and deep understanding of real-world behavior and its meaning (Yin 2009).

This design builds from Creswell’s contention that a qualitative research process involves data analysis that inductive builds from individuals to general themes and includes emerging questions and procedures as to the interpretation of the meaning of data (Creswell 2014). “those who engage in this form of inquiry support a way of looking at research that honors an inductive style, a focus on individual meaning, and the importance of rendering the complexity of a situation” (Creswell 2014).

Yin lists six sources of evidence for data collection in the case study protocol: documentation, archival records, interviews, direct observation, participant observation, and physical artifacts. Not all need be used in every

case study (Yin 1994). The research will use all six types, combining economic data sets, archived informational movement literature, social media textual analysis, formal and informal interviews, participant observation, analysis of the physical (or virtual) artifacts created, and interviews with other scholars who have done extensive research on these subjects.

There are applications of blockchain technology that are being undertaken in reaction to global capitalism with some consciousness about the creation of a global alternative to capitalism.

Each case will be the main unit of analysis for this study. The cases are bounded entities in that they are organizations. The following three organizations are the cases I have chosen to examine: FarmShare, Fair.coop, and Bitnation. Each of these cases is a unique representation of the movement to build blockchain communities. The cases selected are expected to produce similar results or direct replications of a positive impact on their community's economy.

### *FarmShare*

Worldwide, farmers need empowering technologies in the global economy. Farmers have local knowledge but lack key financial and legal tools. The blockchain can help manage financial, governance, administrative, legal, and creative processes that in many contexts would make cooperative wide scale food production impossible. The blockchain can execute major tasks independently, which would have the effect of limiting corruption, mismanagement, and human error. Blockchains enable collaborative governance voting systems, crowdfunding systems, smart contracts, the ability to quantify reputation value, manage shared property transactions and more.

This means that blockchain integration with co-farming can go far beyond collaborative design of what crops to plant, what land to use and what prices to set. Smart property transactions through the use of smart contracts can facilitate the shared use of farm equipment, tools and

transportation. Smart contracts built on blockchains also create new options for buying goods when they reach a set price or for arranging recurring orders. For example, if you are a CSA farmer and you want to be able to forecast in advance how much revenue you will receive from a strawberry crop, you can use a blockchain to create smart contracts with community members who commit to buying 10 pounds of strawberries at \$10 per pound.

DAO's are organizations which do not require any direct human involvement and run according to a set of incorruptible business rules written as smart contracts. In the case of co-farming, the DAO would take the place of traditional farm management by handling the ordering of seeds and supplies. A blockchain community co-farm can avoid the managerial problems that accompany growth and still encourage community participation in the decision-making processes.

Traditional community supported agriculture farms (CSAs) operate on a shared risk-reward model. Community members pay in advance of the growing season for a box of fruits and vegetables, usually weekly, over the course of the harvesting period. This allows farms to plan exactly how much to plant and consumers often get to influence what types of foods are grown. However, the farmer is busy tending their farm and does not often have the time to engage in customer service or engaging the community members directly with a consensus based decision making process. This also means that joining several CSA farms together into a large network is nearly impossible with traditional CSA technology.

Blockchains like FarmShare, founded by William Edward Bodell, use blockchain technology to facilitate distributed consensus, token-based equity shares and automated governance in order to foster greater community engagement while removing some of the managerial burdens and financial risks from farmers involved in a CSA.

FarmShare community members would receive tokens created and distributed by each participating CSA, which would represent shares of the

harvested crop. FarmShare wants to reestablish community engagement as a peer-to-peer network:

*“Any shareholder may table a proposal on the FarmShare platform to be voted on by the rest of the community, with the ability to automatically enact proposals via smart contract once a predefined number of community members have approved it. The CSA may have an electable chair, add or remove members based on community consensus, allocate funds according to smart contract proposals, and revise its structure or bylaws as deemed necessary by the community.”* (Bodell 2015).

Farming could move to a more micro level through the use of blockchain enabled smartgrids. An example of a smartgrid in food production would be a farm grid comprised of a community of individual home or business microgrowers. Each community member in a farm grid could use a portable hydroponic unit to grow food for their own and community consumption. A map would allow users to find the local hydroponics units with fresh produce in an on-demand real-time updating reservation-taking system. Consumers could own shares or tokens supporting local food cooperatives. They could purchase these tokens directly or receive them through volunteer or educational activity.

### *Fair.coop*

Fair.coop is an international, technology savvy, direct action oriented organization led by a Spanish fugitive. This organization is comprised of dozens of individuals working on both a monetary alternative to currencies used by corporate capitalist countries and a market to spend your Faircoins (<https://market.fair.coop/>). Similar to Bitcoin, Faircoin makes financial transactions from affordable by eliminating the need for banks, removing credit card fees, currency exchange fees and money transfer fees.

Fair.coop’s tagline is, “the Earth cooperative for a fair economy”. Their website (<http://www.Fair.coop/>) is an open membership global cooperative that consciously remains outside of any nation state. Its members are self-

organizing through the Internet to avoid governmental control. The cooperative's stated goal is to reduce inequality everywhere, and at the same time gradually contribute to a new global wealth, accessible to all humankind as a shared commons. From the Fair.coop website, "Fair.coop understands that the transformation to a fairer monetary system is a key element. Therefore, Faircoin was proposed as the cryptocurrency upon which to base its resource-redistribution actions and building of a new global economic system."

In October 2014, they launched a cooperative currency, FairCoin. FairCoin has been designed to adapt the blockchain technology of Bitcoin while incorporating a more environmentally friendly design. This is because Faircoin incentivizes saving and minting new coins rather than the massive computing power required to mine new coins. The membership of Fair.coop believe existing national monetary systems and private banks will do little on their own to reduce inequality or create wealth for all.

An open letter from the Fair.coop explains:

*We need to create a new, decentralized economic system: a metasystem to support, feed and connect multiple autonomous systems built in a distributed manner. Foreign exchange markets trading cryptocurrencies have been expanding rapidly in the past two years. With the concept of Global South, communities can define themselves and support one another from remote corners of the world. It's time for the networked global citizenship to empower themselves as part of a fair economic system, without intermediaries, and create the change that has not been achieved from above.*

Faircoin still faces significant challenges to encouraging widespread adoption of Faircoin, but if it is successful, the benefits for the co-creation of a global commonwealth could be enormous because it would enable interest-free lending and independence from conventional finance.

Fair.coop also plans the creation of complementary financial tools that will work to close the capitalist finance credit loop:

- ❖ Faircredit - a worldwide mutual credit system for exchanging goods and services via Faircoin.
- ❖ Fairfunds - a group of Faircoin donation vehicles. The funds currently include the Global South Fund, the Commons Fund and the Technology Infrastructure Fund.
- ❖ Fairsavings - a multisignature digital wallet which forces a minimum savings period of six months.
- ❖ Faircoop wallet - a linked P2P multisignature wallet and smartphone app.
- ❖ Fairmarket - a source of Faircredit to people who use Faircoin.

The ambition of Fair.coop members is to create a system of globally coordinated networks that link local democratic commonwealth institutions. The basic idea is, "to hack the foreign exchange market by inserting the cooperation virus as a tool for global economic justice."

The blockchain ledger technology of which Bitcoin and Faircoin are built has important potential uses beyond alternative currencies. Blockchain ledgers hold the possibility of trusted peer-to-peer exchange of any kind without third-party guarantors such as government or banks (Clippinger and Bollier 2014). This technology could be used to help many new types of commonwealth institutions emerge. For example, a solar commons could be formed by homeowners to mutually share electricity off a regional smart grid using blockchain ledger transactions to keep track of people's contribution and use of electricity (Hundt, Schub and Schottenfeld 2014).

*Bitnation: DYI Governance #BlockchainsNotBorders*

*"The Nation state construct is an artificial concept that was created during the Treaty of Westphalia 1648, cementing the global oligopoly on governance, which we now know as nation states. It has been around for less than 400 years, and has not worked out particularly well. The end of the Westphalian world order has been*

*imminent for some time, through trends like cheaper transportation, global trade, and - of course - communications.” - Bitnation Founder, Susanne Templehof*

Bitnation is a blockchain project for decentralized governance on a global scale. Bitnation is a Decentralized Borderless Voluntary Nation or DBVN. Common to many blockchain communities, the founders of Bitnation do not want power for themselves. Therefore, Bitnation is structured as a *holacracy*, an organizational form that removes power from central management and distributes it across members of self-organizing teams (Robertson 2015). The stated goal of Bitnation is to soon become a fully formed DAO.

Bitnation is creating the technology infrastructure to eliminate borders. CEO Susanne Templehof said, "I would like to see all legacy systems disappear, the most important being borders. That is the most criminal one. Just because you are born in the wrong area with a piece of paper you can be subject to a horrible government or famine or starvation." (Allison 2015). Bitnation offers blockchain IDs and Bitcoin Visa debit cards to refugees to receive funds from family in the absence of a bank account.

Of the 7.3 billion people in the world, only two billion have a title that is legal and effective and public regarding their control over an asset (de Soto and Cheneval 2006).

In December of 2015 Bitnation partnered with the Estonian government to offer a Public Notary to e-residents allowing for the notarization of their marriages, birth certificates, land titles, business contracts and safe spaces on the blockchain. This registry will be more secure than traditional registries offered by nation states, because it is distributed and immutable. Additionally, a public auditor will also make a real-time audits and it will reduce the time and the cost of property rights registration.

CEO Susanne Templehof said, "We have made a deal with Estonia, and the ultimate goal is to gain recognition for Bitnation as a sovereign entity, thus

creating a precedent for open source protocol to be considered as sovereign jurisdictions." (Allison 2015).

## **Toward Common Property**

“The earth, in its natural uncultivated state is the common property of the human race” (Paine 1797). Yet our common property is currently controlling by a small transnational capitalist class constantly engaged in environmental degradation and the creation of scarcity. Global capitalism is reaching its natural ecological and political limits (Zizek 2015).

I intend to test the thesis that blockchains have the potential to make the Marxian promise of a post-capitalist, post-state democratic commonwealth a reality. The three research cases to be explored will shed light on the extent to which the 21st century technology of blockchains offers the possibility for undermining global capitalism and enabling the construction of a democratic global economic commonwealth.

Democratization requires political participation as a constant activity (Bello 2015). Blockchain technology offers the possibility for the institutionalization of shared power among community members. Traditionally, the organized left has recognized the need to take power to maintain gains, but what blockchains are fundamentally about is distributing power. How will these transnational social change agents working on blockchains reconcile their privileged place in building the system with their desire to create a non-hierarchical next system?

Humanity has created disruptive technological tools with the great potential to restructure society and move from a system of scarcity to one of global abundance. Will those tools be used to eclipse the global capitalist system and create a global commonwealth to the benefit of all?

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