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Discussing computer operating systems, the economist Joseph Stiglitz argues that, 'Just as it's very convenient for everyone to speak the same language, it's very convenient for everyone to use the same operating system'.¹ There's a simple and plain truth in what he says. And in what can now be seen as a clear echo of the prevailing trend in Distributed Ledger Technology (DLT), or blockchain research, as well as development off the back of financial technologies markets towards multi-domain usages, Stiglitz continues by suggesting that, '[i]ncreasing interconnectivity across the world naturally leads to standardisation. Those with a monopoly over the standard that is chosen benefit'.² Blockchain may not presently be a standard owned or intellectually controlled by a single economic actor, but there are certainly a growing number of consortia made up of major legacy financial and tech players hoping to benefit from it. But will this remain the case in the near future, and does it really matter if the development of blockchain technology ends up under the control of, say, one tech giant?

In a very short space of time, arguably the last three to five years, blockchain has risen to capture the feverish imagination of capitalists and entrepreneurs alike across the globe. There is now a morass of such players scrambling over one another in fierce competition to be the winners in this latest round of onanistic technological innovation. Fuelled almost exclusively by hyperbole and, contrary to the nature of the technology itself, a gradual centralization and aggregation of peripheral technological practices that is a direct result of the influence of capitalist logic, blockchain is rapidly emerging as a profitable mainstream means for generating the surplus interventions, accumulations, exploitations and reproductions demanded by the capitalist imagination. Under the duel banners of 'innovation' and 'progress' blockchain has become the means *du jour* for the reproduction of capitalist class power through 'world changing' technology in the so-called fourth-industrial age in which advanced Western capitalist societies now imagine themselves.³ And the forward thrust of blockchain innovation is furious, with record levels of investment as of 2016/17 measured in billions of dollars of venture capital.⁴

1 Joseph E. Stiglitz, *The Price of Inequality*, London: Penguin, 2013, p. 56.

2 Ibid., p. 56.

3 For some commentators it is less an 'age' and more another industrial revolution. For example, Klaus Schwab, the founder and executive chairman of the World Economic Forum. See Klaus Schwab, *The Fourth Industrial Revolution*, New York, NY: Crown, 2017.

4 See James Ovenden, 'Blockchain Top Trends in 2017: What Lies Ahead for One of the World's Most Exciting Technologies?', *The Innovation Enterprise*, 29 November 2016, <https://channels.theinnovationenterprise.com/articles/blockchain-top-trends-in-2017>.

Capital and ‘Disruptive’ Innovation: An Entrepreneurial Love Affair

The issue of blockchain as a means of reproducing capitalist class power does not begin (or end for that matter) with the technology itself but with people. Those who engineer and build the technology might care about blockchain solely as an intellectual challenge. The extent to which it is possible to separate those who, for instance, engineer a piece of software or build a platform from those who seek to exploit the technology (for the purposes of not simply generating personal fortunes in the short to medium term but also for the sheer thrill of the process of being an active economic subject) becomes less clear when they are one and the same person, namely a so-called tech entrepreneur. For this cabal of tech-minded libertarians and anarcho-capitalists blockchain technology offers an opportunity to leverage new markets and enable, as David Golumbia argues, ‘a wide range of extractive and exploitative business practices’ that ultimately ‘increase the power of corporations and capital outside the scope of any attempts by democratic polities to constrain them’.⁵ When discussing technology it is easy to forget the people behind it. Likewise, it is easy for those self-same people to hide behind the technology and ultimately use it to both facilitate and conceal their desires and motivations. Desires that can be markedly different from those to which the technology appears to be aimed — or, at least, towards which they tell the world the technology is aimed.

A single basic technological form with many different uses is the Holy Grail of technological innovation in engineering terms. Just as Stiglitz suggests in the quote earlier. But the economics of these innovations make happy reading for many as well. The reason is simple. If you don’t need to spend time or money changing technology to make it fit multiple applications then you are likely to have the gift of a technological ‘organizational form’ that is highly cost-effective and organizationally efficient.⁶ It is trite these days to highlight capital’s insistence on superseding the old with the new, whether via material obsolescence or some other form of cynical immaterial manipulation of one’s personal and subjective desires (advertising, marketing etc.). We must recognise what the process of making way for (or forcing) the new represents in this context however: a deeply ideological and often highly cynical process that determines the accrual of benefits into only a few sets of hands, and the onward march of capitalist class power through the creation of a constant tension between (supposed) problems and (necessary) solutions.

Much like the comic plotlines of the hit HBO comedy *Silicon Valley*, entrepreneurial narratives of progress and innovation are fraught with fanciful thinking and dream-like logic that see problems as always already indexed to solutions and *vice versa*, *ad infinitum*. Central to the reproduction of capitalist class power on this score is the necessity of a call to duty of individuals willing to play the game of problem versus solution. Akin to Louis Althusser’s interpellated economic subjects, entrepreneurs don’t just answer this call (the hail) made by capitalism, however; they locate their object of desire in the internal reason and (il)logic of capital. Entrepreneurs fall in love with

5 David Golumbia, *The Politics of Bitcoin: Software as Right-Wing Extremism*, Minneapolis, MN: University of Minnesota Press, 2016, p. 69.

6 David Harvey, *Seventeen Contradictions and the End of Capitalism*, London: Profile Books, 2015, p. 92.

innovation, they enjoy the promise of it, and it becomes their ‘passion’.⁷ As such they tell themselves that ideas not income are important, whilst searching, via a cycle of success and failure, for the one big idea that will secure their fortune.⁸

For entrepreneurs and capitalists alike the aim is always to unearth innovations and technologies that ‘disrupt’, which are capable of creating more competition and markets. Blockchain is a prime example of just such a ‘disruptive’ technology, hence why it forms the latest chapter in the enduring love story between capital and innovation. But it is important not to confuse technology with innovation. The latter ‘is what capitalism consists in and what every capitalist concern has got to live in’.⁹ Innovation, like progress, is rooted in historical contingency and narratives of power. ‘The idea of innovation is the idea of progress stripped of the aspirations of the Enlightenment, scrubbed clean of the horrors of the twentieth century, and relieved of its critics’, says Jill Lepore, ‘[d]isruptive innovation goes further, holding out the hope of salvation against the very damnation it describes: disrupt, and you will be saved’.¹⁰

Let’s be honest, however: what passes for technological revolution and disruption are entirely vacuous notions in many of the contexts in which they are celebrated. First and foremost, because nothing actually is disrupted by them. Instead the so-called disruptive technologies sustain and reinforce the *status quo*. In my book, disruption is, a lot of the time, radically *conservative*. Why? Simply because the economic base (*infrastructure*) of capitalism, the very reason why the technology is developed and deployed in the first place, always remains unchanged when exposed to the supposed cosmological forces of disruption. Not only is disruption often a conservative enterprise, it is nothing more than rearranging the furniture in a room but then trying to convince people it’s a different room. There is no shift, radical or otherwise, in what Althusser calls, ‘the determination in the last instance of what happens in the upper ‘floors’ (of the superstructure) by what happens in the economic base’.¹¹ Far from being shaken by innovation, capitalism, like it does post-crises, flourishes thanks to the tinkering of entrepreneurs who like to believe they are changing the world and are champions of social justice. As Joseph Schumpeter says (albeit from another side of the debate), innovation as technological mutation only ‘incessantly revolutionizes the economic structure *from within*’.¹²

The economic base flourishes as an embodiment of ideas and practices that have underpinned capitalism, largely unchanged, since Adam Smith. Innovation has never interrupted the conditions nor the normal course of the ambitions of capital. Quite the opposite. Time and again, capital is reinforced and reinvigorated by the love shown it by economic subjects keen to prostrate themselves at the feet of God-like market

7 Louis Althusser, *On Ideology*, London: Verso, 2008.

8 A popular term in Silicon Valley for those entrepreneurs who aim to build companies from the ground up is ‘bootstrappers’, the classic image derived from the late 19th century fiction of Horatio Alger who painted the romanticism of the American Dream in terms of the plucky ingenuity of the underdog who climbs the ladder to prosperity.

9 Joseph A. Schumpeter, *Capitalism, Socialism and Democracy*, London: Routledge, 2010, p. 73.

10 Jill Lepore, ‘The Disruption Machine: What the Gospel of Innovation Gets Wrong’, *The New Yorker*, 23 June 2014, <http://www.newyorker.com/magazine/2014/06/23/the-disruption-machine>.

11 Althusser, *On Ideology*, p. 8-9.

12 Schumpeter, *Capitalism, Socialism and Democracy*, p. 73.

forces, and recite evolving incantations of technological innovation. The technology might change but, in this process, it is the only thing that does. Only subtle and ineffectual disruptions to the narratives surrounding desires, needs and motivations (i.e. *problems*), that the technology is mobilized to address (i.e. *solutions*), occur. Narratives that can themselves be constantly rephrased or even 'leveraged' by capital in order to, for example, justify the pleasure of incessant innovation and why more individuals and businesses ought to indulge in risk in the name of innovation. 'The advocates of disruption have an affinity with circular arguments', claims Lepore, 'if an established company doesn't disrupt, it will fail, and if it fails it must be because it didn't disrupt. When a start-up fails, that's a success, since epidemic failure is a hallmark of disruptive innovation'.¹³

Insofar as it can only truly be understood within the confines of its own logic and reason, disruption is perhaps best understood as a story of self-love. As an ethos, disruption serves the self-regarding needs and desires of the capitalist class. That's why we can think of it as a form of onanistic self-love that ultimately reinforces the ideological dominance of capital. Entrepreneurs are preachers of innovation and the natural foot-soldiers, narrators and story-tellers of capital. With spiritualized fervour, their narratives are constructed to rationalize innovation for innovation sake, and innovation as *the Good*. But the fact that the same old stories of how this or that technology will change the world for the betterment of all are parroted by entrepreneurs only makes them all the more disingenuous. What's more, it highlights that behind the pretence of such stories are the basic demands of capital steering the desires of the entrepreneur. As a computer science graduate of Stanford University, the intellectual heart of Silicon Valley, put it when asked by the University's magazine to comment on the truth of the motivations of entrepreneurs and the start-up culture he had experienced there: 'entrepreneurs like to "put that spin on it, that we're going to change the world [...] A lot of times, for lack of a better word, that's just bullshit", he said. "The bottom line is that people want to make money"'.¹⁴

'We have seen that the function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention', claims Joseph Schumpeter, 'or, more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way'.¹⁵ Schumpeter's statement paints entrepreneurs as revolutionaries, but let us once again ask: beyond superficialities, what are entrepreneurs really interested in changing, let alone revolting against? Entrepreneurs adopt risk and sacrifice themselves in the name of capital in situations that function as arenas for the *display* of risk and sacrifice. Failure (not success) is the *sine qua non* of what it means to engage in authentic modern business practices. It's as though the myth of Sisyphus has become a principle for the modern entrepreneur to live by, and the world of blockchain is merely the latest stage for the drama to play out on.

Technology > Efficiency > Monopoly

The strategies employed by capitalism regarding the role and place of technologies have remained largely unchanged for two centuries. It is something that is echoed in Althusser's claim as to the radical eternity of (capitalist) ideology: 'The peculiarity of

13 Lepore, 'The Disruption Machine'.

14 Fiona Kelliher, 'The Privilege to Fail: For Startup Founders at Stanford, "Anti-Establishment" and Privilege Go Hand in Hand', *The Stanford Daily Magazine* 1.5 (7 April 2017): 9.

15 Schumpeter, *Capitalism, Socialism and Democracy*, p. 117.

ideology is that it is endowed with a structure and a functioning such as to make it a non-historical reality, i.e. an *omni-historical* reality, in the sense in which that structure and functioning are immutable, present in the same form throughout what we can call history'.¹⁶ Amid the many technologies put into the service of capital over the course of two hundred years, some have proven of use in multiple domains of industry.

Steam power is a classic example from the rise of industrial capitalism in the 19th century, and now there are various computational forms such as blockchain that appear to fulfil the same multi-domain criteria. As cost-effective and efficient, the success engendered by technologies such as these is directly attributable to desires for accelerated innovation and their ability to produce a greater surplus for less labour input, or what André Gorz calls the pushing back of 'the frontier of the *sufficient*'.¹⁷

Efficiency is only one measure of innovative success. Yet, in contemporary Western capitalist societies, efficiency has become *the* measure of what it means for commercial (and social) spheres to function properly. In short, in all walks of life efficiency is good and inefficiency is bad. This determination is rooted in the fundamental logic of capitalism, namely 'to maximise profits, facilitate endless capital accumulation and reproduce capitalist class power'.¹⁸ Innovation has, under capitalism, become a byword for greater efficiency and the aggregation of advantages sought by capital to secure dominance over all social, cultural and political domains. Hence '*the* founding myth of liberal economic theory' in the form of perfect (utopian) competitive markets is exactly that, a *myth*.¹⁹ Instead the logic of economic reason, the aggregation of advantages sought by capital, ultimately points elsewhere, namely monopoly.²⁰

Even apparent radical exponents of the decentralized liberal nature of capitalism such as Ludwig Von Mises cannot help but acknowledge the intractability of monopolies in capitalist reasoning. As Von Mises admits, the centralization of capitalist power in monopolies demonstrates that one's fellow capitalists have managed to find a way to yield greater profits, which is, after all, precisely the aim.²¹ And where profit is the aim it is also that which must ultimately be respected. Therefore, innovation must be examined in light of what it can facilitate not in terms of competition and the growth of markets, at least not as ends in themselves, but rather, in terms of consolidation and monopoly.²²

16 Althusser, *On Ideology*, p. 35.

17 André Gorz, *Critique of Economic Reason*, London: Verso, 1989, p. 115.

18 Harvey, *Seventeen Contradictions and the End of Capitalism*, pp. 96-97.

19 *Ibid.*, p. 132.

20 The tendency towards monopolization is not simply defined in terms of an individual or corporation assuming complete control over a particular resource, but also assumes more subtle forms, such as monopoly rents and pricing that have the effect of restricting the production of certain commodities (see, for example Joseph E. Stiglitz, *The Price of Inequality*; Thomas Piketty, *Capital in the Twenty-First Century*, trans. Arthur Goldhammer, Cambridge, MA and London: The Belknap Press of Harvard University Press, 2014. Notwithstanding the subtlety however, a singular logic remains apparent, one predicated on its own peculiar efficiencies. Hence, one of the most economical (i.e. efficient) ways for an individual to yield the greatest profits for themselves is to deny the source of those profits to others.

21 Ludwig Von Mises, *Liberalism: The Classical Tradition*, Bettina Bien Greaves (ed.), Indianapolis, IN: Liberty Fund, 2005, p. 65.

22 Even Schumpeter admits as much. See for example: Schumpeter, *Capitalism, Socialism and Democracy*, pp. 68-69.

After all, both competition and markets are inherently risk-based, uncertain (unpredictable) and messy, all features that threaten profit and thus also the associated reproduction of capitalist class power. If competition and markets can either be avoided entirely or made to perform or act less like ordinary manifestations of competition and markets do, as largely risk-free entities for instance, then this is the direction in which economic reason under capitalism will ultimately pull. It is the way that entrepreneurs will pave for their capitalist masters. Certainty and immutability, both of which can be achieved in non-competitive monopolies, are highly favoured by capital on this basis.²³

Blockchain (De)centralization

Blockchain came to prominence in 2007/08 with cryptocurrencies. Instrumental in solving the so-called ‘double-spend’ problem, blockchain represented a novel approach to anonymous, secure, distributed and decentralized exchange practices that enabled cryptocurrency communities to circumvent mainstream, traditional and legacy modes of centralized capitalism — what Satoshi Nakamoto referred to as ‘not going through financial institutions’.²⁴ However, as blockchain moves rapidly through its latest round of iterations (blockchain 2.0) expectations are that it will help solve far more than just financial transaction issues. For some the goal is to restore the decentralized make-up of the internet, in its entirety.²⁵

‘Decentralisation’, as David Harvey claims, ‘is one of the best means to preserve highly centralized power, because it masks the nature of this centralized power behind a veneer of individual liberty’.²⁶ In this brief statement Harvey manages perfectly to describe what we are told blockchain is supposed to achieve, and what it is actually being geared-up to achieve in the service of capital. Decentralization is a structural reality in the way blockchain functions. Fine. But if desires that tend towards and are in many cases rooted in centralization are what ultimately inform and are, more importantly, funding blockchain research and development then decentralization very quickly becomes a tool of centralization.

As ideological modalities, cryptocurrencies are by and large situated within the scope of high libertarianism and anarcho-capitalism.²⁷ This is, therefore, the soil from which blockchain in its contemporary form grew. Blockchain 2.0 possess the same DNA but is under the influence of far more mainstream and orthodox forms of capitalism. This means more capitalism and less anarchism. Also, the ‘disruption’ of orthodox

23 To some extent law is a form of social organisation that capital has long expected to make the (business) world more certain and predictable. For its part law often ends up in the face of technological proliferation looking highly conservative, which is not helped by instances of law’s rather ineffectual relationship with technology. A classic example in England and Wales concerns the failure to implement an electronic conveyancing system. See, for example, Michael Cross, ‘Society Backs Reform of “Distracting” E-Conveyancing Law’, *The Law Society Gazette*, 2016, <https://www.lawgazette.co.uk/news/society-backs-reform-of-distracting-e-conveyancing-law/5057115.article>.

24 Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, 2008, <https://bitcoin.org/bitcoin.pdf>, p. 1

25 See Kelliher, ‘The Privilege to Fail’, p. 8.

26 Harvey, *Seventeen Contradictions and the End of Capitalism*.

27 See for example Samuel Edward Konkin III, *New Libertarian Manifesto*, Koman Publishing, 1983, <https://web.archive.org/web/20120223021118/http://agorism.info/NewLibertarianManifesto.pdf>; and, Fiona Kelliher, ‘The Privilege to Fail’, p. 9.

financial models proposed by Nakamoto has not translated into the actual disruption of the fundamental logic of capitalism underlying the research, development and use of cryptocurrencies and blockchain. In the hands of entrepreneurs who service their capitalist masters, therefore, blockchain is providing a means of (re-)centralizing certain networks and systems rather than decentralizing them.²⁸

Appearing to contradict the centralizing tendencies of capitalist class power (the fact that capital seeks monopoly), it is believed by the faithful that blockchain reproduces new freedoms and libertarian class power across distributed, decentralized computational nodes.²⁹ In accordance with a liberal myth of capitalism that favours more markets and more competition in order to countermand the threat of monopoly and centralization, blockchain creates the perfect illusion of decentralization. Those who insist on decentralization as the essence of blockchain's libertarian credentials are misguided.³⁰ Captured by the 'force-field of contemporary capitalism' each fragmented node instead plays a part in sustaining the dominance of capitalism's economic reason.³¹ One thing is for sure, blockchain is now firmly established as a play-thing of legacy capitalist institutions and the various startups who come begging to the table for crumbs in order to satisfy their desire for failure. As Lepore argues, 'the upstarts who work at startups' are told by venture capitalists and investors 'forget rules, obligations, your conscience, loyalty, a sense of the commonwealth. If you start a business and it succeeds, sell it and take the cash. Don't look back. Never pause. Disrupt or be disrupted'.³²

Innovation is and has always been 'immediately perceived as opening new avenues for economic growth', countering the threat to capital of finite economic expansion and consequently heralding the dawn of a new and expansive 'vision imposed by a widening of technological horizons'.³³ Yet innovation for innovation sake, if that is the

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- 28 Centralization is a problematic concept in this context precisely because it is often seen and spoken about by the likes of Hayek, for example, as symptomatic of anti-capitalist (communist) tendencies rather than the ultimate aim for capital itself. As a product of capitalist economic reason and a logic that privileges efficiency as essential to maximising accumulation and profit however, centralization *qua* monopoly clearly offers a 'solution' to the messy uncertainty ('problems') of competition and markets faced by stakeholders of capitalism. In other words, given the choice between negotiating with other stakeholders in the marketplace, or the ultimate concentration and consolidation of resources, wealth and power in one pair of hands, capitalist logic and reason favours the latter. As Marx claimed in his definition of the *law of centralization*: 'Capital aggregates into great masses in one hand because, elsewhere, it is taken out of many hands' (Karl Marx, *Capital: Volume 2*, London: J.M. Dent & Sons Ltd., 1930, p. 691).
- 29 As David Golumbia claims: 'From a cyberlibertarian perspective, governments – all governments, not simply whatever current 'bad' government we describe as doing wrong – exist *only* to curtail the freedom that is inherently negative [...] to be 'free' simply *is* to be 'free' from government' (David Golumbia, *The Politics of Bitcoin*, p. 6).
- 30 Blockchain might appear to represent a breakthrough for anarcho-capitalists seeking the complete absence of government from cyberspace. But, at least from the perspective of left critique, the vacuum left by the retreat of the State threatens to be filled, even more than at present, by the insidious forces of economic reason that colonise and cannibalise the political. The State may not be the best option as a force in the development or control of blockchain, but the alternative in the form of capitalism is hardly an improvement. What both positions share however is the ability to conceal the centralization that begets decentralization.
- 31 Lorenzo Chiesa and Alberto Toscano, 'Agape and the Anonymous Religion of Atheism', *Angelaki Journal of Theoretical Humanities* 12.1 (April 2007): 118.
- 32 Lepore, 'The Disruption Machine'.
- 33 Robert Heilbroner, *The Worldly Philosophers*, London: Penguin, 2000, pp. 102-103.

truth of what we are more often than not faced with, straddles a line between barbarism and civilization, and produces, as André Gorz argues, an ‘a-critical submission to the technological imperatives of any kind of machinery whatsoever’.³⁴

Blockchain research, development and use is suffused by capitalist class power. Far from being wholly novel or causing any radical shifts in the socioeconomic world (what entrepreneurs like to imagine as ‘disruption’), blockchain, at least as we presently find it, can simply be added to the long list of technologies that have been drafted into the service of capital. This in order to reinforce and guarantee the reproduction of capitalist class power. Even Joseph Schumpeter’s notion of ‘creative destruction’ that only revolutionizes capitalism ‘from within’ reflects the type of ‘innovative’ capitalist strategy that blockchain is truly part of.³⁵ And so blockchain really only deserves to be understood in light of the fundamental aims of capitalism. This makes critique of the technology and its sociocultural affects, rather than a-critical fetishization of *the new*, central to understanding what is at stake from blockchain now and in the near future.

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34 Gorz, *Critique of Economic Reason*, p. 87.

35 Schumpeter, *Capitalism, Socialism and Democracy*.