

Exit, voice, and forking

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Abstract: This paper offers a new framework to understand institutional change in human societies. An ‘institutional fork’ occurs when a society splits into two divergent paths with shared histories. The idea of forking comes from the open-source software community where developers are free to copy a piece of software, alter it, and release a new version of that software. The parallel between institutional choice and software forking is made clear by the function and politics of forking in blockchain implementations. Blockchains are institutional technologies for the creation of digital economies. When blockchains fork they create two divergent communities with shared transaction ledgers (histories). The paper examines two instances of institutional forks. Australia can be seen as a successful fork of eighteenth-century Britain. The New Australia settlement in Paraguay can be seen as an unsuccessful fork of nineteenth century Australia.

Keywords: Institutional choice, blockchains, Australian history, New Australia, open source software

1. INTRODUCTION

When I design a lot of other systems, I usually ... try to design it from the start the way that I want it to be. But Bitcoin is how it is right now, and we’re bootstrapping this network that already has a lot of value, and the real engineering challenge isn’t ... how would I build it from scratch better, but how can I take what exists right now and modify it in a way that isn’t going to break it that’s going to add the functionality that we want (Lombrozo 2017)

Society is nothing but a succession of exchanges
(Destutt de Tracy 1817, p. 6)

Albert O. Hirschman (1970) contrasts two methods by which citizens and consumers can exert power over firms and states. They can *exit* (migrate to a different jurisdiction or take their business elsewhere) or they can exercise *voice* (vote, protest, complain, and otherwise exercise influence over the unsatisfactory organisation). This paper offers another option: they can *fork*. Forking is a form of group secession (exit) that takes an existing set of institutions and creates a new ‘society’ with a shared history but divergent

futures. Exit can be an entrepreneurial activity (Gofen 2012). Congleton (2010, p. 11) notes that *formeteurs*—that is, individuals or groups who entrepreneurially create new organisations—frequently model their new organisations on existing organisations. Forking describes a special case of this organisational-institutional formation, in which existing forms are ‘copied’ with modifications, exploiting (deliberately or otherwise) the organisational-institutional past.

The concept of forking comes from the open source software (OSS) community. Where proprietary software (that is, software protected by copyright) requires potential competitors to create new products, OSS allows developers to copy an existing codebase, modify it, and then release a new variety of the program. For example, the popular GNU General Public License 3.0 allows anyone the ‘freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs’ (Free Software Foundation 2007).

This paper draws a relationship between forking in open source software - in particular blockchain technology - and political secession in which seceding groups inherit, alter or abandon the institutions of the originating society. Economic and political institutions are ‘open source’ in so far as there are no meta-rules that prevent potential institutional entrepreneurs from choosing to adopt them in new societies. There is nothing *proprietary* about the common law, representative parliaments, central banking or the bourgeois virtues. However, there are strong path dependencies that push secessionists to replicate originating institutions even in their ‘new’ societies. Secessionists do not rewrite the institutions of their societies from the bottom up. Rather, they consciously modify and adapt those institutions to meet specific pragmatic needs or philosophical visions, creating a fork of their originating society.

In this paper we consider two forks: European settlement in Australia (a fork of the United Kingdom in 1788) and the New Australia settlement in Paraguay (a fork of Australia in 1893). The former is usually described as a *settlement* or a *colonisation* and the latter a *colony*. William Lane’s settlers came at the invitation of the Paraguayan government. By contrast Indigenous Australians had no say in their dispossession after 1788. The expropriation of property rights of the existing inhabitants was a deliberate decision made by the colonists (Brooks, Davidson and Faff 2003) that constitutes a distinct (and devastating) institutional choice. While readers should understand that settlement was forced in the case of Australian convicts and voluntary in the case of the New Australians, each new society had to make decisions about which institutions in the old society to keep and which to discard.

Forking has been a feature of software in the public domain since the earliest days of computing. However, the similarity between secession (and colonisation) and software forks has become evident since the development of open source blockchain technology—what Davidson, De Filippi and Potts (2018) call an *institutional technology* (see also Berg, Davidson and Potts 2019b). Blockchains are the underlying decentralised ledger technology that powers cryptocurrencies like Bitcoin (Nakamoto 2008a) and distributed computing technologies like Ethereum (Buterin 2014). Like other operating systems, blockchains are multi-sided markets whose value is partly derived from network effects (Rochet and Tirole 2003; Rysman 2009). Yet blockchains are economically distinct (Catalini and Gans 2016) three-sided markets where buyers, sellers and miners each have to be satisfied (Berg, Davidson and Potts 2020). Blockchains are a co-ordinating institution for creating *new economies*—they are a new environment for exchange, not just a facilitator of more efficient exchanges.

Exchanges in blockchains are governed by the rules of the network and enforced by consensus mechanisms. In this context, blockchains are *constitutional*: they offer a framework on which diverse ends can be pursued (Alston 2019; Berg, Berg and Novak 2020; Berg, Davidson and Potts 2019a; Bodon et al. 2019; Rozas et al. 2018). Their value is derived from a history of exchanges recorded on the shared ledger. Blockchains are also highly susceptible to forking. The original Bitcoin protocol is licensed under the MIT open license, and new cryptocurrencies have been established by copying and then making changes to the Bitcoin codebase. We discuss this below.

Where Davidson, De Filippi and Potts (2018) use institutional analysis to shed light on the institutional significance of the blockchain, this paper does the reverse: it uses the dynamics of institutional innovation in the blockchain industry as a model to shed light on historical institutional innovation and change. Blockchains were not invented to be used as an economic model to be mapped onto the real world. However, they function as an institutional ‘closed loop’—they are institutional technologies in which the rules are self-enforcing. As a result of solving the practical challenges of implementing a decentralised shared ledger (that is, maintaining a consensus for coordination in the possible presence of opportunism) Nakamoto (2008a) created a model of an organised social system.

North (1990) describes institutions as the rules of the game: “humanly devised constraints that shape human interactions”. Institutions facilitate political, economic, and social exchange when transaction costs are non-zero. Institutions can be explicit codes that direct and prohibit behaviour (such as coded statutes and regulation), legal-regulatory meta-frameworks (such as the common or civil law) or norms, customs and traditions that structure and coordinate economic choices (Denzau and North 1994). In this mode, institutions coordinate mutual expectations about future action, but these expectations are fundamentally backward-looking, based on limits set by prior choices and the imaginary result of choices yet to be made (Shackle 1979). In the institutions-as-equilibria approach (Greif and Kingston 2011), institutions are mutual expectations between exchanging agents in which the rules are self-enforcing—that is, rule enforcement is endogenous.

Given these relatively static conceptions of institutions, the question is how institutions change. Institutions evolve in historical time under conditions of path dependence (David 1994; North 1991). Another way of describing this is that institutions both change and prevent change. Glaeser and Shleifer (2002) and La Porta, Lopez-de-Silanes and Shleifer (2008) develop a ‘legal origins theory’ to show that the economic performance of colonial and post-colonial societies is at least partly determined by the legal framework of the settling empire. Common law countries that inherited their institutions from the United Kingdom are better at protecting outside investors than countries that inherited civil law systems (particularly French civil law systems). There is, however, considerable variation among countries with a shared system, as there is between systems. Path dependency constrains but does not prevent institutional change.

Potts (2007) explores the evolutionary theory of institutions as a three-step process: the entrepreneurial creation or origination of a rule (institution), the adoption and adaptation of that rule by a population of carriers, and finally the retention of that rule by the population. It is at the retention stage that the rule achieves equilibrium. Evolutionary entropy means that two separate - but otherwise identical - populations will diverge over time as institutional entrepreneurs develop new ideas, and those ideas are differentially adopted by those populations. While identical populations are never perfectly replicated, the process whereby one rule-population equilibrium becomes two is a fork.

The paper proceeds as follows. Part 2 outlines the role of forking in the open-source world and the blockchain ecosystem as a model of institutional change. Part 3 discusses the Australian colonies as a successful fork and New Australia as a case study of an unsuccessful fork. Part 4 concludes.

2. FORKING AS A MODEL FOR INSTITUTIONAL CHANGE

Bitcoin and most implementations of blockchain architecture are OSS projects. The blockchain industry has inherited the practice of forking from that movement as well as many of the norms surrounding it. Forking occurs when collaborative software development bifurcates along two or more paths. Each path inherits the previously developed code and modifies it independently, creating two or more unique pieces of software. The term forking was first used in public documentation by Allman (1980), describing how a version control system could describe code changes that branched off, and was included in the POSIX operating system standards to describe a process of making a copy of itself (Robles and González-Barahona 2012).

Forking creates two development and user communities that use technologies with a shared parent but that have limited or no cross-compatibility.

Forking is a social phenomenon not simply a technical one. It is governed by strong social norms and taboos that have evolved to protect the reputation of developers (Kogut and Metiu 2001; Raymond 2001; Stewart and Gosain 2006). Considerable controversy surrounds software forks. Forking has been described as the ‘cardinal sin’ of open source software (Ågerfalk and Fitzgerald 2008, p. 390). Objections typically focus on the potential for duplicative and therefore ‘wasteful’ development work, and a divide among developers that may mean less focused attention is paid to the subsequent software (Raymond 2001). By contrast, forking can also reduce the need to force a consensus on future development direction and thereby reduce social tensions (Dash 2010), provide valuable competitive pressure (Fogel 2005; Weber 2004), and safeguard projects from opportunistic actors (Nyman et al. 2011).

Why do development communities fork? In a study of 566 forked programs on the open software platform Sourceforge between 1999 and 2010, Nyman and Mikkonen (2011) identify seven distinct self-reported motivations for forking. Half of all forks identified were to add content to, or refine the focus of, the software. A quarter were ‘technical’ modifications, including porting the software to a different operating system or hardware, and providing for technical improvements. Other forks were to revive abandoned projects, deal with licensing issues, language or regional changes. Only 4 per cent were for experimental purposes and a very small number—just 4 of the 381 identifiable motivations—reported the fork was due to community disagreements or breaches of trust. By contrast, Viseur (2012) looked at a sample of 26 larger and more mature projects and found a much higher percentage of forks driven by problems of project governance or cultural differences within the community (46 per cent). Technical motivations were attributable in 42 per cent of forks. (Forks which resulted in proprietary software were not considered.)

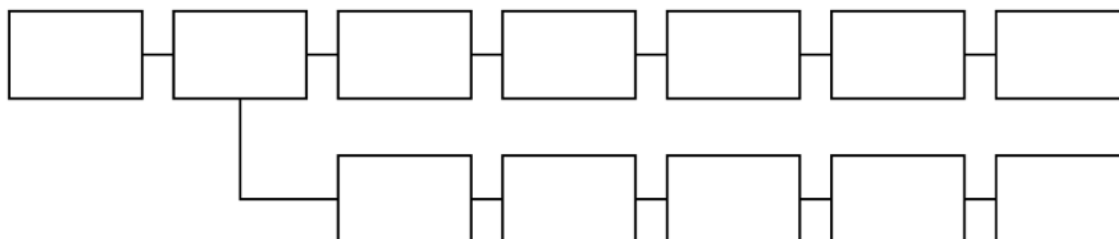
Forking is common in the blockchain community, and there are a number of distinct categories of forking. The most common type of fork occurs at the consensus layer, when two or more miners produce valid blocks near simultaneously. This event causes a divergence in consensus on the chain. Miners then seek to coordinate around the split chain that has the most acceptance, re-establishing consensus. Berg, Davidson and Potts (2019a) describe this as a *block fork*. By contrast, *modification forks* occur when miners and full economic nodes disagree on changes to the protocol and adopt different rulesets, resulting in a (usually) undesired split in the chain. The result of a modification fork is to leave owners of tokens in the original chain with ownership of tokens in both split chains - that is, each chain retains a shared history going back to the first block but has divergent histories after the split. Finally, a *coin fork* occurs when developers take the source code from an existing project, modify it, and launch a new blockchain network with a distinct history. Typically, both modification and coin forks feature iterative innovations, building on otherwise successful protocol designs to modify features.

As an open source project, Bitcoin has been subject to a large number of forks. Early modification forks, when the network lacked a critical mass, were implemented through unilateral software upgrades by Nakamoto. The Bitcoin protocol has forked repeatedly as some miners have sought to increase the block size as part of attempts to increase the transaction throughput of the network. These ‘altcoins’ have sought to maintain a brand and ideological connection with the Bitcoin chain include Bitcoin XT (which forked in 2015), Bitcoin Classic and Bitcoin Unlimited (which both forked in 2016), and Bitcoin Cash (which forked in 2017).

Coin forking altcoins that offered fundamental changes to the design or purpose of the protocol dropped the Bitcoin name. Early examples include Namecoin (launched in 2011), which allowed for data to be stored within the blockchain transaction database, allowing for identity-based management such as domain names. Litecoin (launched in 2011) adopted larger block sizes, an alternative hashing function, and a larger maximum number of coins. ZCash (launched in 2016) offers privacy-preserving shielded transactions. These forks are conceptually distinct from alternative blockchain implementations that have been built from the ground up, such as Ethereum, Steem, or Tendermint. However, these alternative implemen-

tations can also fork. The most famous example is the modification fork experienced by Ethereum in 2016, where the legacy chain took the name of Ethereum Classic.

Figure 1: Forking in blockchain



In Figure 1 we show an abstract representation of a modification fork in blockchain. Blockchains group transactions into blocks that are strung together (hence ‘blockchain’). Each block contains a cryptographic summary (a ‘hash’) of the previous block, allowing external observers to validate the chain all the way back to the first block (the ‘genesis’ block). The figure depicts a chainsplit that begins at the third block in the chain. Both the original chain on top and the forked chain below maintain the same histories (in the first and second blocks) but have divergent paths.

Open source software and blockchain implementations have distinct philosophical cultures, coming out of the hacker and cypherpunk communities respectively (Hughes 1993; May 1988). Before its public release, Nakamoto (2008b) described the system as “very attractive to the libertarian viewpoint if we can explain it properly”, and political philosophy—particularly libertarian and anarchist philosophies—motivated many early community participants (Faife 2016; May 2017). Disputes about the desirability of forking have pivoted on the technical, economic, political, and philosophical implications of the fork. For example, one former Bitcoin Core developer wrote of how the dispute over the Bitcoin block size “reflects deep philosophical differences in how people view the world” (Hearn 2016). These debates often hinge on questions of legitimacy, given the collaborative governance structures and norms of the Bitcoin community (Back 2015). The question of whether Bitcoin XT was a fork or an effort to create a new consensus on the core Bitcoin chain was challenged by moderators on the Reddit Bitcoin forum, *r/bitcoin*, who disputed the legitimacy of discussing XT on that forum (theymos 2015), and accusations of censorship on topics concerning block size led to the Reddit Bitcoin community splitting (Blokke 2016).

Lehdonvirta (2016) describes the disputes over forks as a problem of governance in the Bitcoin ecosystem, which had been designed as (and is still often conceived as) a domain of mechanism design rather than one in which problems of governance—and politics—are pervasive. De Filippi and Loveluck (2016) argue that the contest around the Bitcoin block size reflected a crisis of governance, where no clear constitutional mechanism had been designed to resolve disagreements about the future of the protocol (however see Allen and Berg 2020).

3. INSTITUTIONAL FORKS IN HISTORY

Blockchain modification forks consist of shared histories and iterative institutional variation. They create two cryptocurrencies with identical ledgers up to the point of divergence. Institutionally, they can be said to have shared histories, inheriting the past history of exchange transactions. Their relative future value is determined by the future economic activity that occurs on the different chains, which is in turn determined by the institutional variation and the economic and community environments in which they operate. Success depends on the effectiveness and sustainability of the institutional variation and the environment in which the fork is deployed (i.e. what users come across to the new cryptocurrency and whether new users can be attracted).

The preceding paragraph, indeed, can also serve as a reasonable description of the uncertainties surrounding settlement in Australia. Would the institutions they inherited from Britain be successful in the antipodes, how should they be varied to adjust to the new environment, and would further settlers be attracted to the Australian settlement?

a) A successful fork: Australia

In January 1788 Captain Arthur Philip established a colony at Sydney Cove, Port Jackson, in today's New South Wales. At the time of this settlement, there was an indigenous population on the Australian continent of approximately 750,000 to 800,000 (Hunter and Carmody 2015; Mulvaney and White 1987). However, the post-settlement dispossession of indigenous property rights (see Brooks, Davidson and Faff 2003) meant that the Aboriginal population was prevented from making a direct contribution to the institutional choices of colonial society. Although Aboriginal people contributed to the settlement economy in the labour market, the stock of existing indigenous economic activity (described in Gammage 2011; Pascoe 2014) was not integrated into the new settlement (McLean 2013).

The Port Jackson colony was established as a penal colony to relieve prison overcrowding in Britain. The end of penal transportation to American colonies after the Declaration of Independence and the failure of an interim measure—confinement in hulks on the Thames—presented a need to establish an alternative destination for felons. A possible secondary, but unpursued, rationale was to establish a permanent naval presence in the Pacific (Frost 2012) and acquire resources, such as flax and naval timber, that would serve geopolitical ends in Europe (Blainey 1966). The dispute over the motives of the founding of Australia has continuously and inconclusively raged in some way since 1888 (Frost 2012; Martin 1978). Nevertheless, the settlement was not intended just as a penal 'dumping ground'. Australia was chosen over alternative sites such as The Gambia because the climate was understood to be mild and the soil fertile enough to support a self-sustaining colony in a reasonably short time. For the same reason, the colony was granted a governor and a marine detachment, rather than leaving the convicts to fend for themselves (Abbott 1995).

The extent to which Australian institutions were derived from British ones was not immediately obvious. Shann (1930) famously described the colony in its earliest years as a barely functioning military despotism, with public provision of agriculture ("prison communism") and a rationing system. Yet as Hirst (1983) has argued, despite the dictatorial illiberalism of its earliest years, the colony was in some sense born 'free'—the convicts were treated as stakeholders in the new society. Englishmen transported to Australia as convicts were still Englishmen and carried with them the stock of liberties and institutional relationships that they had enjoyed in Britain (Atkinson 1994). In his analysis of the Kable case, the first civil case in the first Australian civil court, Neal (1991) shows how convicts were seen to have property rights and the right to have those enforced against an authority figure. The half century towards self-government involved the adoption and integration of British civil, economic, and legal institutions into the colony, such as jury trials and parliaments.

These British institutions were less chosen than confirmed. Early Australian public culture was an enlightenment, neoclassical one (Berg 2017; Dixon 1986; Gascoigne 2002), less imported or adopted from Europe than continued. As the nineteenth century liberal James West put it, "In her colonies [Britain] recognises the reproduction of herself, and, without envy or jealousy, awaits the hour when the communities she has sent forth shall be enrolled among the nations" (West [1854] 2001). The conservative James Macarthur wrote of the "British character ... spread over the uncultured regions of primeval nature" in Australia and the United States (Macarthur 1837, p. 282). This Britishness was defined partly as the institutions and ethos that could be recognised and imported from Britain and partly defined in contradistinction against the indigenous population, which were assumed to be lacking in British virtues (Buchan 2015) and presented a challenge to the orderly implementation of its institutions.

Nevertheless, the Australian colonies were a fork of their British inheritance, not a straight transplantation. The rights which the convicts enjoyed as British subjects exceeded those held by felons in Britain, who were seen by the legal system as ‘civilly dead’ (Neal 1991). To allow convicts to hold property and sue in this way was to transport the “personal autonomy of English law ... to Australia, but in a new form” (Kercher 1995, p. 23). While that discrepancy between Australian and English convict law was removed in 1820, it was one of the first of a century of institutional choices, deliberate or otherwise, that had to be made by inhabitants of the Australian colonies.

Australian culture and identity were shaped by the human capital which settled in the colonies—not a cross-section of British society, but convicts and ‘paupers’. Ward (1956) writes that “In early Australia convict and working-class attitudes strongly influenced those of the whole community”, whereas in Britain aristocratic and upper-middle class manners and culture set the tone for British society. In his history of the English, Tombs (2016) emphasises the function of politeness moderating difference, extolling rationality and sincerity. By contrast, Anglo-Australian culture is ironic, anti-sentimental, ‘tough’, and egalitarian, as linguistic evidence amply testifies (Goddard 2006, 2009, 2012; Mullan 2010; Peeters 2004; Wierzbicka 1986, 1997, 2002).

A more concrete institutional choice faced by the colony was whether to maintain the structures of British privilege. Cochrane (2006) traces the contests over democratisation in New South Wales as the colony struggled with two competing visions of Australia: the establishment and maintenance of a ‘bunyip aristocracy’, or a more radically popular democracy (see in particular Pickering 2001). These institutional choices had a material effect on the success of the colony. McLean (2013) argues Australia’s relatively more liberal political institutions and land reform that limited the build-up of land empires meant that it avoided the development path of Argentina—a country with similar land endowment but whose economic development has been poor relative to Australia. The similarities between these two countries has meant that comparing Australia and Argentina is a mainstay of understanding Australian success (Duncan and Fogarty 1984).

Yet as Ville (2013) identifies, Australian and Argentinian prosperity only diverged in the 1930s, long after these institutional choices were made. If we are to view European settlement in Australia and Argentina as a natural experiment, then from an institutional perspective, the two colonies, one a fork of Britain, the other a fork of the Spanish empire, were operating with a near-completely different rule set and human capital stock (user base). At one fundamental institutional level, Argentina is a (French) civil law country and Australia a common law country; a distinction which La Porta, Lopez-de-Silanes and Shleifer (2008) show has a deep and pervasive influence on economic outcomes (see also Glaeser and Shleifer 2002; Porta et al. 1997, 1998). The transplantation of a legal system:

involves not just specific legal rules (many of which actually change later) but also legal institutions (of which judicial independence might be the most important), human capital of the participants in the legal system, and crucially the strategy of the law for dealing with new problems. Successive generations of judges, lawyers, and politicians all learn the same broad ideas of how the law and the state should work. (La Porta, Lopez-de-Silanes and Shleifer 2008, p. 307)

As this suggests, these ‘broad ideas’ include beliefs and ideologies that underpin and draw from those legal rules, institutions, and educations. But that transmission is not costless, and La Porta, Lopez-de-Silanes and Shleifer (2008, p. 288) emphasise how the transplanted institutions were “changed, evolved, and adapted to local circumstances”.

In the institutional fork model, the initial circumstances were technical. The original fork was driven by resource constraints in Britain (prison overcrowding and possibly access to flax and timber). Despite the vast initial institutional difference between relatively liberal Britain and penal colony despotism, the overriding goal of most settlers in the early decades was to replicate as close as possible the society that they left.

Early Australian libraries were full of the works on legal and political economy that settlers believed characterised Britain at the time. Berg (2017) finds 132 copies of Adam Smith's *Wealth of Nations* and 61 copies of Blackstone's *Commentaries* on sale in Australian colonies between 1800 and 1849.

Yet the process of forking meant that the new colony had institutional divergences that play key roles in Australia's later development. Some of these differences (such as treating convicts as legal entities with property rights at law) were established in order to pursue the broader intent of British institutions despite necessarily diverging in the specifics. Larger and more consequential to Australia's long-run development was the fact that the spread of human capital in the colony was significantly different from Britain. This had specific institutional consequences, shaping language and culture, resisting the adoption of class structures that would have otherwise been inherited from Britain, and heavily influencing the path towards self-government.

2. An unsuccessful fork: New Australia

"Where we shall we be able to form new habits, uninfluenced by old social surroundings, where none but the good men will go with us" (Souter 1968)

"Most forks are failures. They find that the things they needed were not actually worth doing and as a result, most forks die" (Torvalds 2011)

New Australia was a settlement founded in Paraguay in 1893 that was intended to be organised according to the principles of communal property ownership and white racial hegemony. New Australia is a fork of Australia that presents a case study of a failed institutional fork. Most accounts of New Australia attribute its failure to resource scarcity ('Colonia Cosme' 1895), the dictatorial character of its formateur William Lane (Marsden 1896), or the 'selfishness' of the colonists (Souter 1968). Here we frame its failure in institutional choice. After all, Australia in 1788 also suffered from these defects. Rather, the choices made to vary Australian institutions in the new society were philosophical and unsuited to the colony's development. Institutional variations were forced on the settlement of Port Jackson by circumstance (the needs of a penal, rather than free settlement, for example). For New Australia, institutional variation was the rationale for the entire project.

New Australia was conceived in a formative period of the Australian labour movement. In the 1890s many in that movement wished to establish a society along socialist lines (Whitehead 1997). Lane, a prominent leader in the 1891 shearer's strike and editor of the *Worker*, was inspired by the Texan and Illinois utopian socialist colonies founded by Étienne Cabet (see Kagay 2013), and the Topolobampo in Mexico founded by Albert Owen (see Katscher 1906). Lane would also have been aware of the thousands of people living in communal settlements across Tasmania, South Australia, Victoria, New South Wales and Queensland in the late 19th century (Foster 2005). After a failed attempt to obtain land in Australia for his settlement, he set his mind on South America, where the Paraguayan government was trying to encourage settlement to resolve a demographic crisis (Kellett 1997).

The first colonists left for Paraguay in 1893. The institutions of New Australia were to be governed by the 'Basis for Communal Organization', to come into effect when 500 colonists had reached New Australia; it called for the communal ownership of the means of production and distribution. In addition, any surplus wealth accumulated would be distributed amongst all members, with no variances based on sex, age or ability (Souter 1968). Underlying this was 'mateship' that would provide the economic and political ethic of the settlement. Mateship (as Lane understood it) was a masculine, fraternal egalitarianism (see Dyrenfurth 2015) that could coordinate activity in the absence of property rights (Whitehead 1997). As Lane wrote his 1892 novel *The Workingman's Paradise*, mates

is them wot's got one purse. If I go to the shed with Jack an' we're mates an' I earn forty quid an' Jack gets sick an' only earns ten or five, or mebbe nothin' at all, we puts the whole lot in one pus, or if it's t'other way about an' Jack earns the forty it don't matter... If Jack's got the pus an' I want half-a-crown, I says to Jack says I, 'Jack, gimme the pus.' An' if Jack wants ten quid or twenty or the whole lot he just says to me, 'Bill, gimme the pus.' I don't ask wot he's goin' to take an' I don't care (Lane 1892, 113)

Mateship, however, was understood by Lane to be an *inherited* institution, rather than a variation of Australia's institutional setup. Mateship is an ethic that was seen to be held by the working class. The poet Henry Lawson, who was in the same social group as the New Australians, wrote of mateship as being a quality where those in need are selflessly helped without thought for reward (Page 2002; Souter 1968; Whitehead 1997).

Consistent with this approach to institutional selection, Lane was also particular about which Australians would be permitted to settle in his new colony. Lane's vision was of an idealised working-class segment of Australians along racial and moral lines. Paraguay was attractive because the remoteness meant that the "weak" would be discouraged from attempting the journey (Souter 1968). The settlement was to exclude those who lacked fluency in English, those living together out of wedlock, those not willing to abstain from alcohol, those who had in the past been disloyal to the labour movement, and any non-white settlers. As Lane saw it, New Australia could be the realisation of his (and many in the labour movement's) anti-Asian views. White racial homogeneity was almost as important as the abolition of private property, as those who went to Paraguay would be "free from the weaknesses of outside races" (Mawson 2011, p. 94).

The instability of the 'mateship' property regime was apparent even before the colonists reached Paraguay. The first voyage featured the loss of most of the cutlery due to carelessness and neglect of common property. Bartering with the Guaraní people in Paraguay was a 'constant source of friction' at it gave rise to questions over ownership over shared goods (Souter 1968; Whitehead 1997). As new settlers arrived in the colony, existing settlers were expected to offer the arrivals 'a pound of flour and half a pint of treacle', but this was resented. One colonist reflected that 'however workable communism may be for angels, we were not suited for it. Communism is an exceedingly high religion. In practice it is only a few who are fit to live that high life' (Souter 1968). There was little agricultural production in the colony and in a few years increasing instances of theft, particularly of cattle and horses, as well as heavy drinking. By 1897 there was an almost complete reversion from communal to individual ownership in New Australia (Mawson 2011). Lane had left New Australia in May 1894 to establish a new colony, Cosme, 72 kilometres to the south. In Cosme the wage system was introduced virtually at founding (Souter 1968). Native Paraguayans were paid to clear woodland, although at the time it was remarked by one colonist that "it strikes me that it is the thin edge of the wedge which will bust up the brotherhood" (Whitehead 1997).

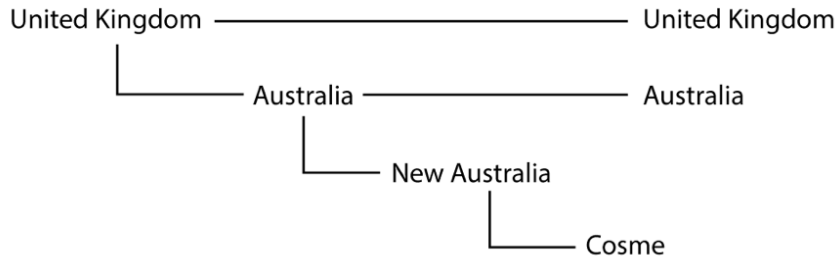
The total population of New Australia and Cosme at any one time likely never numbered more than 350 (Souter 1968). Within a few years, communal ownership ceded to individual ownership and production. Over time, even social habits and language adopted to local customs. Spanish became increasingly adopted by the colonists, as well as Paraguayan eating and drinking habits. Rather than a racially pure Australian socialist utopia in South America, those who remained were gradually amalgamated into rural Paraguayan society.

4. FORKING AS INSTITUTIONAL ENTREPRENEURSHIP AND COMPETITION

An institutional fork occurs when a society splits into two divergent paths with shared histories. Australia was a remarkably successful fork of the United Kingdom, and New Australia a notably unsuccessful fork of colonial Australia. In each instance deliberate and implicit institutional choices were made that determined the success or otherwise of the new population. The decision to establish a settlement is a choice made by an

institutional entrepreneur, and the institutional choices of the new settlement are subject to that initial decision. Institutions evolve over time but do so unpredictably, affected by entropy, environmental-technical factors, and ideological influences. Forking presents a framework in which to analyse secession and institutional change in the context of path dependencies—that is, the long-run effect of those shared histories.

Figure 2: Australian institutional forks



In Figure 2 we show an abstract depiction of this process of institutional forking. Each new colony brings the institutional history from its originating society, embedded not only in the legal framework that was explicitly imported, but in the norms, attitudes, and memories of those who were the settlers. As Kir-sop (2011) has written, in the minds of the settlers, the Hobart of 1846 was not so far away from Warwickshire of the 1770s and 1780s. The divergent paths create new institutional dynamics. At the first instance, the new society is physically separated from the divergence in a new environment—the types and patterns of agriculture are different in the United Kingdom and Australia, and again in Paraguay. For example, early Australia suffered from extreme labour shortages. This favoured the grazing of livestock, which in turn led to the development of a class of wealthy ‘squatters’ (who grazed livestock on crown land) that sought to entrench the bunyip aristocracy (McLean 2013). Yet these aristocrats had relatively little social and economic bargaining power compared to their counterparts in Britain, and the colony made the explicit institutional choice to diverge from the British class system. New Australia likewise made explicit institutional choices—Lane sought to maintain Australian cultural norms (mateship) yet at the same time vary the institutions of private property and wage labour. The subsequent settlement fork, Cosme, varied these institutions again (in fact re-adopting some of the economic institutions of Australia).

Forks compete with their originating economy for resources and economic activity. Bitcoin and Bitcoin Cash compete to both represent ‘Satoshi’s vision’ as well as for attention and adoption (see for instance Ver and Vays 2019). These compete on the margins of adoption (given the centrality of network effects), and institutional qualities (such as fast transaction speed or security). Kwon et al. (2019) show how the competitive co-existence of two coins with the same mining algorithm—meaning that miners can switch between mining each coin at low or zero cost—can weaken security and decentralisation in both. Likewise, settlements compete with their originating economy for resources and in export markets. Where just over 300 individuals (freely) migrated from the United Kingdom to Australia in 1821, more than 73,000 migrated in 1854 after the Gold Rush in Victoria (Haines and Shlomowitz 1992). Haines et al. (1998) show that migration contributed to a ‘brain drain’ in another British possession: Ireland.

Institutional orders are subject to network effects and these are often achieved by having one side of the market subsidise the other side. In the blockchain industry the process of creating network effects—of encouraging the decentralised development of an ecosystem/economy of token holders, users, developers and applications—is described as “bootstrapping” (Catalini and Gans 2016). Cryptocurrency tokens incentivise investment in the network, and some blockchains have experimented with airdrops (giving away tokens freely to developers or users), as well as the (in)famous initial coin offerings common during the 2017-2018

cryptocurrency boom. Parallel attempts at institutional bootstrapping are also evident in examples of institutional forks. Australian colonial governments subsidised migration, competing against other colonies for immigrants, which in turn shaped the types and occupation of migrants in each colony as both implicit and explicit policy choices (Haines and Shlomowitz 1996).

Institutional experiments on one forked economy can be adopted by the originating economy or by other forks through their own endogenous process of institutional change. There is a long history of institutions being developed in Australia, where a smaller population and fewer inbuilt constraints encouraged experimentation, that were then exported to the United Kingdom, most prominently the expansion of suffrage to women (in South Australia in 1894, although New Zealand introduced women's suffrage a year earlier) and the secret ("Australian") ballot.

Forking presents a powerful descriptive framework in which to analyse secession and institutional change in the context of path dependencies. This article has introduced the concept of an institutional fork, thereby opening the opportunity for the study of further instances. These include socialist experiments in Mexico (see Katscher 1906) and Australia (see Foster 2005), as well as major forks from the United Kingdom such as the United States and Canada. The comparative study of institutions and societies which have shared histories but divergent paths can be a powerful tool for analysing the multitude of different economic and social outcomes throughout the world.

Finally, forking offers entrepreneurs who are seeking to exit existing institutional sets a framework to think about institutional choices. The creation of special jurisdictions such as charter cities (Romer 2010), special economic zones (Moberg 2015, 2017), seasteads (Friedman and Taylor 2012, Quirk and Friedman 2017), and startup cities (Bell 2018) all require choices to be made about what rule sets to adopt. The opportunity for institutional experimentation is enhanced by digital technology that allows for territorial jurisdictions to integrate more deeply with foreign jurisdictions, as well as allowing for new forms of 'cryptosecession' (Macdonald 2019) or 'pop-up economies' (Rennie 2019), where institutional rule sets are taken entirely online (see also Allen, Berg and Davidson 2020). The forking framework clarifies the dimensions of institutional choices that need to be made.¹

NOTES

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