

The Physiology of Money: Containment and Circulation in the Alternative Economy

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Abstract:

This article presents an ethnography of alternative currencies that foregrounds the notion of “circulation”. Building upon a long legacy wherein money is equated with a primary life force—being either water or blood—that is contained within a body, “circulation” became a dominant metaphor for the use of money from the mid-seventeenth century onwards. Imagining money as a liquid that flows and circulates means that remedying economic inequalities and injustice is often reduced to a matter of redistribution. Instead, money is itself an institutional project engineered to distribute resources and authority based on a philosophy of growth and accumulation. Alternative currency initiatives aim to re-design, rather than re-distribute, money. Importantly, they believe the technological fix of a circular software system effectively does away with the inequalities of the capitalist mode of production. What happens when on-going practices towards systemic change converge on money and the economic “body” of a local community is imagined as software?

Keywords:

Alternative money, Algorithms, Europe, Ethnography of Organisations

1. Introduction

Money is like water; and the economy of a city is like a bucket. A full bucket means that local residents have plenty of resources to be able to buy what they need for a good quality of life. The bucket of the conventional monetary system leaks, significantly so. Because for every pound or euro spent, 80 cent flows away towards global financial centres and off shore tax havens. What remains, is a monetary desert.¹

The growing alternative currency community of Europe produces this money-as-water metaphor time and again on websites, YouTube videos, press releases, performance reports, and during interviews. My interlocutors call this the “leaky bucket” argument, as presented in the practitioner handbook *Plugging the Leaks*,² and use it to explain why money needs to be actively bordered, walled in as it were, in order for it to “work for the local economy”. In this paper, I explore, ethnographically, what emerges when money is imagined as a liquid and the economic “body” of a local community is bounded through software. The presented research is based on over two years of fieldwork I conducted between January 2016 to April 2018 with three key alternative currency organisations in the Netherlands and the United Kingdom: the Social Trade Organisation (STRO), Qoin, and the Bristol Pound.³

I refer to the people populating these organisations as “the Money Makers”, precisely because they aim to re-make money according to an alternate set of rules.

The leaky bucket argument is instructive for how, to my interlocutors, money should function. What, specifically, is the work money is supposed to do in society? What are the design flaws in the current system that an alternative currency might remedy? And, consequently, how can this be done? Such questions highlight the distribution of power in contemporary economies and the ways in which the concept of money is increasingly interrogated.⁴ The algorithmic technologies of cryptocurrencies on the blockchain have, for example, been heralded as feminist weapons able to challenge patriarchal norms⁵ – possibly a belated resolution to Luce Irigaray’s question, “where are the traces of a currency

1 Bernie Ward and Julie Lewis, “Plugging the Leaks: Make the Most of Every Pound that Enters Your Local Economy,” (The New Economics Foundation, Esmée Fairbairn Foundation, and the Neighbourhood Renewal Unit, September 2002), accessed October 26, 2022,

2 Ward and Lewis, *Plugging the Leaks*.

3 Coco Kanters, “‘The Money Makers’: The Institutionalisation of Alternative Currencies in North-West Europe.” PhD diss., Leiden University. 2021.

4 Lisa Adkins. “What Can Money Do? Feminist Theory in Austere Times,” *Feminist Review* 109 no. 1 (2015): 31–48.

5 Jenny Aysgarth, “Bitcoin as a Feminist Weapon,” *Forklog.net*. (2016). Accessed May 20, 2023. <http://forklog.net/bitcoin-as-feminist-weapon/>, quoted in Allon, *Money after Blockchain*, 223.

amongst women?”⁶ Yet any claim of a technological fix for the disparate production of power relations and intersectional subjectivities requires careful scrutiny.⁷ In this paper, I work to “unbox” complex financial processes and economic imaginations by revealing the work of metaphor empirically, as constructed and put to use in practice. The notion of “plugging the leaks” employed by my interlocutors emphasises that the main monetary intervention of alternative currencies is not to create *more* money or even—for that matter—*another* money. Instead, the intervention is to prevent it from leaking away from the community. This is, as I will show, a question of control. In building what they term a “monetary ecosystem”, the Money Makers emphasise that, rather than a linear in-and-out motion over which local communities have lost control, there should be circularity in the way money flows. Much like the water cycle of an ecosystem, they design currencies to travel in a circular motion within the boundaries of the bucket so that they do not—uncontrollably—leak away. The management of money’s movement is at the core of a feminist perspective on economies I call “the political physiology of money”. I borrow the phrase “political physiology” from socialist-feminist theory⁸ and put it to work ethnographically to uncover the perspective that guides the purposeful management of money.

Whenever we talk about money, we are often concerned with its movement. Moreover, in describing how money moves, both the English and Dutch languages are rife with aquatic expressions. In English, for example, money flows, circulates, or stagnates. We might be flushed with cash, swimming in money, dip into our savings, or, conversely, our bank account is drained when our funds dry up. Companies are liquidated or might have their assets frozen. Like ebb and flow, money comes, and it goes. The conceptual “money as water” metaphor has a long history in philosophy and economic thought and is deeply entrenched in our everyday discourse on money. Such metaphors are a way to make sense of abstract, complex systems or concepts. They also reveal something about our mode of being and acting in the world; cognitive linguists claim that metaphors are not just expressions, as language characterises thought and structures action.⁹ The conceptualisation of money as water and the emphasis on circularity is not arbitrary; it reveals something about the way the Money Makers also think about and act upon money.

“Circulation” became a dominant metaphor for the use of money from the mid-seventeenth century onwards. Political philosopher John Locke first used the word “currency” to denote the circulation of

6 Luce Irigaray, “Women, the sacred and money,” *Paraphrase* 8 (1986): 6-18, 10.

7 Fiona Allon, “Money after Blockchain: Gold, Decentralised Politics and the New Libertarianism,” *Australian Feminist Studies* 33, no. 96 (2018): 223-243.

8 Donna Haraway, “Animal sociology and a natural economy of the body politic, part I: a political physiology of dominance,” *Signs: Journal of Women in Culture and Society* 4 no. 1 (1978): 21-36.

9 George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago: University of Chicago Press, 1980).

money in 1699. The Latin present participle *currens* means “running”, which also extends to “running water”, embedding a sense of circulation or flowing. Currency is, therefore, sometimes defined in etymology databases as a “condition of flowing”. Some centuries earlier, the notion of circulation directly compared the movement of money with the circulation of blood in a body. Take, for example, the fourteenth-century French philosopher Nicholas Oresme (1320–82), who described the force of money within the state as the flow of humours in the body politic.¹⁰ Hence the “leaky bucket” view of the economy builds upon a long legacy wherein money is equated with a primary life force—being either water or blood—that is contained within a body. Money circulates, and it is vital that it does so, yet its circulation is contingent upon an inside, a boundary, and an outside. As such, money’s connection to the body politic emerges.

In her paper on domination, Donna Haraway writes about the notion of the body politic as an organism; “political physiology” describes how human groups, in this projection, come to mirror natural forms¹¹—such as, indeed, bodies of water or ecologies—and the consequences this has for the distribution of control. This paper examines the political physiology of money. Though it is tempting to contribute to discussions about its nature,¹² my aim here is not to develop an ontology of money. Instead, I am concerned with two fundamentally political questions that the Money Makers bring to the fore: “What should money do?” and “How should it be done?” with the ideal on the one hand and the pragmatics on the other. These questions are political not only because both the ideal and the pragmatics are in constant dialogue with each other but because they are guided by the stakes of a group. An alternative currency is framed as a matter of collective action in the interests of that collective—a body of sorts. Hence it is not only important what type(s) of money fills “the bucket” and how it leaks or circles around, but also which people, organisations and institutions float in there and who gets to determine its boundaries. The development of such a payment system with a political physiology different from state-sanctioned fiat currencies cannot be sufficiently analysed through the well-established “diverse economies” perspective.¹³ Rather than understanding alternative currencies

10 Jerah Johnson, “The money= blood metaphor, 1300-1800,” *The Journal of Finance* 21, no. 1 (1966): 119–22.

11 Haraway, *Animal sociology*, 21.

12 Delineating what money is remains an ongoing task, as it is something even the Bank of England refuses to irrefutably and categorically define: “Despite its importance and widespread use, there is no universal agreement on what money actually is”. Quoted in Michael McLeay, Radia Amar, and Thomas Ryland, “Money in the Modern Economy: An Introduction.” *Bank of England Quarterly Bulletin* 54, no. 1 (2014): 4–13.

13 J.K. Gibson-Graham, *The end of capitalism (as we knew it): a feminist critique of political economy* (Oxford: Blackwell, 1996).

outside of a “Capitalocentric” frame¹⁴, it is key to dissect the existence and power of the manifold financial, political and technological institutions regulating (alternative) economic life, as well as the consequences by which people make sense of the abstractions of finance.

My interlocutors employ a discourse of regaining authority and control over the local economy through their currencies. For example, the slogan of the Bristol Pound is “Our City, Our Money”. Yet the contours of this new form of control initiated by the Money Makers remain opaque, as I will show; the new regulator is the software system Cyclos, designed by STRO. Ian Lowrie notes that “the financial system is probably the most thoroughly computationally automated terrain in contemporary society”.

¹⁵Alternative currencies form no exception. The Money Makers all firmly hold that a central feature of professional currencies is that they are (also) digital. To them, the structure of authority, power and control embedded in the global monetary system is fundamentally problematic; the digitalisation of local money is a way to regain this control. But who, then, gains control? This question of authority is clouded by the veil of a technology that steers the money flows rather than democratic community decisions as suggested by the discourse of community ownership. Fiona Allon writes that “technical systems...inevitably reproduce the context that governs their development and constitution.”¹⁶ This reproduction happens through various ways and scales, such as technologies’ design and management,¹⁷ but certainly also through the projection of hopes, dreams and utopian faith in their power to effect change. Alternative digital payment systems can be a canvas on which projections of the economy are made graspable *and* black-boxed at the same time.

The architecture of Cyclos quite literally determines the scope, uses, and exchange experiences of the currencies by STRO, Qoin, and the Bristol Pound. It is through this software that communities are created, and visions of the economy are articulated. In this paper, I introduce the term “algorithmic reason” to argue that in such computational realities, authority is enfolded into the performance of the system. There is a transposition of agency from the Money Makers onto the technology. I use Friedrich Engels’ tale of a cotton mill,¹⁸ where he states that the fully automated system of “the steam” holds authority over the operation of the mill; the agency of capitalism becomes naturalised in the

14 See also Luce Irigaray’s *critique of phallogentrism in Speculum of the other woman*, Gillian G. Gill, trans. (Ithaca: Cornell University Press, 1985) for J.K. Gibson-Graham’s inspiration in coining Capitalocentrism.

15 Ian Lowrie, “Algorithms and Automation: An Introduction,” *Cultural Anthropology* 33, no. 3 (2018): 349–59.

16 Allon, *Money after Blockchain*, 236.

17 Nick Seaver, “Algorithms as Culture: Some Tactics for the Ethnography of Algorithmic Systems,” *Big Data & Society* 4, no. 2 (2017): 1–12.

18 Friedrich Engels, “On Authority,” in *The Marx-Engels Reader*, trans. Robert Tucker (Norton: New York, [1872] 1978): 730–733.

machine. The ethnography that follows heeds to what Lila Abu-Lughod calls in *Writing Women's Worlds* an “ethnography of the particular”¹⁹; working, as such, against generalisations as well as conceptual closures and instead showing the specificities of lived reality without employing these realities a priori for theoretical or political agendas.²⁰ Through *being there*,²¹ I ask, if money is a political design of power from the state and banks, what is the political design of alternative money?

2. What Should Money Do?

Tobias²² draws a large, somewhat wobbly, circle at the heart of a flip chart [Figure 1, image 1]: “Imagine this is an economy. Any economy. It could be a country or a region. But for now, it represents the economy of Utrecht.” Drawing a thick arrow into the imaginary urban economy [Figure 1, image 2], he goes on, “So there is money flowing into this economy. For example, when I receive my salary.” The second arrow he draws extends from the core of the circle towards the empty blank space of the chart [Figure 1, image 3]:

Most of the time, this money coming in leaves the area really quickly. Not only when I pay for a mortgage, also when I buy groceries at the Albert Heijn [a large Dutch supermarket chain store]. You see: this business spends only a small percentage of its income locally, like on salaries for cashiers. The bulk is sent to its headquarters in Zaandam, or even across the [national] border.²³²⁴

His audience is nodding. It is about eight pm and already dark outside; the reflection in the bare windows gives the illusion there are more than ten heads bobbing up and down. From my vantage point, forward-facing the small meeting room, I can tell Tobias’ presentation is going well. The local entrepreneurs that have gathered to learn about STRO’s recent alternative currency in the Dutch city Utrecht, called the *Utrechtse Euro*, are listening attentively. The notion of an economy as a bounded

19 Lila Abu-Lughod, *Writing Women's Worlds* (Berkeley: University of California Press, 1993)

20 See also Nancy Scheper-Hughes “The Primacy of the Ethical: Propositions for a Militant Anthropology”, *Current Anthropology* 36, no. 3 (1995): 409–440 on how critical analyses of power structures and imbalances do not necessarily have to be purely theoretical matters.

21 Conrad W. Watson (ed.), *Being There: Fieldwork in Anthropology* (London: Pluto Press, 1999).

22 I have substituted all real names of individuals participating in this research with first-name pseudonyms.

23 Meeting - STRO 171107.

24 These quotation references throughout the ethnography refer to the type of interaction, organisation or pseudonym and the year (here: 2017) month (here: November) and day (here: 7th) the interaction took place.

circle, where money flows in and out, seems to land well. Encouraged, Tobias goes on:

Money leaks away from the community. Shopping at a chain store, the impact of my spending is only once. With a local currency, we aim to keep money inside the circle. So we put it inside software and make it travel in loops six or seven times. If I spend my money at a local supermarket, who then spends it at a local wholesaler, who uses it to buy batches of bread from the bakery, the baker all of a sudden has money to pay for new business cards at, say, my print shop.²⁵

This flow of transactions is illustrated with a few dots inside the economic sphere. Tobias connects the dots with a series of arrows to represent the monetary transactions [Figure 1, image 4]. One entrepreneur speaks up: “But why do we need another money for this? Can’t people just choose to shop at independent shops with euros?” He leans back in his chair and crosses his arms. It is a common question for informative gatherings like this one. I catch myself in a moment of ethnographic laziness; absently gazing into the reflection of the room in anticipation of what I know will be Tobias’ answer. “Sure,” he says, “but it doesn’t only matter where you spend your money, it also matters where the people you give it to spend it.” He continues:

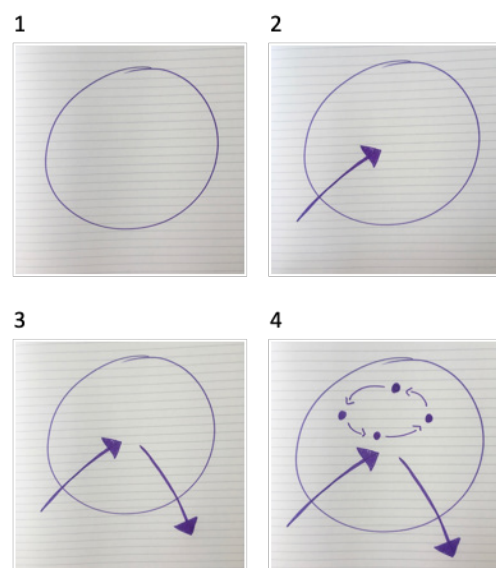


Figure 1—Flow local currencies

If I shop with euros I have no idea what happens after I’ve spent it. With the Utrechtse Euro I am certain the business will re-invest this money in the local economy. To facilitate a circular economy, you need a different kind of money. You need money with a purpose.

“Money with a purpose” is STRO’s catchphrase to describe the particular type of currency they offer. This purpose is to make money available to local entrepreneurs, who are seen to be struggling in the face of crisis and globalisation, whereas multinational corporations and monopolists are thriving. And the purpose is to make money work for communities. As Tobias explained visually during the entrepreneurs’ meeting, the justification for “purposeful money” is that communities have no control over the flows of mainstream money. It leaves smaller cities or poor neighbourhoods quickly; this means there is always a lack of money (a “monetary desert”) in precisely the places where it needs to circulate. Documents, conversations, opinions: all are seeped through and through with this logic. This explicit desire for

25 Meeting - STRO 171107.

localised monetary circularity is also prominent across (and beyond) Qoin and the Bristol Pound alike. The Bristol Pound even depicts Bristol (UK) as an island in their promotional material. The island has steep cliffs and conveys the image of local money as unable to leave the city. The accompanying text—”Our city, our money, our future”—conveys a strong sense of regaining ownership.

To understand better this desire for control and what it is that, according to my interlocutors, money *should* do, as well as why this is different from conventional money—it is instructive to examine how the Money Makers understand money. Knowledge of how the current financial system operates is vital in grasping the logic of alternative currencies. This system is, after all, the current authority in managing its flows. The Money Makers poured much time and effort into economic education and knowledge dissemination. To them, one beneficial effect of alternative currencies, beyond their practical use, is that they teach people about what money is and how the monetary structure is governed. “It is difficult for people to understand money,” Bristol Pound director Caleb told²⁶ me one afternoon, “It’s like how fish think about water: they don’t.” The first step in regaining control, then, is becoming aware of the “water”.

Monetary orthodoxy holds that money has three functions: as a “unit of account”, a “medium of exchange”, and a “store of value”.²⁷ These functions describe what money does rather than define its nature or origin. Key to the Money Makers is money’s function as a medium of exchange: this means that money acts as an intermediary in transactions by providing a way to translate the value of products and services in relation to each other. Following the economist Irving Fisher, and particularly the book *Stamp Scrip*,²⁸ the Money Makers actively work to increase the function of money as a medium of exchange. At Qoin and STRO, they say in Dutch *geld moet rollen* (money must roll or move around). Note the closeness here of seeing money as rolling, running, or flowing.

Alternative currencies intentionally alter the rules of exchange by limiting *what* the currency might be exchanged for (only local produce or services) and *where* it circulates (a defined geographical region, or “protected space”, as ecological economist Richard Douthwaite says).²⁹ Chain stores are not welcome as a member of alternative currency schemes, and for example, Bristol Pounds cannot be spent in London. Moreover, altering money to function more effectively as a medium of exchange and diminishing its

26 Conversation - Caleb 180428.

27 Richard Douthwaite, *Short Circuit: Strengthening Local Economies for Security in an Unstable World* (Devon: Green Books, 1996); Peter North, *Local Money: How to Make it Happen in your Community* (Totnes: Transition Books, 2010).

28 Irving Fisher, *Stamp scrip*. Assisted by Hans Cohnssen and H.W. Fisher (Adelphi, 1933).

29 Douthwaite, *Short Circuit*, 64.

capacity to store value over time is at the core of alternative currency designs. I will examine the way Money Makers relate the “medium of exchange” function to the “store of value” function in more detail because it speaks to the centrality of movement in the political physiology of money.

Money moves from payer to acceptor. It continues to move if this action is carried out regularly. However, because conventional money has the capacity to retain or potentially increase its value, it can be stored for later use. Such “immobile money” is highly undesirable in the eyes of my interlocutors. “To properly work as a medium of exchange,” STRO’s frontman Theo says, “money must move around.” The “medium of exchange” function epitomises the desired circularity of monetary flows. Yet money’s capacity to be potted up, and stored so that it accumulates over time distorts this principle purpose of money. So, the fact that money might act as a store of value is highly problematic to Theo and his currency colleagues because it negatively impacts upon money’s function as a medium of exchange. In one of STRO’s publications, he says:

Money is used for two incommensurable goals: the trader wants to trade and the rent seeker³⁰ wants to become rich. The first would like plenty of money in circulation to be able to trade easily, the other’s interest is best served by having less money in circulation. This increases the value of money. Because the rent seeker prefers to keep his money close, store it, there is less money circulating in the economy. Money becomes scarce.³¹

Removing money from the realm of exchange ensures scarcity; money, therefore, is artificially made scarce.³² For Qoin, STRO and the Bristol Pound scarcity in money supply is undesirable; this creates “monetary deserts” since—as the leaky bucket argument illustrates—money leaks away to the financial centres where it is stored, because of the inherent power dynamics I described above.

So the ways in which the Money Makers do away with scarcity by altering its functionality reveals two key differences with conventional money. For one, the Money Makers seek to limit the area of circulation so the “medium of exchange” function is normatively altered by directing money flows to local businesses and away from multinational corporations. Second, alternative currencies are interest-free and aim to do away with the “store of value” function.³³ Sometimes they even introduce a negative

30 Note on translation: I translated the Dutch term *rentenier* with an economic term that refers to a person that seeks to increase their existing wealth without creating new wealth.

31 Documentary analysis - STRO 171022.

32 North, *Local Money*, 51.

33 To be sure, lowering interest rates is also a key tactic of central banks in times of recession in order to encourage spending. Yet the option that interest might be raised again is inherent in the monetary design of the euro and the pound.

interest, called “demurrage”, in order to speed up the velocity of exchange. In short, the bucket leaks and its content seeps away too quickly so that it does not benefit localities. This is a systemic design over which even governments have lost authority.³⁴ The power to control money, then, should in the eyes of the Money Makers be in the hands of the communities in which it circulates. Moreover, the computational approach of Qoin is telling of *how* the Money Makers seek to regain control over the movement of money. This is the focal point of the next section.

3. How Should It Be Done?

A key element, says Bernard Lietaer in *The Future of Money*, of “the new money frontier” is the “cybersphere”.³⁵ To quote Lietaer at length:

The future of money therefore lies not only with the further computerization of our conventional currencies—such as dollars, euros or yen via smart cards and other new information technologies. Such changes will happen. But these same information technologies also make it possible for new non-conventional complementary currencies to enter the mainstream and provide new tools for addressing some of our most pressing challenges, both locally and globally.³⁶

The emergence of the internet was instrumental in the continuous spread and popularity of alternative currencies, starting with basic online ledgers. STRO has subsequently made the most significant contribution to the digitization of alternative money through their software, Cyclos. The currencies of STRO, Qoin, and the Bristol Pound all run on Cyclos; their purpose of localising money as a way of controlling its movements, then, is made actionable by having money enter a closed software system. In the words of STRO, the algorithm of Cyclos “conditions money to circulate in a defined area”.³⁷ And Qoin calls Cyclos a “transaction engine”.³⁸

STRO started to develop Cyclos in the 1990s. The first stable version of Cyclos was released and published, open source, in 2005. Since then, currency initiatives around the world have adopted the system as their means of materialising a different economy. Both Qoin and the Bristol Pound use

34 North, *Local Money*, 63.

35 Bernard Lietaer, *The Future of Money: A New Way to Create Wealth, Work and a Wiser World* (London: Century, 2001), 39.

36 Lietaer, *The Future of Money*, 25.

37 Documentary analysis - STRO 171111.

38 Documentary analysis - Qoin 170608.

this particular software to operate their digital currencies—though Qoin repackaged the open-source version by programming a different interface, rebranding it “Qoinware”. Cyclos, then, is central in answering the question of *how* monetary innovation should be attained. Thus far, I have shown the central ideal of controlling circularity in talking and thinking through various facets of what money should do, according to STRO, Qoin, and the Bristol Pound. This section interrogates Cyclos as the primary way through which this goal is achieved. For alternative, professional currencies, the software sets the terms for the way money moves as well as the boundaries of the bucket. Indeed, the notion of “control” is key here: there is a particular “algorithmic reason” ascribed to Cyclos as being the authoritative agent in creating alternative economies.

Pablo Velasco González³⁹ examines the Bitcoin Blockchain and the power relations that are enfolded into this system. In many ways, his analysis is applicable to the local currencies using Cyclos. I build on his use of Friedrich Engels’s essay “On Authority”.⁴⁰ Engels questions which shape authority might take in a fully automated system of a cotton mill. He describes a hypothetical arrangement of cooperative labour, where capitalism has been overthrown so that the means of production are held collectively, and power is decentralised. “Will authority have disappeared,” Engels asks, “or will it only have changed its form? Let us see.”⁴¹ The question is rhetorical. Engels argues that the operation of the cotton mill, like many factories of “modern industry”, falls increasingly “under the dominion of the machine and of steam.”⁴² Once the machine takes over, a certain sequence and rationale in its operations, as well as a rhythm of work, becomes enforced. The mill does not require a recognisable leader but is nonetheless an authoritarian system because it functions through “the authority of the steam.”⁴³ Authority, here, is not external but embedded within the very operational work of the machine itself. After the workers of the factory have, albeit collectively, set the rules for its functioning, once the system is operational, the authority of the steam takes over.

Engels’ story of the cotton mill is a pertinent allegory for the digital machine the Money Makers designed (the software Cyclos) and for the steam that runs it (its computational procedures and algorithms *built by them*). In *The Ethics of Coding*, Colman, Bühlmann, O’Donnell, and Van der Tuin define algorithms as “[...] a finite set of instructive steps that can be followed mechanically, without comprehension, and that is used to organise, calculate, control, shape, and sometimes predict outcomes, applied across

39 Pablo Velasco González, “‘The Authority of the Steam’: Power Dynamics of Digital Production in the Bitcoin Blockchain,” Phd diss., University of Warwick, 2017.

40 Engels, *On Authority*, 730.

41 Engels, *On Authority*, 730.

42 Engels, *On Authority*, 730.

43 Engels, *On Authority*, 731.

various fields.”⁴⁴ I argue that particular meanings of control, trust, and authority are enfolded into the instrumental operation of production and recording of Cyclos’ digital ledger—which are “followed mechanically”. This “algorithmic reason” remains obscure, clouded, by the validation of currency software as democratic, community ownership over money. The intention of Cyclos is the displacement of control in social and political relationships from the production and recording of global markets to localised computational production and recording. As such, control, trust, and authority are built into the system. Transfer conventional money into Cyclos, and it will, almost magically, transform itself into community money—with all the values of solidarity, locality, and sustainability attached. As such, Cyclos becomes an “object endowed with agency”.⁴⁵

Anthropologists of digital systems and algorithms have revealed the social processes behind this naturalisation of the ‘countable’ and have uncovered how they embed and are embedded in values and cultural meanings.⁴⁶ Nick Seaver, for example, points to the value-laden subjectivity of software. Conway’s Law, a well-known axiom amongst programmers, holds that software systems mirror the organisations that make them.⁴⁷ It is equally true, however, that organisations—their ideals, their pragmatics—take the shape of software systems. And not only organisations: these systems also impact society and the actors they interact with. There is a growing body of work in anthropology on the power of code. Steiner,⁴⁸ for example, argues that algorithms “rule our world” and other critical scholarship of algorithms emphasize their “inhumanity” and all-encompassing power over human judgement and decision-making.⁴⁹ Meeting these positions somewhere in the middle, Seaver⁵⁰ writes against the view of algorithms purported “technical rationality” and “killing blow to what remains of the free, serendipitous spirit of human existence”. Instead, he observes the individuals that are constantly “tweaking and tuning, repairing and refactoring” the complex responsive software we have come to interact with on a daily basis: “social structures emboss themselves onto digital substrates; software

44 Colman, Felicity, Vera Bühlmann, Aislinn O’Donnell, and Iris van der Tuin, “*Ethics of coding: A report on the algorithmic condition*,” (Brussels: European Commission 2018): 8.

45 Colman et al., *Ethics of Coding*, 8.

46 Nick Seaver, *Algorithms as Culture*, 1–12

47 Nick Seaver, “What should an anthropology of algorithms do?” *Cultural anthropology* 33, no. 3 (2018): 375–385.

48 Christopher Steiner, *Automate This: How Algorithms Took Over Our Markets, Our Jobs, and the World* (London: Penguin Books, 2012).

49 John Cheney-Lippold, *We Are Data* (New York: New York University Press, 2017); Hallinan, Blake, and Ted Striphas, “Recommended for You: The Netflix Prize and the Production of Algorithmic Culture,” *New Media and Society* 18 no. 1 (2016): 117–37.

50 Seaver, *What should an anthropology of algorithms do?*

is a kind of print left by inky institutions.”⁵¹ Seaver thus argues for a view of algorithms in software as complex sociotechnical systems. Building on these theories, in what follows, I ethnographically unravel the algorithmic reason of Cyclos in order to reveal the structures of power and control that are enfolded within its operations.

One time during lunch at STRO’s office, I asked Theo why they decided to call the payment platform “Cyclos.” The flash of surprise crossing his face was brief but unmistakable; I could imagine him thinking, “this anthropologist is fishing for obvious answers again.” He said no such thing. Instead, he smiled and said, “Well, uhm, we thought of Cyclos because we want money to circulate, you know, it being cyclical.”⁵² This is all I managed to find out about the etymology of STRO’s leading payment software. At the time, Theo’s one-sentence reply was somewhat of an anti-climax. I’d asked Cyclos manager Stefan earlier about the origin of the name; he had replied he wasn’t there when the software was born, so I should ask Theo about it. After this, I had secretly hoped for a captivating origin story. Back then, I failed to grasp the beauty of the plain, straightforward answer Theo had given me: they want money to circulate, and Cyclos makes this happen.

As I have made clear, technology is central to the Money Makers’ approach in innovating money to attain its circular purpose. In fact, all financial innovations have been technological innovations,⁵³ and advances in technology have been central to the dissemination and development of multiple currency forms. This connection is not just inspired by practical functionality; for the Money Makers, the possibilities of online interconnections encompass ideals of freedom and autonomy. In the mid-1990s, about the time when the Canadian-born Local Exchange and Trading Systems landed in Europe, the internet materialised a network of communications throughout society. Lawrence Lessig writes about this emergence of cyberspace and the utopia of freedom it inspired:

The space seemed to promise a kind of society that real space would never allow—freedom without anarchy, control without government, consensus without power. In the words of a manifesto that defined this ideal: ‘We reject: kings, presidents and voting. We believe in: rough consensus and running code’.⁵⁴

Important to note here is how the notion of organised freedom as sovereignty without a state became

51 Seaver, 375.

52 Conversation - Theo 171025.

53 For example, the credit card system, the Dutch iDeal payment method, automatic teller machines (ATMs), sub-prime mortgages, high-frequency trading, or blockchain currencies.

54 Lawrence Lessig, *Code and other Laws of Cyberspace* (New York: Basic Books, 1999).

entwined with the promises of digitization. So too for the currency pioneers of STRO. In one of STRO's mainstream publications, they discuss the realisation that led to developing Cyclos:

I recognized how well computers are able to communicate with each other. I realised how successfully those beeps could transfer information about debt relations—hence be a type of money. Intuitively I was convinced this was the way to create a kind of money that couldn't be disqualified by the law and banking monopolies. Bits and bytes of information about transactions can circulate within a closed administration, as long as there is no formal exchange of money [...] The key to the alternatives we are developing, is that you can organise trade based on claims.⁵⁵

As a software program, Cyclos brings into being a different type of money and directs its flows. How does its digital dynamic enable or constrain the space in which new economic behaviours might emerge? And what happens when the desire for decentralised monetary governance and community ownership is apparently embedded in software?

There are not a lot of software programs that allow for the design, implementation, and management of digital money. Banking software needs to be secure, safe, easy to use, flexible as well as free or cheap. Developed as a poverty amelioration programme in Latin America, Cyclos is now used all over the world as software for regional banking, barter, LETS, timebanks, and microfinance institutions. Customers, for example, include MobiCash, which is licensed by Banque de la République du Burundi, Centrale Bank du Congo, National Bank of Rwanda, Bank of Uganda and Bank of Botswana. The practicalities of maintaining the software or adding new rules to the code are also global: the team of about ten programmers is based in Porto Alegre and Montevideo. This is because the development of Cyclos started in the early 2000s as a subsidised project in Latin America, and STRO decided to localise its creation there as much as possible. The activities or names of these programmers are rarely, if ever, mentioned at the office in Utrecht. Even the commonly shared personnel file with names and functions of all paid staff and volunteers just notes the vague collective term “programming team Cyclos”, whose function consists of “programming Cyclos”. The only way these people enter STRO's headquarters—though inaudible—is through ongoing Skype and Google Hangout chats with Stefan. This tangible absence of those who actually *program* is intriguing for an organisation that holds FinTech innovation at its core.

The software product consists of three versions: Cyclos 4 PRO; Cyclos 4 Communities, Cyclos 3 Open

55 Helen Toxopeus, *Een @nder Soort Geld* (Utrecht: Jan van Arkel. 2014), 196.

Source. I focus exclusively on the latter two because these are used by communities creating their own currency. Bristol uses a free social license for Cyclos 4 Communities, and STRO's currencies do as well. Qoin uses Cyclos 3.7 open source with a user interface for web and smartphone usage they built themselves, relabelling the software to "QoinWare". The core of all Cyclos activity consists of users making payments to other users. Hence according to STRO's Cyclos manager Stefan, the software is, at its core, "just a score board." What I have come to learn about Cyclos is that it is basically a huge ledger that keeps track of the currency accounts within the community. Cyclos thus works from a closed database; therefore—different from decentralised cryptocurrencies like blockchain—there is necessarily a central agent that manages the infrastructure. In the final section of this paper, I show how this works in practice for one particular currency, the Bristol Pound, particularly how meanings of control, trust, and authority are enfolded into the instrumental operation and recording of Cyclos' digital ledger.

4. The Monetary Ecosystem of the Bristol Pound

Bristol Pounds come into circulation when sterling, in the form of fiat currency (coins and notes) or bank deposits (online funds), are exchanged for the local currency. Once these pounds are converted into Bristol Pounds, they are, as one Bristolian using the local currency put it, "locked" into "the system". As I have shown, this move of "locking in" and "creating boundaries" is crucial to the ideals and pragmatics of alternative money. Yet, to almost all of Bristol Pounds' users and the majority of its employees, "the system" and how it succeeds at creating circular local money—keeping money in the bucket—is somewhat of a black box.

Digital Bristol Pounds only come into circulation when someone opens a specific account at the Bristol Credit Union (BCU). This local financial institution has agreed to partner with the Bristol Pound by operating the online reconciliation of sterling and Bristol Pounds within the existing legal frameworks. Therefore, in this particular currency and legal context, the first step in the birth of online alternative money is opening a sterling account at a local bank. This ensures membership in the BCU cooperation (there is a one-pound membership fee) and requires members to abide by the BCU terms and agreements. Next, in order to be able to trade with Bristol Pounds, a *separate membership* of the Bristol Pound CIC⁵⁶ is required. With both memberships in place, the pounds sterling on the BCU bank account are transferred, by the BCU, to a deposit fund under their management.

56 Following the Money Makers, I use the organisational abbreviation "CIC" (pronounced as 'kick') when referring to the Bristol Pound Community Interest Company. I use the term "BCU" to refer to the Bristol Credit Union. This is because "the Bristol Pound" as an organisational noun is confusing since it is run by two entirely separate legal organisations.

The transformation into Bristol Pounds happens when the deposited amount travels, *as information*, into the banking software Cyclos. This is executed and monitored by the credit union. Jack describes the work of Cyclos as “creating a shell of data keeping track of the exchanges in the Bristol Pound accounts.” All the pounds sterling that have been converted into Bristol Pounds then sit together in a fund—depicted in the model as a pool of water—and Cyclos tracks the movement of the corresponding alternative currency in a huge ledger. So that, administratively, the amount of sterling allocated to each member’s BCU account is correct at any given time. Users can transact and keep track of their digital Bristol Pounds through the website, an app, and through text messages. Digital Bristol Pounds thus exist as a set of data in software.

The credit union owns, monitors and keeps track of the digital money as a set of data, and the CIC stipulates the central rule of transaction (namely that the currency can only circulate locally) by setting the terms of membership to the Bristol Pound. Because the Bristol Pound CIC decided that membership in the Bristol Pound is restricted to residents and businesses of the Bristol postal code alone, they can only do so within that particular area and with other members of the Bristol Pound. Cyclos can also be used to program conversion rules. For example, in the Netherlands, STRO works towards integrating a timer-function so that the alternative currencies can be converted back into fiat currency only after they have circulated for a set period of time within the software. The Bristol Pound CIC at first instituted a conversion fee to discourage businesses and individuals from exchanging Bristol Pounds back into pounds sterling. However, per the decree of financial regulators, the “data” travelling into the Cyclos environment to become Bristol Pounds can be exchanged back into fiat at any time without a conversion charge. Hence the monetary design, made practicable through Cyclos, is crafted by the Money Makers, and implemented in conversation with other institutions.

However, this infrastructure, with managing agents and distributed responsibility, is decidedly not how Cyclos is understood, portrayed, and communicated. “Using Cyclos,” the Money Makers repeatedly stress, “money can be reprogrammed to circulate longer in a region.” This point is made prominently and visibly in the communications and advertising of local currencies.⁵⁷ For example, it is mentioned on the website of Cyclos itself, and it is part of the argument that a local currency ensures that the person you give it to will also invest locally—as Tobias mentioned during the entrepreneurs’ meeting. The digitisation of alternative currencies also speaks to funders, as evidenced by the DigiPay4Growth project that piloted Cyclos across a range of European currencies. Within this project, Cyclos is

57 Yannick Lung, Léo Malherbe and Matthieu Montalban, “Between territorial and virtual proximities. The digitization process of the French ecosystem of complementary local currencies,” *Paper 5th Biennial RAMICS International Congress in Japan* (September 11–15, 2019).

explained as creating “a system where purchasing power is ‘trapped’ within a local system.”⁵⁸ This view of *reprogramming money* which, by virtue of its new features, aids the local economy, is echoed by the users of the Bristol Pound. The owner of a cafe, a longtime member of the Bristol Pound, mentioned during an interview how he “is very much in favour of a system that keeps money in Bristol.” He described the digital currency as “an advanced app and payment system that keeps money flowing around here.”⁵⁹ In all these instances, Cyclos is portrayed as a dam or a bucket. As such, the software itself, being key in how money should be stopped from “leaking away,” becomes imbued with agentive powers.

In this image, regaining control over the local economy thus entails relinquishing this control to a software program. Like in Engels’ parable on the authority of the steam, automation takes over the running of the economy (in Engels’s example, the factory) but then naturalises the operation of an alternative currency into the logic of machinery—rather than revealing the organisations that design and manage the software. This understanding of Cyclos, whether it, in fact, uses algorithms or not, is an instance of what I call “algorithmic reason.” Digital infrastructures tend to be somewhat of a black box.⁶⁰ In talking about the way a software programme functions, neither programmers, developers, nor its users can identify what, exactly, creates digital money. Yet, it is Cyclos that ultimately creates the alternative economy. Judith Butler has noted that an economy “only becomes singular and monolithic by virtue of the convergence of certain kinds of processes and practices that produce the ‘effect’ of the knowable and unified economy.”⁶¹ These processes and practices, in the case of Cyclos, are made legitimate through its automation. Clouded within its mechanics is an “authority of the steam,” whereby, in fact, a system is created over which the Money Makers preside both as central banks and ministries of finance. They determine the borders of the currency and track its movement meticulously by means of software. Cyclos hosts the alternative currency, steers its flows, and logs the social pathways it intersects.

This algorithmic reason, for a large part, propels the imaginative power of alternative currencies. The political design of an alternative currency is different from the design of conventional money by virtue of its existence in Cyclos. In effect, because the locus of power and control is clouded in automation, this transposes the uncontrollability of global markets into a new shape. There is still “a system” at work that “makes an economy,” yet how it does so and who makes these decisions remains opaque in the

58 Ornella Martinello. “DigiPay4Growth: how digital payments can stimulate local and regional growth,” *The Urban Media Lab*. (February 2, 2017), accessed September 3 2020. <https://labgov.city/theurbanmedialab/digipay4growth-how-digital-payments-can-stimulate-local-and-regional-growth/>

59 Interview - business user Bristol Pound 180309.

60 Seaver, *What should an anthropology of algorithms do?*

61 Judith Butler, “Performative agency,” *Journal of Cultural Economy* 3, no 2 (2010): 147–61.

way Cyclos is understood and spoken about. Even though the money in digital Bristol Pound accounts is essentially re-labelled pounds sterling, there is a different measure of control over the monetary flows: the money is designed to circulate within a limited geographical area, and it does not, like sterling does, bear interest. The Bristol Pound CIC wanted to institute a conversion fee but was not allowed to do so. Where the paper money, as non-redeemable vouchers, cannot be exchanged back into pounds sterling, the digital money under the auspices of the credit union is, by law, free to travel back into a “regular” bank account at any time. This means that the borders of the alternative currency are easily crossed. Yet, still, while it exists in Cyclos, money cannot “leak” away to financial centres—which are extending loans and commanding interest—because it is tethered to Bristol as much as it is incentivised to flow. These are conscious and purposeful decisions made by the Money Makers in dialogue with institutions and regulators rather than with a community of users.

5. Conclusion

The political physiology of money provides a perspective on money that uncovers ideas about what money should do and how it should be done. Using widely read practitioner literature, I showed why the Money Makers think the current monetary system is at fault and how it should be remedied. Likening this system to the natural form of a body of water, they hold that when money works well, it flows and does not stagnate. Specifically, it should flow within a contained basin to prevent it from leaking away. In the second part of the paper, I focused on Cyclos and the monetary ecosystem of the Bristol Pound. I highlighted how the agency of the Money Makers is enfolded into Cyclos to show ethnographically what the consequences are of the theoretical framing of “algorithmic reason.” Money, the Money Makers hold, is automatically reprogrammed to work for the community as soon as it is “poured” into the black box of the machine, Cyclos. The software is imagined and portrayed as a dam, or a bucket, keeping the flows of money within the city. I showed how the agency of the Money Makers becomes embedded in the rules of a software system and how this is premised on a political physiology of money that is encompassed in the powerful water metaphor, which the Money Makers use to communicate their ambition to “make money circulate” in a controlled way in a controlled space.

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