

**MONEY FOR THE COMMON WEALTH OF THE
MULTITUDE**

TOWARD A USER-MANAGED CURRENCY AND
PAYMENT SYSTEM DESIGN

Thesis submitted for the degree of

Doctor of Philosophy

at the University of Leicester

by

Marco Sachy

School of Business

University of Leicester

~ Abstract ~

This thesis will begin with a critique to the orthodox paradigm in monetary economics. Secondly, I will offer a theoretical, economic, structural and biopolitical analyses of the origin, nature and effects of money on society. After a critique to conventional paradigm of money, I will then propose a semiotic genealogy of money followed by an analysis of the Common, the Multitude together with a tentative fourfold proposal for monetary reform, i.e. a monetary *dispositif* for the socio-economic emancipation of the Multitude from the rule of capital to build a new paradigm of money. In particular, I will discuss the literatures on basic income and the emerging notion for bottom-up welfare named Commonfare; the Neo-Chartalist approach to money; complementary, *viz.* subaltern currencies; and crypto-currencies and distributed ledgers technology. In turn, I will present the two qualitative methodologies that I endorsed to design and research four sites of inquiry in Iceland, Spain, Finland and Italy: Participatory Action Research and Critical Multi-Sited Ethnography. A discussion of fieldwork findings will follow. Moreover, I will offer a comparative analysis on fieldwork findings by identifying not only commonalities and differences among the four sites, but also by eliciting the limits of methodological choices. I will conclude this thesis by arguing to refine the theoretical framework introduced in the literature review; and notwithstanding personal and objective limitations to the application of the monetary *dispositif* in the real world, I will advocate for further inquiry on Money for the Common Wealth of the Multitude to increase the quality and effectiveness of the debate on suggestions for monetary reform.

Acknowledgements

I would like to begin to thank my Italian-Mozambican family scattered around the world, in particular my father Sergio Sachy and my mother Celeste Judite Figueira da Fonseca, and my sister Marta Sachy, for their unconditional love. I would then like to express much appreciation also to my extended family of energy work teachers and friends, Fabrizio Dalle Piane, Denise Ferreira da Silva, Daniela Spachholz, Chiara Carcianiga, Gael van Weyenbergh, Valentina Desideri, and Isabel Xecalos for their gifts of balance. In turn, I thank a trillion my mentors Bernard Lietaer and Stefano Harney - and Matteo Pasquinelli - for their invaluable support and guidance in the past six years. I would also like to thank my master's colleague Roebin Lijniss Huffenreuter for his bold support together with my PhD colleagues and friends Donald Harper, Amit Rai, Marco Checchi, Matteo Ciccognani, Maddalena Tacchetti, Martina Martignoni, Andrea Ghelfi, Blandine Emilien, George Kokkinidis, Kostantin Stoborod, Anthony O'Tierney, and Stephen Cornacchia, you all made my stay in Leicester always uplifting, especially in the hardest moments, and I am confident that in the future, we will have the chance to work and share life again together in some capacity. Remaining at campus, I would also like to give a felt and honest thank to my supervisors Dimitris Papadopoulos, David Harvie, Geoff Lightfoot, and Martin Parker who, together with Teresa Bowdrey, made this thesis concretely possible in the first place. Outside of campus, I thank a trillion my senior brother-in-life, Denis 'Jaromil' Roio, to be in fact as telepathic as a brother is, and all the hackers at Dyne.org Foundation, Acme, Asbesto, Fredd, Parazyd, Hellekin, Alvise and Rad0 to share the digital revolution of our times on the same spaceship. A very warm thanks goes to Dr. Anna Wilson, recent acquaintance and colleague who preciously proof read the final draft. As for groups, I give many thanks to all those that took part to the D-CENT Consortium and are taking part to the PIE News project, those nurturing the Complementary Currency movement worldwide and symbolized by Matthew Slater and all the *compagni*. A huge Thank You! also to all those that spent their time and energy, directly and indirectly, to take part to the multi-site research that I conducted in Italy, Spain, Iceland and Finland, you are the most important part of this research as you gave a concrete expression to Money for the Common Wealth of the Multitude. Last, the most special thank-you goes to my partner Patricia Saez Blasco who, among many difficulties, made me grow as strong a man.

Table of Contents

List of Figures and Tables

Introduction	11
1 A Critique to the Orthodox Monetary Paradigm	19
1.1 Introduction	
<i>1.1.1 Making the Orthodox Monetary Paradigm explicit</i>	
<i>1.1.2 The Monetary Blindspot</i>	
1.2 Three Theories on the Ontology of Conventional Money	
<i>1.2.1 Menger's Commodity Exchange Theory - Objectual Genealogy of Money</i>	
<i>1.2.2 Simmel's Philosophy of Money - Sociological Genealogy of Money</i>	
<i>1.2.3 Keynes' Treatise on Money - Instrumental Genealogy of Money</i>	
1.3 An Economic Critique of the Orthodox Monetary Paradigm: five economic and structural shortcomings	
1.4 A Bio-political Critique of the Orthodox Monetary Paradigm: the debt structure of control and the loss of trust in it	
1.5 Conclusions	
2 Overcoming the Monetary Blindspot to define Money For the Common Wealth of the Multitude	81
2.1 Introduction	
2.2 A Semiotic Genealogy of the Ontology of Money as an Agreement	
<i>2.2.1 The notion of Agreement</i>	
<i>2.2.2 The notion of Community</i>	

2.2.3 *The notion of Means of payment*

2.3 The Common, the Multitude, and the *dispositif* for monetary reform

2.3.1 *The Common*

2.3.2 *The Multitude*

2.3.3 *The monetary dispositif as constituent governance for the exodus of the Multitude*

2.4 Conclusions

3 The four components of the *dispositif* to frame Money for the Common Wealth of the Multitude **116**

3.1 Top-down 1: Basic Income within Commonfare, a bottom up emerging form of welfare provision for the Multitude

3.2 Top-down 2: the Neo-Chartalist approach

3.3 Bottom up 1: Complementary Currencies

3.3.1 *A brief History of Complementary Currencies*

3.3.2 *Complementary Currencies Benefits and Best Practices*

3.3.3 *A Critique of Complementary Currencies*

3.4 Bottom-up 2: Crypto-currencies and Distributed Ledgers Technology

3.5 Conclusions

4 Methodology: Participatory Action Research and Critical Multi-Sited Ethnography 164

4.1 Introduction

4.2 Participatory Action Research and Critical Multi-Sited Ethnography

3.2.1 Participatory Action Research

3.2.2 Critical Multi-Sited Ethnography

4.3 Conclusions

5 Fieldwork Findings 173

5.1 Introduction

5.2 DCENT, PIE News and the Freecoin Social Wallet

5.3 Vignette No 1: Social Krónas

5.3.1 Context

5.3.2 Social Krónas - a complementary crypto-currency and meritocratic basic income provision system in Reykjavik

5.3.3 Relevance of Social Krónas for the Freecoin Social Wallet test in the fourth site

5.4 Vignette No 2: Eurocat

5.4.1 Context

5.4.2 Eurocat - a Micro-Endorsement and Mutual Credit System for a regional currency in Catalunya

5.4.3 Relevance of Eurocat for the test of the Freecoin Social Wallet in the fourth site

5.5 Vignette No 3: Multapaakku

5.5.1 Context

5.5.2 Multapaakku - a Decentralised Self-remuneration system for Community-Supported Agriculture in Helsinki

5.5.3 Relevance of Multapaakku for the test of the Freecoin Social Wallet in the fourth site

5.6 Vignette No 4: Commoncoin

5.6.1 Context

5.6.2 Commoncoin: a multi-signature self-remuneration complementary crypto-currency and basic income provision system in Milan

5.6.3 Commoncoin: Test Description and Results

5.7 Conclusions

6 A Comparative Analysis among the Four Sites 229

6.1 Common Aspects among the Three Sites

6.1.1 Shared Sense of the Role of Money as a Catalyst for Socio-economic Emancipation

6.1.2 Money for the Common Wealth of the Multitude as a Bottom-up Practice of Monetary Constituent Governance

6.1.3 Common Willingness to Experiment in Software for Monetary Innovation

6.2 Differences among the Four Sites

6.2.1 Objective Differences

6.2.2 Different Money Creation and Allocation Processes

6.2.3 Different Complexity in Technological Design

6.3 Conclusions

**7 Conclusions - The Origins of Money for the Common Wealth
of the Multitude** **258**

8 Bibliography **265**

List of Figures and Tables

Figure 1: Ancient-temples themes in modern bank buildings.

Figure 2: the ideological polarisation between capitalism and communism.

Figure 3: Keynes' scheme of the modern monetary system.

Figure 4: exponential growth of the money supply issued as debt at compound interest in an advanced economy (US) and in an emerging one (India).

Figure 5: U. S. dollar devaluation graph from its inception in 1913 until the 2000s.

Figure 6: Transfer of Wealth via interest, in Germany 1982.

Figure 7: Network structure negatively influences the performance of the conventional monetary system.

Figure 8: number of systemic crises, with distinctions among three types: sovereign, monetary and banking crises (1970 - 2010).

Figure 9: The Network of Global Corporate Control.

Figure 10: Lorenz-like curve showing the 737 top holders with an 80% of the control over the value of all Trans-National Corporations worldwide.

Figure 11: Decline of trust in banks over time.

Figure 12: Comparative analysis of customers trust in the financial services industry surveyed in 2008 and 2013.

Figure 13: Trust in Industry - Banks and Financial Services are at an all time low.

Figure 14: Cuneiform clay-tablet featuring a tally of sheep and goats.

Figure 15: the effect of complementary currencies is to address economic and structural shortcomings of the conventional system.

Figure 16: Face and reverse sides of Two Wära note from Schwanenkirchen, Germany, 1932.

Figure 17: the front page of *The Times*, 3rd of January 2009.

Figure 18: The Freecoin Social Wallet "cornucopia" logo.

Figure 19: an overview of the ensemble of tools that D-CENT project offers for citizens empowerment through direct democracy and social economy.

Figure 20: the Elevator Pitch for the Freecoin Social Wallet.

Figure 21: the user interface of the Freecoin Social Wallet.

Figure 22: the DCENT project - Icelandic Pilot Overview.

Figure 23: Group-persona for Eurocrat.

Figure 24: wallet creation procedure using the multi-signature FXC Secret Sharing Protocol.

Figure 25: the basic scheme of the FXC Secret Sharing Protocol.

Figure 26: retrieving a participant's lost wallet on the distributed ledger by the auditor and the minting organisation applying the FXC Secret Sharing protocol.

Figure 27: Scheme of Freecoin Transaction for the Finnish Pilot.

Figure 28: the front side of the occupied building hosting the precarious artists collective Macao.

Figure 29: the two layers of the Eurocat system, that is endorsements (END), complementary currency (EUC) and national currency (EUR).

Table 1: examples of Commoncoin continuous functions

Table 2: example of Macao members, how many commocoins they gained by working to organise events, i.e. autonomous functions.

Table 3: basic income figures related to the prototyping tests run at Macao on December 2016, February and March 2017.

Introduction

This thesis is the culmination of my post-graduate research in the monetary domain at both theoretical and practical levels. Accordingly, I believe that I made two types of contributions to knowledge as a result of my research in this field: a theoretical contribution and a practical one. At the theoretical level, I will present a new ontology of money conceptualised through the lens of a semiotic genealogy. This novel look on the nature of money will allow me to initiate a narrative for a monetary paradigm shift grounded on the Common intended to serve the vast majority of society, what I will define as the Multitude. Indeed, alongside the dominant, privately owned monetary system operated for advantage of the few through the monopoly of a single currency, I will argue for the reformulation of the social contract in the monetary domain in order to institutionalise a pluralistic, i.e multi-currency approach to monetary theory, policy and resulting practices.

In effect, in the context of the Common, which enables the Multitude to produce and reproduce itself and, by doing so, reproduce and expand the Common in a self-reinforcing dynamic that I will describe in the chapters below, Michael Hardt and Antonio Negri highlighted the importance to deal with the *power of money itself*. The re-appropriation of the means of production of money, they argue - in my view correctly - might in effect be the decisive battle field in the war for the social-economic emancipation of the Multitude from the rule of capital:

“Might the power of money (and the finance world in general) to represent the social field of production be, in the hands of the multitude, an instrument of freedom, with the capacity to overthrow misery and poverty? We cannot answer these questions satisfactorily yet, but it seems to us that efforts to reappropriate money in this way point in the direction of revolutionary activity today.” (Hardt and Negri 2009: 295)

Accordingly, in this thesis, I will propose both theoretical and practical answers to the question by Hardt and Negri. In fact, Money for the Common Wealth of the Multitude is the theoretical and practical effort in establishing

an academic conversation on the importance to reform the current monetary system, i.e. to go beyond the current monetary paradigm postulated by orthodox monetary economics, in order to institutionalise forms of monetary exchange operating to the advantage of the many, especially the poor. I will suggest how this is possible through new forms of re-appropriation of the power of money by and for the Multitude. Indeed, by proposing a monetary *dispositif* as a fourfold constituent governance structure, I will define Money for the Common Wealth of the Multitude as follows:

Money is an agreement within a community to use state money, receive basic income in the form of crypto-coins stored on a distributed ledger, or more traditional forms of currency, as a means of payment democratically self-managed by the Multitude in a multi-currency environment to create biopolitical value.

At the practical level, I will put to test the last three of the four components of the monetary *dispositif*, composed by Neo-Chartalist money, basic income, complementary, or subaltern, currencies and crypto-currencies with the underlying distributed ledgers technology.

I have been proficiently trained as a complementary currency designer by my mentor, Bernard Lietaer, with whom I collaborated since 2009 to the present day. However, as a second and practice-oriented original contribution to knowledge, I will present my effort for the advancement in the state-of-the-art in the field of crypto-currencies and distributed ledgers. Indeed, my theoretical contribution to knowledge impelled me to go beyond the theoretical framework of complementary currencies to use in parallel with national ones. Such a framework is part of my approach to monetary innovation and reform, but as I will argue below, I aimed at exploring new paths in currency design, which attempt to go beyond the limits inherent to the complementary currency tradition. In fact, I will present my work within two EU-funded projects for research and technological development on Collective Awareness Platforms for Sustainability and Social Innovation, wherein I personally de-

signed and tested what I will define below as the Freecoin Social Wallet. The latter is a web-based digital wallet for complementary crypto-currencies into which it is possible to encode governance rules to foster cooperative economic behaviour between individuals and communities.

It is important to state at the outset of this thesis that I embarked in this academic journey after I gained a Bachelor Degree in Philosophy of Language at the University of Milan and a Master of Arts in Philosophy and Economics at Erasmus University in Rotterdam, where I specialised in the critique of the monetary field by building a thesis on the possibilities for monetary innovation offered by complementary currencies. However, I decided to do a PhD not to perform an academic exercise *per se*, but as a way to express the social aim embodied in my activist *ethos*, which was born as a result of the traumas caused by the social disorders that affected me and my generation, i.e. the Millennials present at the G8 in Genoa on 21st July 2001. In other words, I embarked on this research journey not to become an academic, but as a way to express my activist side, to reflect on myself while offering my help to address the challenges characteristic of my generation. This gave me problems, but it also gave me the chance to cooperate in restructuring - albeit within my own limits - the world out there.

Therefore, in the first years of the PhD started in 2011, I expanded my knowledge base on money coming from the master's years by reviewing core academic literature on money. Accordingly, in the first chapter of the thesis, I will operate a critique of the current paradigm of money, i.e. a critique of the conventional monetary system. In the introduction to the first chapter in section 1.1, by drawing from Arnsperger (2010) and Lietaer *et al.* (2012), I will identify three issues that a theory and practice on Money for the Common Wealth of the Multitude is intended to tackle: single-currency thinking, the false opposition, at least at the monetary level, between capitalism and socialism and the resulting institutionalised *status quo*. Secondly, to open the black box of

the monetary domain, in section 1.2, I will perform a philosophical critique of the core academic literature on the nature of money by analysing what I consider as an inadequate definition of the ontology of money in both the history of economic thought (Menger 1871 and 1892; and Keynes 1930) and philosophy (Simmel 1900). After such philosophical critique, in section 1.3, I will narrow the scope of critique to the realm of orthodox monetary economics by presenting five economic and structural shortcomings inherent to the dominant monetary paradigm. Finally, and in order to show the adverse effects of philosophical and economic inadequacy of the orthodox monetary paradigm on the Multitude, in section 1.4, I will offer a biopolitical critique of such paradigm (Foucault 1976; Vitali *et al.*, 2011; Gillespie and Hurley 2013; Hurley *et al.*, 2014; Nienaber *et al.*, 2014). Section 1.5 will conclude this chapter.

After a critique of the orthodox monetary paradigm, in the second chapter I will present what I consider to be a more suitable - albeit not perfect - definition of the ontology of money, if compared to the ones supplied throughout the histories of philosophy and economic thought. If the latter proposed either objectual, sociological or still instrumental genealogies of money, by drawing from Italian semiotician Carlo Sini (2005), in section 2.2, I will propose a semiotic genealogy of money as a writing system, which offers in my view a more convincing account of the origin and nature of money at a conceptual level. This will enable me to propose a working definition of money understood as an inter-subjective agreement (Lietaer 2001), rather than an object, a social relation or a tool. After clearing the field with a fresh definition of the genealogy of money coupled with a new working definition of money, in section 2.3, I will give the elements around which such definition will be applied, i.e. the notions of Common (Hardt and Negri 2009) and Multitude (Hardt and Negri 2004) as the main theoretical pillars of a new worldview on the money issue together with four elements for monetary reform. Chapter 2 will conclude with section 2.4.

In chapter three, I will elicit the details of the four components for monetary reform, i.e. a monetary *dispositif* for substantiating Money for the Common Wealth of the Multitude as a tentative theoretical strategy to encircle what I will define as monetary biopower from both the top-down and the bottom-up. As fieldwork will focus more on bottom-up dynamics of such strategy, in section 3.1 and 3.2, I will briefly present the literature on the two top-down components of the monetary *dispositif*: basic income (Atkinson 1996; Van Prijs 1991 and 2004; and Huws 2016) within the context of Commonfare (Fumagalli 2015); and Neo-Chartalism (Wray 1998). Secondly, in section 3.3, I will discuss more robustly the literature on the first bottom-up component of the monetary *dispositif*, i.e. complementary (Lietaer *et al.*, 2009 and 2010), *viz.* subaltern (North 2010b) currencies by chiefly drawing from Peter North's work in this field in that it helped me to theoretically link my bio political concerns to the field of money in general and subaltern currencies more in particular (North 2016; 2010a; 2010b, 2007, 2006 and 1999).

Finally for this third chapter, in section 3.4, I will introduce and discuss crypto-currencies and distributed ledgers technologies by reviewing the literature on the field relevant to conceive the theoretical framework for this thesis (Nakamoto 2008; Antonopoulos 2014; Sachy *et al.*, 2015; Rio and Sachy 2015; and König and Duran 2016). Indeed, I will argue that the set of monetary reforms presented in this chapter could be appropriate candidates to serve the needs of the Multitude, i.e. to create a multi-currency infrastructure for the safeguard of the Common in order to make biopolitical value production thrive as the form of Wealth creation, which is by definition proper to the Multitude. Section 3.5 will conclude this chapter and the literature review by indicating to the reader that methodological considerations will be the object of the following chapter.

In chapter four, I will justify my methodological choices, which I endorsed in order to research for and co-design with real world communities manifesta-

tions of Money for the Common Wealth of the Multitude. In section 4.2, I will introduce both Participatory Action Research and Critical Multi-Sited Ethnography with special focus on the limits of the latter qualitative approach to research (Burawoy 2000). Indeed, during fieldwork research, I applied the tools that critical multi-sited ethnography, i.e. ethnographic research in multi-sites with a political purpose offers such as observation and self-observation, semi-structured interviews and journaling (Walford, 2009). These tools found application from a critical standpoint, a position that allowed different roles to coalesce in the same individual. As I stated above, I was a political activist, a currency designer and also a researcher all at once. This provided me both points of strength and points of weakness during my academic work, which I conducted while striving to maintain a detached approach. To cultivate detachment from my political position has been indeed a challenge sometimes, and only self-reflexivity helped me to fine-tune my 'positionality': "positionality is vital because it forces us to acknowledge our own power, privilege, and biases just as we are denouncing the power structures that surround our subjects. A concern for positionality is sometimes understood as "reflexive ethnography": it is a "turning back" on ourselves" (Madison 2004: 7). By stressing my awareness about both my own positionally as an activist in academia and the limits of my methodological choices, I will conclude this chapter in section 4.3.

In chapter five, I will present the fieldwork part of this thesis by describing the research in four different sites in Iceland, Spain, Finland and Italy within the works of two EU-funded projects, i.e. Decentralised, Citizens Engagement Technologies, or the DCENT project and Poverty Income and Employment News, or the PIE News project. In section 5.2, I will introduce both projects' contexts and their object of design and technological development, i.e. the Freecoin Social Wallet, a social-purpose crypto-currency wallet. In particular, in the DCENT project I developed the design elements for the Freecoin Social Wallet, which I will present in sections 5.3 (Social Krónas -

Icelandic site), 5.4 (Eurocat - Spanish site) and 5.5 (Multapaakku - Finnish site). Furthermore, in the PIE News project I had the possibility to also test in the real world such design elements of the crypto-currency wallet prototype whose results will be presented in sections 5.6 on the fourth site (Common-coin - Italian site). Section 5.7 will conclude this fieldwork chapter.

By approaching the conclusion of the thesis, I will propose a comparative analysis among the four sites. In chapter six, I will highlight both commonalities (section 6.1) and differences (section 6.2) among the four sites together with reflections on the limits of my methodological choices. The common themes will document, first, a shared sense within the sites' communities around the role of money as a catalyst for socio-economic emancipation. Secondly, I will underline that in all sites Money for the Common Wealth of the Multitude manifested as a bottom-up practice of monetary constituent governance. I will phrase a last theme present in all four sites as a common willingness of each community to experiment with state-of-the-art software for monetary innovation. By contrast, I will analyse three main differences emerged after a comparative analysis among the four sites of this research such as objective differences, different money creation and allocation processes and, finally, the different complexity in technological design. I will complete this chapter with section 6.3.

Chapter seven will conclude this thesis, whereby I will invite the reader to understand this research as an invitation to further focus efforts in academia in the direction of the betterment of the monetary system, especially by others more adapt to work in academic research than the author, a political activist and currency designer, rather than a vocational academic aspiring to a career in the Business School. Hence, as I will state in the conclusions below, this thesis is not intended to demonstrate a successful attempt of a paradigm shift in the monetary domain as the need for further refinement of the theoretical framework coupled with both personal and objective limitations

emerged after fieldwork did not allow to aspire to such an unrealistic outcome, especially within the span of a PhD. Indeed, both my theoretical framework and practical research findings presented below should be understood as attempts to open the curtains on the window of the future about a new reality and experience of money, rather than pretending to have already reached such reality both within and without academia. Notwithstanding the limits of this thesis, I am firmly convinced of the genuine value of both germinal theoretical framework and embryonic practical findings that I will discuss in this thesis. Therefore, I will conclude by advocating for the development of further theoretical, policy and practical efforts toward monetary reform to build constituent governance structures for the socio-economic emancipations of the Multitude.

1 A Critique of the Orthodox Monetary Paradigm

1.1 Introduction

In order to give more context and legitimation to the need for a theory and practice of Money For the Common Wealth of the Multitude, in this first chapter, I will offer a critique of the existent, orthodox paradigm grounding the dominant experience of conventional money. With the word 'conventional', I will refer to the money system that everybody commonly uses. In this, 97% of the money supply in the economy is created by commercial banks through interest-bearing loans while the remainder is created as coins and notes by central banks (New Economics Foundation 2012). After a critique of the conventional monetary paradigm, I will delve into the accounts of the origins and nature of money within the classical history of economic thought and philosophy by analysing three theories on the genealogy of money, in order to show the inadequacy of current ontological definitions of money. The latter gave room for the expansion of the dominant, poorly performing conventional monetary system of violent biopolitical control throughout the top-down enforcement of one peculiar type of money, i.e. *fiat* debt at interest, which is regarded as 'real' only because of the authority of the State and central banks.

In order to understand money, we need to take a second look to the most pervasive medium almost spontaneously experienced daily since an early age in each one's life:

"Fish do not comprehend the nature of the water in which they live. Similarly, people have trouble understanding the nature of money. We allocate a great portion of our physical, emotional, and mental energy to getting, keeping, and spending money - but how many of us really know what money is or where it comes from?" (Lietaer 2001: 7)

By analogy, in this chapter I will build an argument that will lead me in the following chapters to endorse Peter North's statements on practitioners of

alternative forms of money, whereby “conventional money’ is simply a discourse, a social construction, a collective agreement to accept a certain form of measurement, store of value, and unit of exchange. Advocates of this position claim that once we accept that money is not a thing ‘out there,’ external to us, we can change it: make collective agreements to use other forms of money that might work more effectively than the money issued by states, which have in the past claimed a monopoly on the right to issue money.” (North 2007: xii)

Initially, since in my view the general starting problems are either the lack of concern and awareness or a sense of surrender around the nature and mechanics of conventional money, I will discuss the notion of paradigm and its application in orthodox monetary economics. Indeed, “conventional economic thinking assumes the *de facto* monopolies of national moneys as an unquestionable given” (Lietaer, Ulanowicz et al., 2010: 12). In effect, the monetary system based on modern bank money is what nowadays everybody has always been used to consider as the only possible system for the functioning of an economy, i.e. legalised usury by the creation of money out of thin air. The eventual focus on the efficiency of the system in processing higher and higher volumes of national currencies to sustain economic growth for increasing the size of total global trade has meant a parallel increase in total debt in a context of structural scarcity.

Because the assumption that failures are directly correlated to structural inefficiency still prevails, the solution has therefore always been to increase the efficiency of the system by cutting the number of steps in the node-to-node pathway in a centralised streamlining transaction process. In the orthodox paradigm of monetary theory and policy, both authorities and financial services industry operators have promptly fostered “policies that promote positive-feedback growth in an economy [and this] may result in a wealth-concentrating vortex that breeds brittleness and bubbles in the same

process” (Lietaer, Ulanowicz et al., 2010: 16). After making explicit the monetary paradigm in orthodox economics, in section 1.1.2, I will present three main factors that define and keep implicit the features of the orthodox monetary paradigm creating what I will refer to as a ‘monetary blindspot’. This exercise is intended to make explicit the orthodox paradigm, a necessary condition to be able to go beyond the ontology and world-views that supported and still support it.

It is only after acknowledgement of the standard conception of the nature of money promoted in the history of economic thought and philosophy, especially by analysing the works by Carl Menger (1871 and 1892), Georg Simmel (1900) and John Maynard Keynes (1930 and 1933) in section 1.2 that, in section 1.3, I will perform an economic and structural critique of the shortcomings that such an ontology of money inherently impels. After this, in section 1.4, I will offer a biopolitical critique of the power structure of the global network of Trans-National Corporations to which also the financial services industry belongs (Vitali *et al.*, 2011). The section will conclude with the presentation of two articles from the *Journal of Bank Marketing*, produced by two teams led by Anne-Marie Nienaber (2014) and Robert Hurley (2014), respectively. These two recent articles document the loss of trust nurtured by the public toward the financial services industry in the contemporary corporate crisis while I will argue for the effects of the crises on life through the review of literature on biopolitics. I will draw from North (1999 and 2007); Hardt and Negri (2000, 2004 and 2009); and Marazzi (2000).

My description of the orthodox monetary paradigm and its shortcomings, the identification of the ontological bases in which it is grounded, and the biopolitical critique of eroding levels of trust in its governance structure are the elements that justify the reconceptualisation of the ontology of money proposed in the following chapters. This ontological, economic and biopolitical exercise is a preliminary critical work on discernment around the domi-

nant paradigm of money. Only after this, it will be possible to define and locate Money for Common Wealth of the Multitude in the real world. In subsequent chapters, this new paradigm will be tested in the world 'out there' through the presentation and analysis of four research sites. This multi-dimensional analysis of money will enable me to reframe the definition of money in general in a way that opens up the possibility of translating Money for the Common Wealth of the Multitude from a theoretical concept into actuality. Accordingly, this chapter is the part of the thesis in which I will detail the particular problems that brought me to the research questions for this thesis.

1.1.1 Making the Orthodox Monetary Paradigm explicit

In this section, I will present the notion of paradigm and its current expression in orthodox monetary economics. I will also present preliminary evidence that emerges from a summary of the state-of-the-art in the conventional paradigm and its long-term paradoxical structural drawbacks. Furthermore, I will discuss the perception of the paradigm - or lack thereof - by the vast majority of the population. Indeed, although the exacerbation of the 2008 financial crisis is obliging many to admit some distrust toward the financial services industry, I will argue that users and managers of the conventional monetary system do not have sufficient emancipatory understanding of both systemic and governance structures and the dynamics of money creation and circulation. Such aspects of the monetary system are usually not objects of critique, since they are commonly seen as either the best possible option or as an unavoidable bad feature of the economy.

Accordingly, money is perceived just as an object, a piece of paper or numbers on a screen, a neutral and useful tool for performing economic transactions. For instance, the inability to forecast the 2007-08 crisis by most econo-

mists is perhaps not to be attributed to their incompetence, but rather to the inherent “inexactitude” of economic science as it has been theorised and it is currently practised “as a discipline that is concerned with a domain in which a small number of causal factors predominate” (Hausmann, 1992: 224-225). In other words, Harris & Harris Group Professor at MIT Sloan School of Management Andrew Lo summarised the situation as follows: “one of the most significant consequences of the Financial Crisis of 2007–2009 is the realisation that the intellectual framework of economics and finance is incomplete in several respects” (Lo, 2010: 39). Indeed, the mainstream paradigm of economics is based on a faith in unrealistic methodological assumptions: methodological individualism, methodological instrumentalism and methodological equilibration (Arnsperger and Varoufakis, 2006). These are the three assumptions promoting first “the idea that socio-economic explanation must be sought at the level of the individual agent;” secondly, “all behaviour is preference-driven or, more precisely, it is to be understood as a means for maximising preference-satisfaction;” (Arnsperger and Varoufakis, 2006: 4-8) and third, that in an economic system “equilibrium would emerge as a natural consequence of agents instrumentally rational choices” (*ibid.*) What is worse, these assumptions are not recognized as such. Rather, they are considered as natural attributes of human societies.

Thus it is likely that mainstream economists were unable to predict the imminent financial crisis because they had been - perhaps unwittingly – unaware that they were theorising and prescribing policies from within the restrictions of paradigm in the first place. As Arnsperger states: “*the notion of paradigm is no longer part of the tool box of the economist.* And the reason for that, in turn, is that *grammar and method have been divorced from semantics and worldview*” (Arnsperger, 2010: 3. Italics in the original.) Indeed, “paradigms are inevitable. Therefore, no economist can speak from anywhere but from inside a paradigm. He can change paradigms, but he can never proceed

without a paradigm at all, because that would mean having no structuring theoretical conceptions, no formal toolbox, and no empirically oriented techniques" (Arnsperger 2010: 25). This holds for mainstream monetary economics in particular (Varoufakis 2013).

Therefore, in order to critique the orthodox paradigm in mainstream monetary economics, it is necessary to first introduce the notion of paradigm itself:

"... some accepted examples of actual scientific practice - examples which include law, theory, application, and instrumentation together - [that] provide models from which spring particular coherent traditions of scientific research. [The] study of paradigms [...] is what mainly prepares the student for membership in the particular scientific community with which he will later practice. Because he joins men who learned the base of their field from the same concrete models, his subsequent practice will seldom evoke overt disagreement over fundamentals. Men whose research is based on shared paradigms are committed to the same rules and standards for scientific practice." (Kuhn 1970: 10-11)

In this view, and in particular for the monetary domain, "all paradigms as collective human structures are prone to the weaknesses and imperfections of all human communities. They are nevertheless inevitable as the cognitive structures within which any economist has to develop his or her ideas." (Arnsperger, 2010: 6) What in my opinion is extremely interesting about money is that neither the vast majority of economists nor the population seem to be aware of the fact that the problems caused by conventional bank money result from paradigmatic choices structurally informing monetary theory and policy. They perceive conventional money design and systemic configuration as akin to a metaphysical law of nature, independent from the epistemological and methodological theoretical frameworks that frame the toolkit of orthodox monetary economics and legitimate the policies derived from it.

In turn, Arnsperger defines the most basic notion of paradigm and its very dynamics in a detailed way:

“a paradigm is, before anything else, an *exemplar-producing community*: no *p*-worldview would have any existence, if it were not for real people taking up that worldview and making it the “engine” of their everyday intellectual and institutional lives. Now, this does not mean that they have necessarily freely chosen their community - they may have become members out of habit, mindless opportunism, or fear - or that they deeply know why they are using the toolbox they are using - they may have learned the tools mechanically or even out of laziness, not bothering to search elsewhere; these are standard perversions in any community.” (Arnsperger, 2010: 6).

In the monetary domain, all these elements manifest with the addition that the paradigm itself is not only almost religiously supported by the majority of the members of the economic community - the reader might recall that many banks were built following Ancient-temples themes as for Figure 1 below - but it is also enforced by law on the population as a whole.

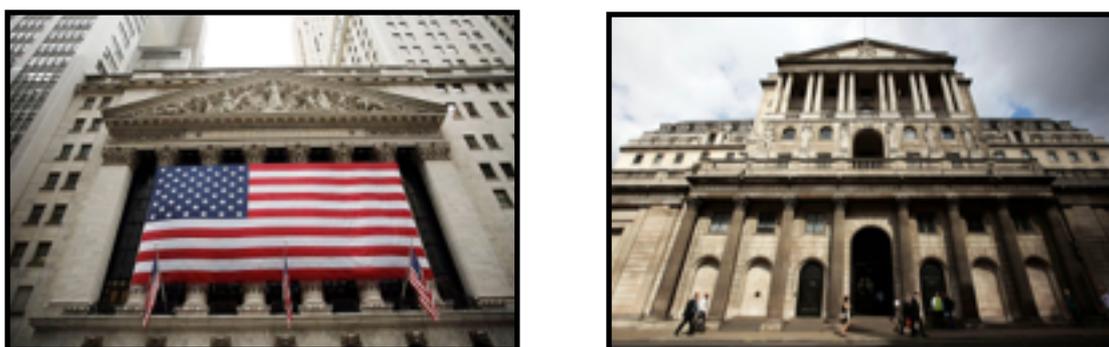


Figure 1: Buildings like the New York Stock Exchange or central banks like the Bank of England have been built following themes from the temples in Ancient Greece and Rome, giving rise to the question whether lay citizens and customers blindly relate to the money system as religious persons relate to their mono- or polytheist theologies
(Source: <http://www.cnbc.com/> las accessed on 22nd April 2017).

This process permeates all the history of modernity, since the introduction of central banking in European society at the end of the seventeenth century and with the affirmation of the hegemony of orthodox economics. Indeed, there has been a continuous and progressive increase of disequilibria in the economy and society which is at odds with the paradigmatic mandates of price stability (central banking) and equilibrium (orthodox economics), which are not laws of nature. Rather, they are the contrary of what happens in nature. As Hardt and Negri put it regarding orthodox economics in general:

“In the course of modernity, proceeding toward our times, there emerge more and more phenomena and institutions that do not square with the equilibria of the good and happy science of economics. Immeasurable quantities, imperfections and distortions of information, cruel and barbaric forms of exploitation, legislative and institutional changes, in addition to social and political revolutions—in short, all that catastrophic phenomena that can be grouped under the title of crisis—demonstrate that the theory of equilibrium cannot serve as the general schema of economics, but rather it is a matter of ruling over disequilibria. Revolutionaries have proclaimed this fact. In the academic context, Thorstein Veblen suspected it. The doubt, which became a certainty, was that measure and equilibrium does not exist in nature at all!” (Hardt and Negri 2004: 154)

It is therefore desirable to clearly analyse the features of the orthodox monetary paradigm promoted by mainstream and neo-classical economics, i.e. to make Kuhnian ‘normal science’ - *viz.* orthodox monetary economics - *explicit*, in order to recognise and fix the shortcomings that it inherently brings about. Indeed, without opening the monetary ‘black box’ and understanding the required structural changes within the monetary system, it would not be discursively possible to ground the notion of Money for the Common Wealth of the Multitude and initiate the peer pressure dynamics for the shift to a new paradigmatic normality around money.

Accordingly, as they have been unable to ‘open the box’ and address the structural flaws, most citizens, economists and policymakers did not see the crisis coming and “after a massive 2008 financial crisis - the biggest systemic financial failure in history so far - the only option considered so far was to bail out the banking system at whatever cost for the tax payers, in order to return as quickly as possible to business as usual” (Lietaer and Arnsperger *et al.*, 2012: 19). Indeed, monetary authorities are responding to the crisis the only way the dominant paradigm prescribes, i.e. after the crash, the system is being re-inflated to yet again create a ‘debt bubble’, in this case a sovereign bubble in Europe:

“The irony is that, as soon as governments borrow these large sums from the financial system to save the system itself from bankruptcy, the financial system concludes that governments are now too indebted and need to be ‘disciplined’. [The] fiscal cost of bailing out the banking system is added to output losses with an automatic drop in tax income. Governments thus have no other option than to increase their indebtedness. This, in turn, results in the downgrading of the creditworthiness of affected countries and makes their debt more expensive. Where does all this lead to?” (Lietaer, Arnsperger *et al.*, 2012: 56)

This leads to an unsustainable fiscal pressure that will not be bearable in the mid- to long-term, unless the debt is re-structured, if not cancelled. According to a study conducted by the Bank for International Settlements entitled *The Future of Public Debt: Prospects and Implications*, “fiscal problems confronting industrial economies are bigger than suggested by official debt figures that show the implications of the financial crisis and recession for fiscal balances. [The] recent sharp rise in risk premiums on long-term bonds issued by several industrial countries suggests that markets no longer consider sovereign debt low-risk” (Cecchetti *et. al.*, 2010: 16). This becomes a problem, especially in those countries whose economies experience increasing fiscal pressure amid recessive downturns, for instance post-2011 Greece. The inability to recognise the paradigm and fix its distortions will be a reason of concern for new generations, which will have to face and try to solve the paradox that non-repayable debt intrinsically entails. In effect, within the dynamics of the conventional monetary system, money is created as banks make positive interest bearing loans, but only the principal is created and not the interest that needs to be repaid.

Money for the Common Wealth of the Multitude is thus an attempt to create a new type of money system apt to replace the slow-motion collapsing old one, a call to action for a paradigm shift within monetary economics. In the next subsection, I will therefore start to discern what are the elements that explain why the dominant paradigm is not genuinely perceived. I will propose that the peculiar ontological features of money enable the orthodox paradigm to remain implicit and to those who are aware and in the right position to take advantage of such informational asymmetry behind that which I will name ‘blindspot’ as I will refer to this collective state of consciousness in the next section. The main result is that the assumptions on which the paradigm itself is based are not put into question by the public opinion, governments, or the financial services industry at large fuelling a self-destroying

framework. To put it concisely: "money is like an iron ring we put through our nose. It is now leading us wherever it wants. We just forgot that we are the ones who designed it" (Mark Kinney, quoted in Lietaer *et al.*, 2009: 2).

1.1.2 *The Monetary Blindspot*

In order to explain the inability of most humans to recognise that they live in a fallacious and counterproductive monetary paradigm, and take responsibility for it, Lietaer and Arnsperger tentatively suggest the influence of what they call a 'monetary blindspot' at the epistemic and methodological levels within the dominant monetary paradigm and affecting almost everybody. A preliminary psycho-pathological diagnosis of this state of affairs and a corresponding movement for change have been promoted under the umbrella of Post-autistic Economics and more recently Real World Economics, a movement born in 2000 at the Sorbonne and endorsed in 2001 by a group of Ph.D students at the University of Cambridge. This endorsement was meant as a response to the more and more evident 'autistic' nature of neoclassical economics and, therefore, of the economists theorising and the policymakers applying it also in the monetary domain. It is also a recognition that the rest of the population is increasingly subsumed by this unrealistic economics at the level of biopolitics, in a neoliberal straightjacket (*The Cambridge* 2001). The analogy of the monetary blindspot is particularly significant in that the human eye presents indeed "a small portion of the visual field of each eye that corresponds to the position of the optic disk (also known as the optic nerve head) within the retina" (Encyclopedia Britannica, 2007, online version, please see full bibliography below). In the same way, our average awareness of the monetary paradigm in which we are immersed and that defines almost every facet of our life, i.e. our 'sight', appreciates neither the structure of the

paradigm itself nor the extent to which its modification could impact on one's life.

According to Lietaer and Arnsperger, the monetary blindspot has three layers. First the "hegemony of single-currency thinking" that corresponds to the traditional monopolistic and top-down system of debt at interest, which accompanied traditional economic thinking, even before central banks entered the scene in modern history. In this regard, it is worth noting that all Empires in history used and imposed a single currency. And this is usually counted as an important attribute for the success of the Empire in question: Sesterces for the Romans, Pounds for the British, Dollars for the Americans, and tomorrow Yuans for the Chinese to fund their imperialistic governance structure. As Lietaer and Arnsperger put it:

"Many societies have imposed a single, monopolistic, hierarchically-issued currency, naturally or artificially kept scarce, and associated with positive interest rates. This was true in Sumer and Babylon, in Ancient Greece and in the Roman Empire, as well as from the Renaissance onwards in all Modern Societies. The form of these currencies has varied largely ... [But] they have had three crucial properties in common: in all cases, only *that* specific currency was accepted for the *payment of taxes*; the currency could be stored and accumulated, i.e. *hoarded*; and borrowing such currencies implied *payment of interest*. So widespread has been this approach that we tend to think that it is the only option, leading to the hegemony of single-currency thinking." (Lietaer, Arnsperger *et al*, 2012: 40, italics in the original)

A second and more recent layer of the blindspot is a result of the ideological war between capitalism and either socialism or communism. This political antagonism focused the attention of the masses on the political arena, rather than the monetary one. A usually understated datum that demonstrates this point is the fact that both the ideological wars between the USA and Soviet Union in the twentieth century and that between the USA and either China or Russia in the twenty first century see two countries that differ many things while they retain the same types of monetary systems. In all political systems promoting either of the ideologies of the two poles (from Marxism to neoliberalism)

eralism), the monetary system always resembles the same blueprint as prescribed by the principles of central banking.

Moreover, and more relevant for what I will argue below, “socialism and capitalism, however, even though they have at times been mingled together and at others occasioned bitter conflicts, are both regimes of property that exclude the common” (Hardt and Negri 2009: ix). Indeed, representatives of the central banks of all these three countries meet regularly at the Bank for International Settlements in Basel for coordinating policies at the international level irrespective of the ideologies, either capitalism or socialism, in the lower power tier of the political arena (Figure 2).

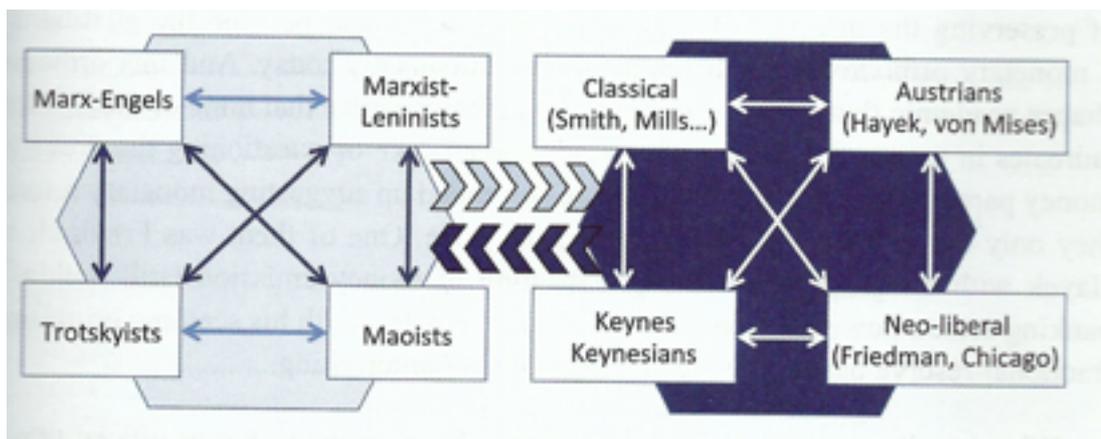


Figure 2: the ideological polarisation between capitalism and communism (Lietaer *et al.* 2012: 41).

Lietaer and Arnsperger’s third layer of the blindspot takes the form of an institutionalised *status quo*: the top-down management of the conventional monetary system has always been hiding its features, rigorously guarded behind the thick walls of banking ‘discretion’ erected by a tiny minority directly owning and indirectly managing the conventional system. That is, this elite minority has taken advantage of an ontological definition of money that suited their historical needs for class self-preservation. In regard to this, Carrol Quigley’s *Tragedy and Hope - A History of the World in Our Time* (Quigley, 1966)

- is extremely helpful in shedding light on the relation, for example, between central banks and financial elites during the last century:

“It must not be felt that these heads of the world’s chief central banks were themselves substantive powers in world finance. They were not. Rather, they were the technicians and agents of the dominant investment bankers of their own countries, who had raised them up and were perfectly capable of throwing them down. The substantive financial powers of the world were in the hands of these investment bankers (also called “international” or “merchant” bankers) who remained largely behind the scenes in their own unincorporated private banks. These formed a system of international cooperation and national dominance which was more private, more powerful, and more secret than that of their agents in the central banks. This dominance of investment bankers was based on their control over the flows of credit and investment funds in their own countries and throughout the world. They could dominate the financial and industrial systems of their own countries by their influence over the flow of current funds through bank loans, the discount rate, and the re-discounting of commercial debts; they could dominate governments by their control over current government loans and the play of the international exchanges... In this system the Rothschilds had been preeminent during much of the nineteenth century, but, at the end of that century, they were being replaced by J. P. Morgan whose central office was in New York, although it was always operated as if it were in London (where it had, indeed, originated as George Peabody and Company in 1838). Old J.P. Morgan died in 1913, but was succeeded by his son of the same name (who had been trained in the London branch until 1901), while the chief decisions in the firm were increasingly made by Thomas W. Lamont after 1924.” (Quigley, 1966: 326-27).

More recently - although he did not argue in favour of overcoming the social *status quo* – the historian Niall Ferguson has presented a thorough description of the *status quo* institutional power structure, which is helpful to adopt if one is to analyse the politics of money. The model that Ferguson discusses is the “square of power” (Ferguson, 2001: 23), in which the four corners represent the four elements that describe the institutional framework of power in modern industrial societies. There are “the parliament and a professional tax bureaucracy on the political side, and central banks and the role of national debt on the financial side.” (Ferguson, 2001: 23) Within the dynamics of the square of power, and assisted by orthodox monetary economics, conventional bank-debt money acts as a “large-scale, unconscious programming tool” that influences the behaviour of the users of the monetary system (Liettaer, Arnsperger *et al.*, 2012: 117). From the Bretton Woods Agreements to the European Stability Mechanism and especially with the demise of the gold standard through the Nixon Shock in 1971 - when the United States unilaterally

ally detached paper currency from gold in favour of floating exchange rates - monetary policy perfected the narrative that facilitates the boom-and-bust trend of the business cycle, which works in favour of vested interests. In the meanwhile, the vast majority of the population remains under the illusion that banks “do God’s work,” as declared in a 2009 interview by Goldman Sachs’ CEO Lloyd Blankfein (Gapper, 2009).

To put it then in the words of Nobel Laureate Joseph Stiglitz, “something is wrong with the global financial system. International financial crises or near-crises have become regular events... the question is not whether there will be another crisis, but where it will be” (Stiglitz, 2009: 3). The instability promotes a self-reinforcing violent pattern associated with both trade and war. Since the March 1637 peak of the *Tulip-mania* in the Netherlands (that led to the Dutch Tulip Bubble during which a single tulip bulb could be traded for more than 10 times the annual income of a skilled craftsman) the cycle of booms and busts has never stopped (Kindleberger, 2005: 9)¹. Instead, the magnitude of the volumes of money storming the financialised economy has increased, and now these perturbations affect all life on the planet. The instability of the conventional monetary system negatively affects society at large while favouring a tiny minority who holds a monopoly on power. This situation is as old as Modernity itself. It was first formalised in 1694 Britain, when the Parliament Act that established the Bank of England allowed “a small number of merchants, trading as private individuals, to provide the sum of £1.2 million for the King. The King [William III] promised to pay interest at 8 per cent to those who had subscribed the money. Taxes were imposed on beer, ale and vinegar [to] pay the interest to the holders of the ‘National Debt’.” (Hutchinson *et al.*, 2002: 56) From that date onwards the national debt

¹ The *Dutch tulip mania* of 1636-1637 is considered the first financial bubble in modern times. In this case, a futures market for bulbs existed as a consequence of the widespread absence of credit. Bulbs functioned as a financial instrument and they were bought only with the intention to sell them at a higher price. This led to speculation until the bubble burst.

has been a “permanent feature of formal cash economies,” accompanied by recurrent crises. (Kindleberger, 2005: 9) In fact, recurrent crises are the normal state of the conventional monetary system.

Moreover, I will argue, in Marxist terms, that the three components of the blindspot are those super-structural assumptions, which frame current monetary culture and make it become a second nature imprinted within the individual. Zooming in to the subjective level, we see users, managers, theorists and policymakers, lost in an unconscious money experiment, living and promoting a monetary system that only the blindspot allows them to tolerate. As I mentioned at the beginning of the chapter, drawing from Arnsperger and Varoufakis, the conventional paradigm of economics in general and monetary economics in particular is based on theoretical and methodological flaws. These flaws are constituents of the conventional monetary paradigm that derives from a specific trajectory that the ontology of money made in the history of economic thought: David Hume (1742) and Adam Smith (1776) in the 1700s, Karl Marx (1867) and Carl Menger (1871 and 1892) in the 1800s and, in still classical terms, Georg Simmel (1900) and John Maynard Keynes (1930) in the 1900s. Among these authors, I will discuss below the most relevant in terms of making the orthodox paradigm of money explicit as the represent some of the most authoritative core academic literature on money. Indeed, Menger’s *Principles of Economics* (1871) and ‘On the Origin of Money’ (1892), Simmel’s *Philosophy of Money* (1900) and Keynes *A Treatise on Money* (1930) offer two different accounts on the origin and nature of money that are both relevant from a philosophical standpoint.

In the next section, I will deepen the scope of inquiry on the theoretical layers of the monetary blindspot. In order to appreciate why I emphasise philosophy in the analysis below, the reader should remember that the monetary blindspot is caused, primarily, by a lack of understanding of the nature of money. Accordingly, only an ontological analysis of money will open up the

possibility to recognize on the one hand how the blindspot emerges, and on the other how the conventional monetary system performs, i.e. extremely poorly as the recurrent - and ever bigger - systemic crises from the *Tulipmania* in the seventeenth century to the Lehmann Collapse in 2008 document. After the acknowledgement of both blindspot and fallacious ontology that frames a poorly performative money system, it will be possible to diagnose the unsuitability of the economic system that orthodoxy promotes together with the biopolitical dynamics that it instantiates through its subtle coercive adoption.

1.2 Three Theories on the Ontology of Conventional Money

In this section, I will analyse first Menger's, then Simmel's and, finally, Keynes accounts of the origin and nature of money in order to make explicit the ontological elements which helped the assumptions of orthodox monetary economics to take root in society. I will argue that all three of these accounts – which can be thought of as objectual, sociological and instrumental genealogies respectively – are flawed. The assumptions inherent to them have given birth to, and over time 'perfected,' the current monetary system, which fails to meet the needs of large sectors of society while being presented in the austere tones of inevitability.

1.2.1 Menger's Commodity Exchange Theory - Objectual Genealogy of Money

In this subsection, I will present the objectual genealogy of money onto which the Commodity Exchange theory is based. Indeed, according to Oxford English Dictionary, 'objectual' refers "to a material object, as opposed to a symbol or fictive referent". If one moves from epistemological and methodological considerations to the deeper layer of the ontological level around the nature of money, it is possible to start healing the blindspot. According to the proposers of the commodity-exchange theory dating back to the work of Austrian economist Carl Menger (1871 and 1892), money is understood as a medium of exchange, which arose in order to facilitate economic transactions otherwise impeded by the "difficulties of barter" (Smith, 1776: 371). The commodity-exchange theory is perhaps the most representative account of the origin and nature of money in terms of an economic model based on "real analysis" (Schumpeter, 1954: 277-278), which centres on the relationship between demand and supply of goods and services, rather than on the quantity of money supplied in an economic system.

For instance, Alice may want something that Bob has, but Bob might not want what Alice has to give in exchange, say swords for ploughs. If Bob owns a sword but s/he does not desire Alice's plough, then there will be no double coincidence of wants. Therefore, the transaction will not take place until Alice finds what Bob wants in an often long series of intermediate transactions. In short, barter exchange does take place in a very narrow set of situations, because the corollary to Adam Smith's argument of the 'difficulties of barter' is that a "double coincidence of wants" (Jevons 1875: 4) is not the norm, but is rather an exception in the dynamics of increasingly complex and growing economic systems, such as present information economies.

The second genealogical element which contributed to the formulation of the commodity-exchange theory of money comes from the observation that a system based exclusively on barter is doomed to repeatedly break down because not all the commodities implemented as means of exchange are perfectly divisible, ductile, homogeneous and durable. In order to overcome such a state of affairs, Marx stressed the necessity to use a 'universally equivalent' commodity, i.e. the commodity that "can buy all the others because it crystallised out into the money-form" (Marx 1867: 182-183).

Thus, in this sense nineteenth-century economists paved the way to the formulation of the commodity-exchange theory by the next generation of economists. From a neo-classical perspective, the final end of this transaction process is the exchange of goods, which have an equivalent use value for both parties simultaneously, in view of bilateral utility maximisation. According to the commodity-exchange theory based on an objectual and commodified nature of money, men started to trade not only commodities which had use value for them personally, but also commodities having greater marketability rather than those one prefers. Cattle were thus the first example of proper money under the assumptions of neo-classical economics promoting methodological individualism, instrumentalism and equilibrium.

In general, in his *Principles of Economics*, in my view Menger unfortunately stresses that humans naturally - as individual utility maximisation is in his opinion part of human nature - began to use commodities as money:

"As each economizing individual becomes increasingly more aware of his economic interest, he is led by this interest, without any agreement, without legislative compulsion, and even without regard to the public interest, to give his commodities in exchange for other, more saleable, commodities, even if he does not need them for any immediate consumption purpose." (Menger, 1871: 260; Italics in the original)

According to the commodity-exchange theory, money does not seem to be a human artefact, rather it is thought of - tautologically - as 'emerging naturally', its use is not enforced by law and it is not created by anybody for fostering the public or, better, the common interest. On the contrary, money originates from the use of the most marketable commodities and, therefore, money ought to be basically an object man uses as a medium in order to facilitate exchanges while reducing transaction costs.

Now, from the point of view of the philosophy of science, Menger's genealogy of the origin and nature of money is restricted and weakened by the very set of assumptions on which it is based: (1) methodological individualism that Menger derived from what academics today refer to as rational choice theory (Anand 1993), which is based on maximisation of an individual's utility function without caring about social and environmental costs; and (2) the retention of the model of an essentially barter exchange economy in which money is a commodity among others, as for the metallic and bi-metallic standards still in vogue when Menger wrote his work in the nineteenth century. From this perspective, money is nothing but the standardisation of bilateral barter, namely a universally accepted object deployable as "an instrument which men have agreed upon to facilitate the exchange of one commodity for another. It is none of the wheels of trade: It is the oil which renders the motion of the wheels smooth and easy." (Hume, 1742: 33) Such *oil* can be a bar of salt, a metal coin, shark teeth, cigarettes, cowrie shells or even bitcoins, depending on the historical and geographical context. In a nutshell, Menger offers a materialistic account of the nature of money, which is superficially thought of as a commodity used as a medium of exchange to maximise economic rationality. Moreover, Menger does not refer to the banking system and the way it worked in his time, i.e. he did not notice the elephant in the room.

Such a commodified view on money flattens out the nature of money on a singular dimension, i.e. the objectual - and ontologically superficial - dimension and neglects the symbolic dimension. I now turn to two other genealogies of money; first that of Simmel, then that of Keynes. Although, in the end, neither of them will prove to be adequate, they contribute different insights to my own formulation in subsequent sections.

2.2.2 *Simmel's philosophy of Money - Sociological Ontology of Money*

In this section, I will present the second theory on the ontology of conventional money through the analysis of another important academic author of the nineteenth century that dedicated great effort to the analysis of money. I refer to Georg Simmel, who offered a philosophical analysis of the nature of money and its effects on society, which have important epistemological implications. One of the important features of Simmel's work was that his "conceptualization of money as a transparent means for philosophical study precisely matched his account of the symbolic and motivating force generated by money's transparency as an economic instrument" (Dodd 1994: 80).

For my purposes, as Simmel's work relates to a multitude of aspects on the origins and nature of money, it can be thought of as the bridge between the objectual (Menger) and the functional (Keynes) genealogies of money. Indeed, although it is better conceived, Simmel's position is in a sense near Menger's as for the view on the historical origins of money. Simmel personally knew and worked with the members of the Austrian School of economics as both Simmel and the members of the Austrian School belonged to the same intellectual *milieu*.

On commodity money, Simmel is more careful than Menger, as he states:

“Whatever may be the historical origin of money—and this is far from being clearly established—one fact at least is certain, that money did not suddenly appear in the economy as a finished element corresponding to its pure concept. Money can have developed only out of previously existing values in such a way that the quality of money, which forms part of every exchangeable object, was realized to a great extent in one particular object” (Simmel 1900: 117)

However, according to Simmel, “money is measured by the goods against which it is exchanged and also by money itself. For not only is money paid for by money, as the money market and interest-bearing loans show, but the money of one country becomes the measure of value for the money of another country, as is illustrated by foreign exchange transactions. Money is therefore one of those *normative ideas* that obey the norms that they themselves represent” (Simmel 1900: 120, my italics).

By going beyond Menger’s conception of the nature of money, Simmel thus shows, correctly in my view, that money is normative in character. Moreover, he adds, “only money, in terms of its pure concept, has attained this final stage; it is nothing but the pure form of exchangeability” (Simmel 1900: 128). Therefore, Simmel argues that money is not simply an object. As I will show in more detail with the analysis of Keynes’s *Treatise on Money* in the next section, Simmel already acknowledged that money is not the object by which it is represented. Indeed, as a pure form of exchangeability, Simmel more specifically argues that money is the purest example of a ‘tool’, which will be Keynes’s main definition of money:

“Money is the purest form of the tool, in the category mentioned above; it is an institution through which the individual concentrates his activity and possessions in order to attain goals that he could not attain directly. The fact that everyone works with it makes its character as a tool more evident than was the case in the examples given earlier. The nature and effectiveness of money is not to be found simply in the coin that I hold in my hand; its qualities are invested in the social organizations and the supra-subjective norms that make this coin a tool of endlessly diverse and extensive uses despite its material limitations, its insignificance and rigidity.” (Simmel 1900: 210)

In his landmark philosophical analysis, Simmel goes on by stating that when one looks deeper to the notion of money, one will notice that money is actually a symbol, which presents a purely symbolic character. As he put it:

“Just as it is irrelevant whether a scale to measure space consists of iron, wood or glass, since only the relation of its parts to each other or to another measure concerns us, so the scale that money provides for the determination of values has nothing to do with the nature of its substance. This ideal significance of money as a standard and an expression of the value of goods has remained completely unchanged, whereas its character as an intermediary, as a means to store and to transport values, has changed in some degree and is still in the process of changing. Money passes from the form of directness and substantiality in which it first carried out these functions to the ideal form; that is, it exercises its effects merely as an idea which is embodied in a representative symbol.” (Simmel 1900: 145)

In fact, as I will argue in the semiotic genealogy of money, which I will present below, money emerged in human affairs as symbolic form that enabled a way to measure of value in a complex economy.

However, Simmel’s analysis of the nature of the effects of money on the subjects that use it is what I consider the Achilles Heel of his work. In effect, by focusing on an excessive idealisation of his object of study, Simmel unfortunately de-personalised the subjects using it, rather than humanise them:

“The money economy, however, exhibits such differentiation in the sphere of private interests. On the one hand, money makes possible the plurality of economic dependencies through its infinite flexibility and divisibility, while on the other it is *conducive to the removal of the personal element from human relationships through its indifferent and objective nature.*” (Simmel 1900: 298, my italics)

As I will more comprehensively argue in the chapters below, I disagree with the “other hand”: money makes relationships reified not because it is indifferent and objective, but because capitalism and Western culture make man ‘one-dimensional’ in character (Marcuse 1964). As I argued in the section on the monetary blindspot above, it is the fact that bank debt bears positive interest that divides subjects, forcing them to compete as an end in itself and to steal from each other’s principals the amount of interest needed to pay the money they borrowed from the bank. The fact that subjects experience increasing individualism within complex money economies is not *per se* caused by money’s alleged objective nature. Rather, and *pace* the desirable observa-

tions that money is symbolic and normative in character, the German idealist view expressed by Simmel fails to recognise that the form of money dominant in his time, what I called 'orthodoxy' in the sections above, should also be an object of critique and, therefore, that it is possible to conceive forms of money that promote more sociality and less individualism.

Although Simmel states that the human condition is in a process of transition to the better (compared with Middle Age serfs, his contemporary members of the proletariat lived a better life), he fails to offer an emancipatory solution to economic inequality. He does not question money as bank-debt at interest. In brief, Simmel rightly identifies the dynamic of society from economy of subsistence to complex money economy with the byproduct of a more impersonal way to relate to the economic sphere in human affairs. However, he fails, in the name of an idealistic objectivity peculiar to all German idealism from Kant onwards, to give a humanistic, what I will call below 'biopolitical' or 'anthropogenetic' (Marazzi 2000) approach to the development of complex money economies in ways that better human existence for the advantage of the many.

In conclusion, Simmel offers a detailed sociological account of the genealogy, i.e. origin and nature, of money. While I strongly support the notion of money as a normative symbol, I do not share his views on the effects of money on the subject, and the resulting individualism that characterises Simmel's sociological genealogy of money. Indeed, Simmel's inability to immerse his analysis in the historical context of his time makes him incapable of avoiding the preeminence of idealism in his account.

In the next section, I will further analyse the notion of money as a tool - what I will define as an instrumental genealogy of money - since it is the one that became, and is, prominent in the history of economic thought. I focus on the

account of the ontology of money that John Maynard Keynes (hereafter, Keynes) offered in the *Treatise on Money* (1930).

2.2.3 Keynes's *Treatise on Money* - Instrumental Ontology of Money

As industrial society quickly evolved during the few decades that separate the publications by Menger and Simmel to that by Keynes, so did awareness around the ontology of money. Contrary to preceding orthodox literature, in the first book of the *Treatise on Money* (hereafter, *Treatise*) Keynes is the first economist (Simmel considered himself as a philosopher and sociologist) who offers a systematic account of the origin and nature of money. Indeed, in the foreword to the first edition, Keynes observes that there was neither a formal nor a systematic academic work about money up to that point, and he hopes to fill such an important gap by publishing the *Treatise* in 1930 as a collection of information that he gathered through years of genealogical research.

However, rather than providing a satisfying account of what money *is*, Keynes's work focuses on what money *does*. His use of stronger scientific proofs gives inferential strength to an instrumental genealogy of the original emergence of money, qualitatively better defined through historiography, and so better supported than the conjectural and objectual genealogy put forward by Menger. However, although Keynes offers an account that is more philosophically complete than Menger's, in that he refers explicitly to Aristotle, his historical and functional analyses only scratch the surface of the ontology of money. In brief, to endorse an instrumental world-view in order to explain the functions of money is not the same as eliciting its ontological features, or *being*.

Nevertheless, Keynes's functional analysis of money provides a map for acquiring a systematic account of both nature and origins of the type of money that is the object of the critique in the present chapter. This is a necessary step toward what I consider a more genuine definition of the nature of money, paving the way for the working definition of money that I will adopt for the rest of the thesis. That is, Keynes's functional analysis helps me to adopt a standpoint from which the monetary blindspot can be seen.

In terms of a genealogical analysis, Keynes explicitly adopted a conception of money stemming from the Aristotelian tradition. Accordingly, he did not consider money as a commodified object. In effect, in the functionalist or instrumental view presented in Aristotle's work, money is thought of as an instrument, a *tool*, something which expresses itself *via* the deployment of its functions. Indeed, Rutherford argues that "as long ago as Aristotle in book V of his *Nicomachean Ethics*, the threefold functions of money as a unit of account, medium of exchange and store of value were noticed" (Rutherford, 2007: 143).

However, the primary importance of Keynes's contribution lies in this: he presented a hierarchical account of the functions of money, with the unit of account as the top and most prominent one. Therefore, by virtue of new archeological findings, i.e. clay tablets from Ancient Babylon, the Mengerian framework does lose soundness at least on the logical tier of the meta-theoretical structure of orthodox monetary economics. In fact, at the very outset of the *Treatise*, Keynes makes it clear that "the age of money had succeeded the age of barter as soon as men had adopted a money of account" (Keynes, 1930: 4). Thereby, Keynes's hierarchy of functions prescribes that money of account be the primary element for a pure concept of money. Indeed, Lapavistas asserts that money as a unit of account "is entirely abstract, an ideal construct of the mind [that] establishes abstract accounting prices in the same

way that other abstract magnitudes, such as meters and kilograms, establish abstract lengths and weights” (Lapavitsas 2003: 119).

In turn, Keynes stresses that money of account differs from *money itself*. The latter is “that by delivery of which debt contracts and price contracts are discharged, and in the shape of which a store of general purchasing power is held” (Keynes 1930: 3). In this view, money itself is only the physical representation of money of account, which is multifaceted within the spectrum of the history of money: from sandstone money to electronic currency (Weatherford 1997). Money of account thus differs from money itself because the latter is defined in terms of the former: “money of account is the description or title and the money [itself] is the *thing* which answers to the description. [...] If the thing can change [e.g. the commodity], whilst the description remains the same, then the distinction can be highly significant” (Keynes 1930: 3 - italics in the original).

By virtue of his clarity in argumentation, Keynes thus makes explicit the aspects that in Menger were obscured: it is not the silver that gives reality and value to money, but the normative definition of the weight of coins or the nominal value on paper notes. In other words, as American numismatist Phillip Grierson argued for a similar contractual constitutive character with regards to the emergence of money in the juridical practice of *wergeld*, which was one of a range of institutions in early society that sanctioned payment of damages and compensation for injury and insult according to a fixed scale of tariffs: “unless the commodities used for exchange bear some relation to a fixed standard, we are still dealing with barter [because] [t]he parties in barter-exchange are comparing their individual needs, not values in the abstract.” (Grierson 1977: 16-19)

Therefore, and with an undoubtable theoretical step forward in the explanation of the origins of money as debt in general and modern bank debt money in particular, Keynes acknowledged the origin of money in the emergence of

a money of account in Ancient Babylon: “the first State reform of the standard of weight, of which we have definite record, was the Babylonian reform toward the end of the third Millennium BC. But this was not the beginning. Earlier standards existed” (Keynes 1930: 12). Moreover, there is evidence dating back to the same historical period of what Rutherford refers to as ‘record-keeping’, i.e. clay tablets onto which there was recorded one’s owed debt (Rutherford 2007: 143). In particular, the curator of the Monetary Museum of Banca d’Italia (the Italian central bank - now Bankitalia), Odoardo Bulgarelli, had studied one representative set of clay tablets from Ancient Mesopotamia. In his historiographic research, Bulgarelli started from the Accad Empire (2335 – 2254 BC) and moved on until the Age of the Persian Empire (539 – 330 BC). He reached the conclusion that during this period, there had been an intentional continuity of implementation of the same type of money as debt throughout the centuries (Bulgarelli 2001). Hence, by contrast to the Mengerian interpretation, the possibility to record debt and account for it through time in a secure way by virtue of calculus and script put the basis for the establishment of the most fundamental element which distinguishes money from barter, namely the unit of account for measuring the value of wealth.

The second main component in Keynes’s classification of money is bank money, the form of money onto which the structure of the conventional monetary system is still predominantly based. In other words, the second function in Keynes’s ranking is the medium of exchange function. Keynes privileging of bank money is justified by the importance that this particular type of money gained throughout the modern era and up until today, as it may be regarded as the modern manifestation of the ancient form of money as debt (Graeber 2009). Indeed, in the 21st century, bank money remains the kind of money that most people in advanced economies deal with. The first reason for this state of affairs is that commercial banks are the *main* source of money in modern capitalist economies, *viz.* they enjoy an exclusive license to create

it under the monopolistic authority of central banks. As North put it - *pace* Menger: “[banks], as trusted institutions, put money into the economy in the form of credit given to trusted customers, in a process that is autonomous from commodity production. These networks of trust create money in ways that go beyond the conceptions of the commodity school” (North 2007: 12). Since the economic and biopolitical critiques that I will present below centre on the conventional monetary, banking and financial systems, and the loss of trust in them, it is worth following Keynes analysis of the features of bank money in more detail.

Technically, the success of modern bank money emerged from the observation that “the transference of debts themselves is just as serviceable for the settlement of transactions as is the transference of money in terms of which they are expressed” (Keynes 1930: 20). True, even before Withers argued that “some ingenious goldsmith conceived the epoch-making notion of giving notes not only to those who had deposited the metal, but to those who came to borrow it, and so founded modern banking” (Withers, 1909: 18). The reader may recall how powerful the de Medici family became in early modern Florence by taking advantage of this fraudulent technique in Florence to provide plenty of money for the Renaissance to flourish: interest bearing paper bills creating money with the flick of a pen. As the public got habituated and domesticated to this state of affairs, especially under fiat money regimes with a central bank and numerous commercial and investment banks protected by armed guards, modern bank money started to serve the expansion of the aggregate economic activity by lubricating the wheels of capital markets in the form of “managed money.” (Keynes 1930: 7) Accordingly, Keynes offers a stylised scheme of the modern banking and monetary system:

Lietaer is correct, in my view, when he stresses that “for any deposit that any bank receives, it is entitled to create new money, specifically, in the form of a loan to a customer of up to 90% of the value of the deposit” (Lietaer 2001: 305).

In particular, the ‘compounded’ nature of interest embedded within the conventional monetary system, i.e. interest on interest, makes exponential economic growth essential to counterbalance the growth of monetary debt, which accrues with the mere passage of time. In the figure below, it is possible to appreciate the systemic nature of this process, not only in theory, but in the real curve of the money supply in either an advanced economy such as that in the USA economy or in an emerging one, such as that in India:

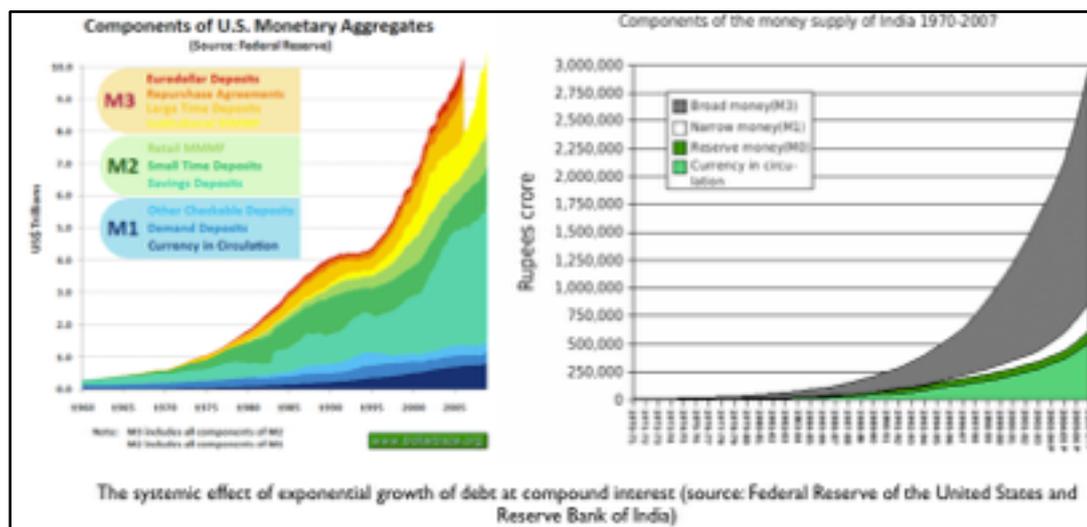


Figure 4: The systemic effect of exponential growth of debt at compound interest as for the tenets of orthodox monetary economics (Sources: FED diagram - www.venngage.com; and Reserve Bank of India diagram Lietaer, Arnsperger *et. al*, 2012: 102).

The economies of developing countries are even more prone to the effects of compound interest, as the declaration of former Nigerian President Obasanjo at the G8 Summit in Okinawa in 2000 illustrates: “All that we had borrowed up to 1985 or 1986 was around \$5 billion and so far we have paid back about

\$16 billion. Yet we are being told that we still owe about \$28 billion. That \$28 billion came about because of the foreign creditors' interest rates. If you ask me what is the worst thing in the world, I would say it is compound interest" (quoted in Lietaer, Arnsperger *et al.*, 2012). The effects of compound interest at this level can be critical: they can include the unsustainable exploitation of natural resources and / or human beings. However, as Henderson showed, "exponential growth is incompatible with a world having finite resources" (Henderson, 1981: 228). In turn, this begets structural adjustment policies and further indebtedness as the downward spiral continues. Rather than an economic law similar to a law of physics, conventional bank debt at interest is thus a very peculiar kind of money in that it is constitutively intertwined with debt in accordance with all documented history. As Keynes put it in the *Treatise*: "a title to a debt is a title to money at one remove, and, to the extent and within the field that confidence is felt in the prompt convertibility of the debt into the money, the element of remoteness is irrelevant to the serviceability of bank money for settling transactions. Bank money in the shape of bills of exchange was not less useful and necessary in the ancient world than today" (Keynes 1930: 13).

Still in the cage well guarded by *Homo Oeconomicus* and secured with the locks of the definition of money as unit of account, medium of exchange and store of value presented already by Aristotle in the *Nicomachean Ethics*, Keynes simply acknowledged that this type of money is the most useful *tool* that became the most widespread means of exchange and store of value. By contrast to the desirable direction to which his genealogy pointed, Keynes was either unwilling or perhaps unable to criticise the very ontology of money. Rather, he just treated it as a matter of course. As Keynes put it, slightly embittered:

“The decadent international but individualistic capitalism, in the hands of which we found ourselves after the war, is not a success. It is not intelligent, it is not beautiful, it is not just, it is not virtuous--and it doesn't deliver the goods. In short, we dislike it, and we are beginning to despise it. But when we wonder what to put in its place, we are extremely perplexed.” (Keynes 1933: 767)

To describe the nature of money through a definition of its functions embedded in the narrow tenets of orthodox monetary economics is not the same as defining what is the nature of money. In other words, if one answers the question – What *does* Money do? – then s/he is not answering the question, What *is* Money? Only an ontological answer to the question of money will give an awareness of the monetary blindspot while opening up the possibility to conceive new monetary solutions for the economic and biopolitical problems that an orthodoxy grounded on a fallacious ontology inherently impels. For now, it is enough to acknowledge that money is neither an object nor a multi-functional tool. That claimed, before giving the ontological answer at the beginning of the next chapter, in the following two sections, I will guide the reader through an economic and a biopolitical critique of the conventional monetary system – that is, the system that Keynes gave an exemplary description of in the *Treatise*, in what remains perhaps the richest account on the origins and nature of money from the twentieth century, and actively contributed to formulate his Bancor proposal for a supranational currency at the Conference in Bretton Woods a few years later.

1.3 An Economic Critique of the Orthodox Monetary Paradigm: five economic and structural shortcomings

In this section, I will present five major economic and structural shortcomings of conventional bank money. Recognition that we are in a paradigm in the first place and the fact that the assumptions of this paradigm are artificial institutional, cultural and social blinkers that hinder understanding of the paradigm itself are essential steps, but they must be followed by delineation of those blinkers and any damage they cause. Only then can solutions be proposed. Therefore, in what follows, I will present a critique of the economic dimension of modern bank-debt money in order to more strongly motivate efforts to seriously tackle the shortcomings of orthodox monetary economics within and without Academia. In particular, I will urge an attempt to put the human user, not money, at the centre of attention.

Recalling that in our current economic system, the monetary supply is fuelled exclusively through conventional bank debt at interest, the first shortcoming is the fact that modern bank money is produced by legitimately sanctioned agencies in a centralised and undemocratic monopoly through a “relatively autonomous socially enacted process” (Ingham 2000: 33). These agencies are mints, ministries of finance in concert with central and commercial banks, all of which feed off the securitisation food-chain through fractional reserve banking and financial engineering practices such as Collateralized Debt Obligations, Credit Default Swaps, Asset Backed Securities and High Frequency Trading (Aldridge 2010). In turn, they are rated by powerful accounting firms, which today can even threaten the existence of nation states by declaring their government bonds as ‘junk’.

Furthermore, the deployment of modern bank money promotes a self-reinforcing system of debt repayment through increasing borrowing backed only by a fraction of the reserves that the commercial bank owns and managed by

policies deliberated by central banks, which are not always reliable in their forecasts. Greco put it succinctly when he argued the following about the Federal Reserve Bank (FED), the most influential central bank in the world as the US dollar is the world reserve currency at the time of writing:

“the federal government has assumed the role of perpetual borrower. By monetizing part of the government budget deficits, the [FED] prevents the supply of money from lagging too far behind the growth of ‘debt’ incurred by private ‘borrowers’. The prevailing monetary policies of the FED will determine whether money is ‘easy’ or ‘tight’, i.e. whether monetization of government debt will be sufficient to provide private ‘borrowers’ with the amounts of money needed to pay their ‘debts’, or whether it will fall short. These actions by the FED are largely responsible for the ‘business cycle’ and periodic inflation and depression” (Greco 1994: 17).

The second major shortcoming is the fact that commercial banks grant loans created out of thin air onto which interest is paid in a profit-making setting. Thus, almost “all the money in a country exists because someone, somewhere, has gone into debt and is paying interest on it” by acquiring money from other agents in the same competitive game setting (Douthwaite 1999: 11), i.e. *homo homini lupus* (‘a Man is a wolf of another Man’, Hobbes 1642). More specifically, the loan that the bank creates is made of two essential parts, the principal and the interest: the former corresponds to the effective amount that the bank will credit on the account of the borrower while the latter is the sum of money that the borrower will have to pay back to the bank, plus the principal. A corollary of this second point is that, although they are mostly perceived as neutral intermediaries, banks create money essentially to make profits out of their activity and the only limit is set by the central bank’s reserve requirements, open market operations and fixing the discount rate. The underlying mechanism is explained by Austrian economist Murray N. Rothbard as follows: “[a bank borrows] these moneys because it expects to be able to lend the new cash at a greater than [e. g.] 10 percent rate, thus earning a profit differential between the interest it pays out and the interest it earns” (Rothbard 2008: 81).

The third major shortcoming is revealed in the answer to the following question: how well does the conventional banking system perform? Put differently, what is the verdict on bank-debt money's performance, if one assesses the behaviour of money in the orthodox instrumental fashion that Keynes presented in the *Treatise*? At a glance, the performance of modern bank-debt money is not top-ranking. Rather, it is dramatically poor. Indeed, Douthwaite showed how the canonic forms of modern bank money behave in response to the features of its own nature manifesting in a developed financial environment. Douthwaite claims that "since the end of the First World War, it has been extremely rare to have long periods in which the supply of money has been just right for the volume of trading. There had been periodic fluctuations from inflationary periods to deflationary ones, i.e. the business cycle accompanied by either monetary or banking crises (or both)" (Douthwaite 1999: 15). In other words, the tenets of orthodox monetary economics have been demonstrated to be effective in the real world in only a very limited number of times. Thus, this third shortcoming provides further motivation to reconsider the ontology of money and, thereby, conceptualise monetary reforms toward a democratisation and commoning of money, as is the object of the present research.

According to Douthwaite, since 1918, "most of the attempts to control the money supply have been intended to enable the monetary unit to serve as a reasonable store of value by preventing, or rolling back, inflation. These efforts were not notably successful and resulted in frequent large fluctuations in the value of one national currency in relation to another, within the space of a few weeks" (Douthwaite 1999: 17). For instance, a comparative assessment of the United States' CPI index leaves a few doubts about the unreliable performance of conventional national currencies as store of value: "the United States CPI on January 1, 1914 was 10.0. The CPI on January 1, 2009 was 211.1. This means that a man's suit that cost \$10 in 1913 would cost \$211 to-

day, a 2,111% increase in 96 years”². Indeed, since its introduction in the currency market in 1913, the U. S. dollar lost almost 96% of its original purchasing power, see Figure 5:

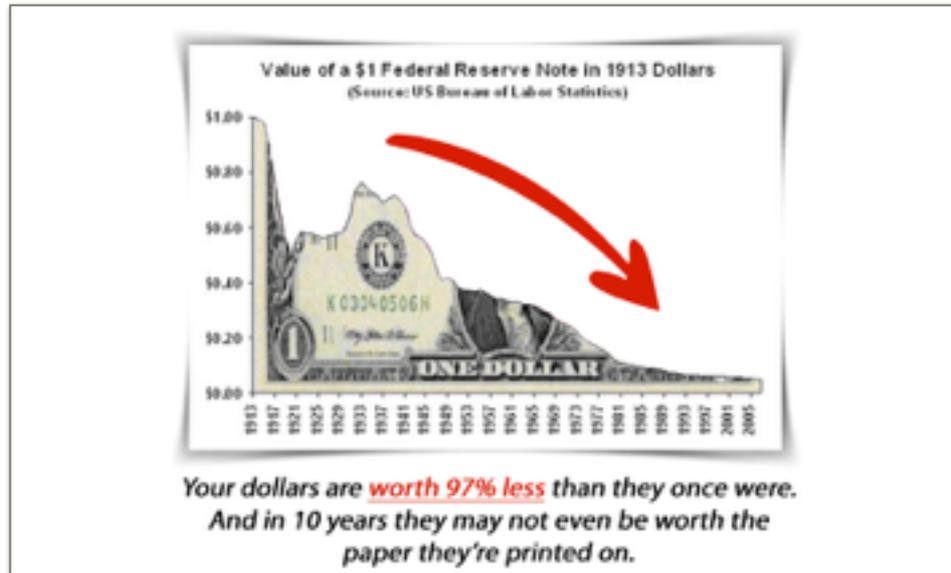


Figure 5: U. S. dollar devaluation graph from its inception in 1913 until the 2000s. The figure shows that in the long-run the process of devaluation is not a reversible one. (Source: US Bureau of Labor Statistics, image enrichment by Gold IRA Rollover Guide - Grow Your Money Tax Free In A Gold IRA - bit.ly/1ZBmPY).

Since conversion factors among currencies are necessarily influenced by international changes in prices of output or cost, or even inflation, it is extremely hard to obtain faithful financial comparisons even among two contiguous years: “[because] inflation has had to be allowed to take place continually (to enable there to be an adequate supply of the means of exchange), it is difficult to make meaningful comparisons between financial results several years apart. The usual method is to convert them all to a common unit (1990 pounds, for example). These conversions are not always simple to make because the prices of various components of output, cost, will almost certainly have changed by different percentage amounts” (Douthwaite 1999: 18).

² Data from the U. S. Bureau of Labor and Statistics (retrieved at <http://www.bls.gov/cpi/> on 12 September 2013).

A fourth shortcoming highlighted by the analysis of the nature of bank-debt money is a by-product of compound interest. In fact, compound interest serves as a structural mechanism for the concentration of wealth by continuously draining it away from the vast majority of productive workers and entrepreneurs, i.e. all those that do *not* have an equity position within the financial services industry (and have to borrow) and redirecting it towards lenders:

“Relations between creditor and debtor are analyzed in terms of a non-cooperative game between a principal and an agent. [Typically] the borrower (agent) is better informed than the lender (principal) about the investment project at hand. ‘Moral hazard’ arises because the agent could lie to the principal regarding the actual outcome of the actions chosen, and retain a larger share of the proceeds. To confront this problem the principal devises an *agreement* that takes the form of a standard debt contract, requiring the agent to pay a pre-determined amount of *interest*. The cost of failing to do so is bankruptcy, and hence the agent has an incentive (i.e. an overhanging threat) not to lie but rather to comply with the agreement.” (Lapavitsas: 2003 - my italics)

In turn, since all the money in circulation is created as debt at interest, everybody pays the cost of interest on almost every good or service that one exchanges for conventional money. In brief, this economic shortcoming may be referred to as built-in redistributive inequality. The wealthiest receive an uninterrupted profit from whomever needs to borrow money. For example, German architect Margrit Kennedy quantified in Deutsche Marks this dynamic of systemic wealth drainage from the German economy in the fiscal year of 1982. As Kennedy put it:

“If we take a more precise look at the last 10% of the population in terms of income from interest, another exponential growth pattern emerges. For the last 1 % of the population the income column would have to be enlarged about 15 times. For the last 0.01 % it would have to be enlarged more than 2,000 times. In other words, within our monetary system we allow the operation of a hidden redistribution mechanism which constantly shuffles money from those who have less money than they need to those who have more money than they need. This is a different and far more subtle and effective form of exploitation than the one Marx tried to overcome.” (Kennedy, 1995: 10; see also Piketty 2014).

Figure 6 shows this state affairs graphically:

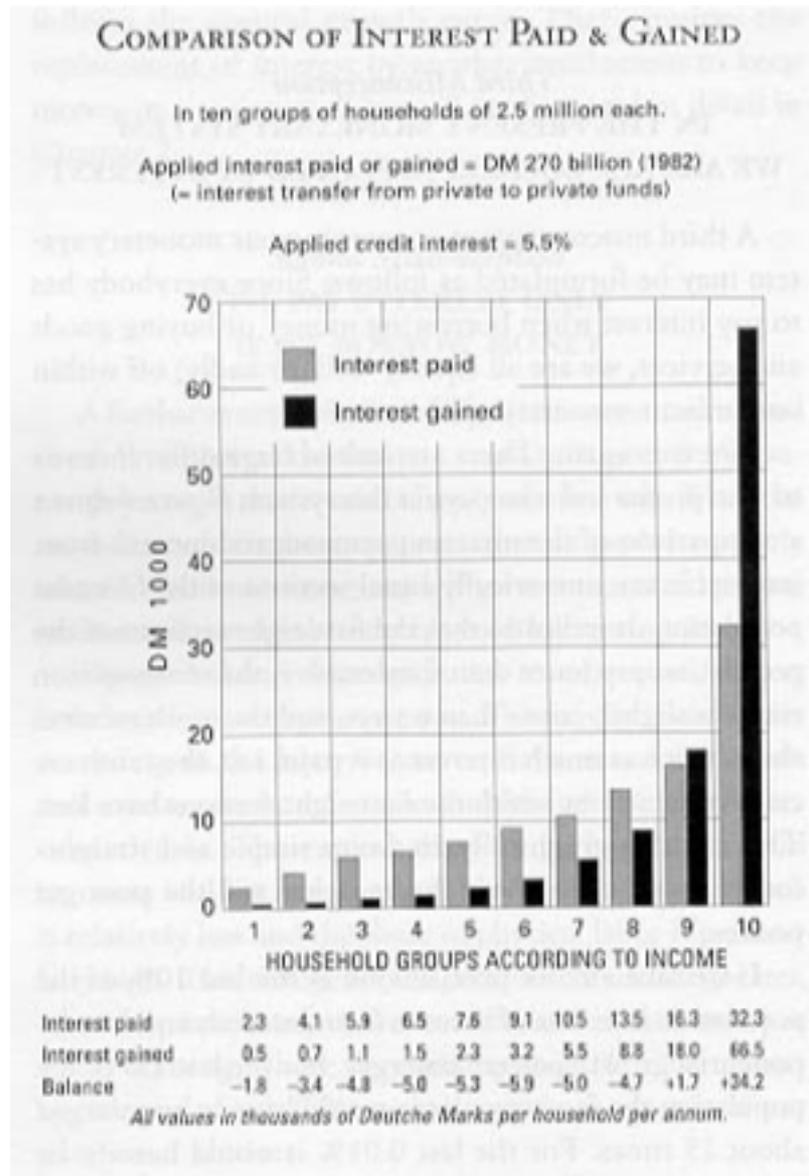


Figure 6: Transfer of Wealth *via* interest, in Germany 1982 (Kennedy 1995: 9).

This hidden mechanism is a component of the conventional monetary system that drives the life of billions on the planet, almost without their knowledge of it.

After these four economic shortcomings, I will now present a fifth structural one, related to the very network structure of the conventional monetary system. By inferring from the behaviour of every complex flow network in general, from a monetary economics point of view, Lietaer *et al.* demonstrated

that the conventional system “is careening toward brittleness and collapse because a general belief prevails that all improvements need to go further in the same exclusive direction (red arrow) of increasing growth and efficiency. For instance, the global monoculture of bank-debt money as legal tender is technically justified on the basis of efficiency of price formation and exchanges within each country.” (Lietaer *et al.*, 2009: 18):

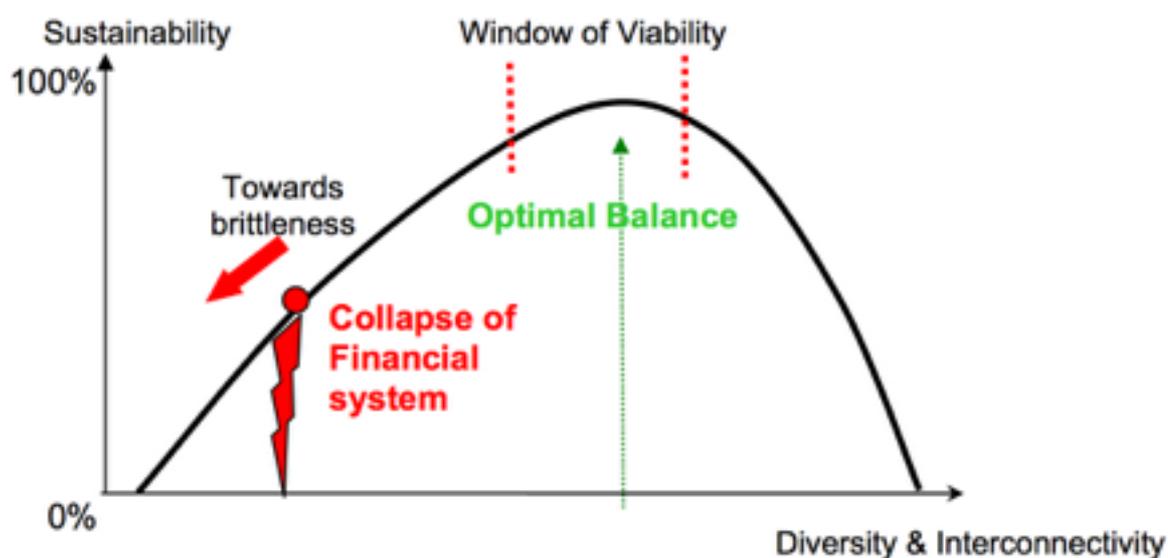


Figure 7: Network structure negatively influences the performance of the conventional monetary system. (Lietaer, 2010: 12)

Indeed, in an article entitled ‘Is Our Monetary Structure a Systemic Cause for Financial Instability? Evidence and Remedies from Nature’, Lietaer *et al.* (2010) mathematically demonstrated that the network structure of the conventional monetary system is the main reason that explains its instability and lack of resilience to the shocks it creates³. The important point is that the four negative economic aspects that I criticized above are expressions of the very structural framework of the conventional system. In particular, Lietaer *et al.* argue that “a system’s capacity to undergo change (H) has two components:

³ The *Journal of Futures Studies* (JFS) is a quarterly peer-reviewed academic journal in the discipline of futures studies. It is published by Tamkang University Press on behalf of the Graduate Institute of Futures Studies at Tamkang University in Tamsui, Taipei, in Taiwan. Although it is not a four-stars journal, it is in my view a legitimate source to include in a post-graduate research as it is peer-reviewed.

order and the absence of order ($H = X + \psi$)" (Lietaer, Ulanowicz et al., 2010: 4):

- 'X' is "mutual constraint": this component "quantifies all that is regular, orderly, coherent and efficient. It encompasses basically all the concerns of conventional science." (*ibid.*)
- 'ψ' is "conditional entropy" or "uncommitted potential": it represents the "incoherent and inefficient potential behaviours that escaped the scrutiny of science". In critical terms, it states that disorder is a key feature of a sustainable complex flow system, if it is to endure in the long run, "to adapt to changing environment, or survive unexpected challenges." (*ibid.*)

Hence, 'optimal' systems, those that endure in nature, structurally result from a combination of efficiency (correlated to mutual constraint and measured by the streamlining degree of 'node-to-node pathway steps') and resilience (correlated to conditional entropy and measured by the number of 'links per node'). In other words, efficiency is a function of mutual constraint while resilience is a function of conditional entropy. Accordingly, in nature, too much efficiency leads to brittle systemic configurations while too much resilience leads to stagnation. This applies to every complex flow network, including monetary systems: in the case of the conventional monetary system, the focus is exclusively put on mutual constraint in order to streamline the node-to-node pathway, that is efficiency, while conditional entropy and the interconnectivity that it carries within are neglected as irrelevant, according to the orthodox paradigm.

Indeed, in Process Ecology "configurations of processes or propensities rather than objects become the focus of our attention in explaining how and why things happen in biology." (Ulanowicz 2009: 117) According to this process-based approach to the study of biology, "Total System Throughput quantifies in a single metric the throughput efficiency of a natural network of transfer, i.e. material and energy." (Lietaer, Ulanowicz et al., 2010: 4). In an *analogous* way, national GDP - the total value of goods produced and services provided in a country during one year - is the corresponding element in economics. Thus, on the one hand reality offers uncountable examples of natural ecosystems that successfully endure for long periods with both efficiency and

resilience steadily in the value range of the window of viability. On the other hand, artificial systems such as the conventional monetary system show simultaneously high efficiency, but very low levels of resilience because the latter is not included as a valuable parameter in the orthodox monetary paradigm.

As Lietaer *et al.* put it:

“In ecosystems, as in economies, size is generally measured as the total volume of system throughput/ activity. Gross Domestic Product (GDP) measures size this way in economies and Total System Throughput (TST) does so in ecosystems. Many economists urge endless growth in size (GDP) because they assume that growth in size is a sufficient measure of health. GDP and TST, however, are both poor measures of sustainable viability because *they ignore network structure*. They cannot, for example, distinguish between a resilient economy and a bubble that is doomed to burst.” (Lietaer, Ulanowicz *et al.*, 2010: 7).

Although the analogy could be argued against in absolute terms, since money is an essential medium of exchange in economic transactions, Lietaer *et al.* further argue that money is to the real economy like biomass in an ecosystem. Therefore, if one applies the framework of process ecology to monetary, banking and financial systems, it is possible to predict by means of mathematics - ($H = X + \psi$) - that an exclusive focus on systemic efficiency will irredeemably lead to the creation of the kind of boom-and-bust economy brought about by the exclusive implementation of modern bank money for the functioning of the monetary system. And this goes beyond mere analogical reasoning. In fact, the primary importance that orthodox economists accord to the efficiency of the monetary system is expressed also through the adoption of a single type of money, namely modern bank money in the form of conventional national currencies. These flow in systems that are exclusively framed around efficiency improvements, rather than resilience gained by mimicking complex flow networks gaining strength from conditional entropy. Thereby, the national currencies monoculture of modern bank-debt money brings about a monolithic system “condemned to crash and collapse however many competent people dedicate time and heroic efforts to try to manage it”. (Lietaer *et al.*, 2009: 13)

For instance, how is it possible that after the IMF identified hundreds of systemic crises since 1970, i.e. the sum of banking, currency and sovereign crises - an average of 10 countries affected each year - the only solution by mainstream orthodox monetary theorists and policymakers is to repeat at a global scale, in substance, the same procedures that have been demonstrated to be flawed for hundreds of times in the past few decades? Why not consider whether a structural flaw could be in operation as Figure 8 suggests?

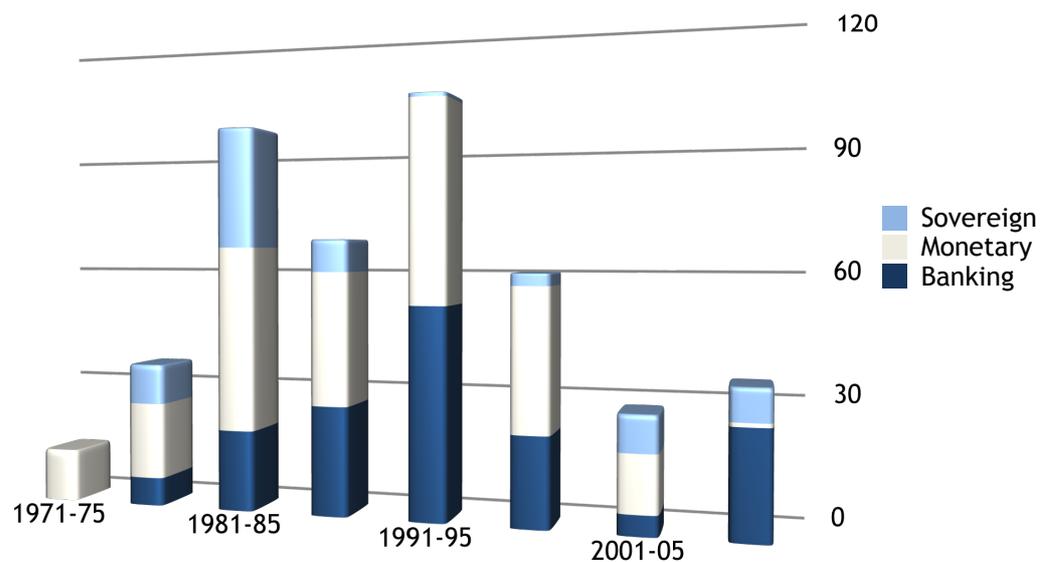


Figure 8: number of systemic crises, with distinctions among three types: sovereign, monetary and banking crises (1970 - 2010). Sources: World Bank, IMF. Graph created by Michelle Bishop using IMF definitions and data from Gerard Caprio & Daniela Klingebiel (1996); J. Frankel and A. Rose (1996), Graziela L. Kaminsky & Carmen M. Reinhart (1999); and, for the data after 2006, Luc Laevan & Fabian Valencia (2010) (Source: Lietaer *et al.*, 2012: 50).

In particular, “there were 145 banking crises, 208 monetary crashes and 72 sovereign debt crises between 1970 and 2010.” (Lietaer *et al.*, 2012: 51) After the mid-1990s, the state of crisis did not show signs of relief: the Asian crisis in 1997, Russia in 1998, and the DotCom bubble of 2001 confirmed the recurrent waves of instability affecting the monetary system. After the Global Financial Crisis in 2008, the European debt sovereign crisis, central in the debate at the time of writing in the 2010s, is the last manifestation of the same phenomenon.

To summarise, modern bank money is a centralised monopoly of debt-based money creation, which, apart from the labour force of taxpayers, has no intrinsic value in the current *fiat* money system enforced by law. It is loaned out at interest and for a profit according to principal-agent dynamics, but the money necessary for the total repayment of the loan is not brought into existence in the first place. This second shortcoming promotes structural scarcity of the means of exchange, a condition at odds with the paradigmatic necessity of exponential growth of the real economy to meet interest payments. Further, although it is a considerably widespread means of exchange, modern bank money is not a reliable unit of account nor a safe and robust savings instrument. Moreover, the nature of modern bank money surreptitiously promotes structural social inequality. Finally, the very network structure of the monetary system promotes efficiency at the expense of everything and everyone else, systemic viability included. Hence, on the one hand, modern bank money is what society basically adopted to reach a mature industrial configuration, which has lasted in the West for almost the past three centuries. On the other, and although I will stress in the next section that biopolitics is central to this critique of the conventional monetary system, from an economic point of view the poor performance of modern bank-debt money brings about a monetary system representing the major economic force behind the present disorders at the transition toward a digital economy (Lietaer 2001).

In conclusion, the last century saw a gradual decline in the performance of conventional national currencies, which has now reached global magnitude and influence. Indeed, modern bank debt money frames an *inherently unstable* monetary system, whose shocks have not been easily bearable even in advanced market economies. As former governor of the Bank of England, Mervyn King, put it concisely during a speech in 2010: “Of all the many ways of organising banking, the worst is the one we have today. Change is, I believe, inevitable. The question is only whether we can think our way through

to a better outcome before the next generation is damaged by a future and bigger crisis.” (King 2010) In an age of continuous innovation artificially slowed down by programmed obsolescence whereby every product on the market is slightly re-styled every year, it seems that only the monetary systems is left untouched in its obsolete state, substantially unchanged from its inception in the second half of the 1600s.

Put it differently and with a historical parallelism, why do we commonly agree with car manufacturing experts when they argue that a car from 1950 is either less secure or efficient and that we should opt for one more up to date, yet we continue to use credit cards, also introduced in the 1950s, despite their inefficiency and insecurity. With credit cards, banks offer a centralised, top-down, costly and slow service and experts in cyber security tell us that they are not safe to use in today’s digital payment systems infrastructures? It is therefore legitimate to wonder whether it is possible to conceive of money differently, in order to counteract the economic and structural shortcomings that described in this section, through the adoption of monetary innovations.

Before focusing on the ontological answer that can open up the possibility of new currency and payment system design solutions that perform better than obsolete bank debt credit cards, a further step has to be made in the rabbit hole of the orthodox monetary paradigm. In the next section, I will present an analysis of the power, control and ownership structure of the global network of transnational corporations, to which the financial services industry belongs. This exercise will be coupled with a biopolitical critique of the conventional monetary system, and the loss of trust in the financial services industry that substantiates it. In this way, we will arrive at an awareness of the undesirable effects of conventional monetary theory and policy on the life of individuals and, as a consequence, society as a whole.

1.4 A Biopolitical Critique of the Orthodox Monetary Paradigm: the debt structure of control and the loss of trust in it

After I acknowledged above the philosophical, economic and structural shortcomings of the conventional monetary system, in this section, I will firstly ask the reader to focus the attention on academic literature about the power structure of the global network of corporate control to which also the financial institutions and services industry belongs (Vitali *et al.*, 2011). Secondly, I will turn to the literature about the effects of the financial services industry on the lives of the individuals populating the economy by proposing a biopolitical critique of the orthodox monetary paradigm. Third, I will review the literature about the current “corporate crisis” (Nienaber *et al.*, 2014: 387) and the “loss of trust in large banks” (Hurley *et al.*, 2014). This is the part of the thesis in which I will argue about the negative effects of conventional money on human life as imposed by what I will name monetary biopower by drawing on Foucault and North, and experienced in every day biopolitics as argued for by Hardt and Negri.

Hardt and Negri describe biopower as follows: “biopower explains how the current war regime not only threatens us with death but also rules over life, producing and reproducing all aspects of society. [Biopolitical] production, in contrast, is immanent to society and creates social relationships and forms through collaborative forms of labour.” (Hardt and Negri 2004: 164). It is my strong conviction that only the study of the power structure framing monetary biopower (in both public and private spheres as most central banks are consortia of commercial banks) and its effects on the *life*, i.e. the very being, of the individuals using it, can possibly lead to the kind of critical thinking that might produce a reformulation of the *being of money* itself.

According to Foucault, biopower is “an explosion of numerous and diverse techniques for achieving the subjugation of bodies and the control of populations” (Foucault 1976). The last exercise for this chapter will, therefore, discuss ‘monetary biopower’ as one of those subjugating techniques of domination, i.e. the deployment of the power structure of the conventional monetary system as an apparatus for surreptitious social control. As North put it:

“If we take a Foucauldian approach, we would examine money as a system of domination “where it is in direct and immediate relationship with that which we can provisionally call its object, its target, its field of application . . . where it installs itself and produces its real effects” (Foucault 1980, 97). We would relate money not to any other system of power, but to its own object, target, or field of application.” (North 2007: 28; see also North 1999)

The deployment of monetary biopower as a technique of subjugation in view of social control by monopolistic monetary means is, I will argue, the main factor hindering the possibility for a monetary paradigm shift. Such apparatus of control for achieving subjugation may perhaps be better thought of as a pathological development of the social body caused by the intrusion of a parasite - i.e. conventional bank debt money bearing positive interest - in the *bios* of its hosts, that is the economies and the users of the conventional monetary system. In other words, the following analysis will offer a detailed view on the ownership and control structures that are the reasons we need a biopolitical critique in the first place. It will describe the power structure over life in general and human existence in particular that orthodox monetary economics and conventional bank money fuel at the social, economic and political levels. As Parker did for managerialism, I will propose that orthodox monetary economics is also “ultimately a form of thought and activity which is used to justify considerable cruelty and inequality.” (Parker 2002: 9)

That is, a debt based system in which money is purposefully scarce and where individual utility maximisation is praised on top of all the other individualistic social-Darwinist neoliberal values. Indeed, at the biopolitical level, the blindspot imposed by monetary biopower, i.e. capital, can be expressed as follows:

“Capital too functions as an impersonal form of domination that imposes laws of its own, economic laws that structure social life and make hierarchies and subordinations seem natural and necessary. The basic elements of capitalist society—the power of property concentrated in the hands of the few, the need for the majority to sell their labor-power to maintain themselves, the exclusion of large portions of the global population even from these circuits of exploitation, and so forth—all function as an a priori. It is even difficult to recognize this as violence because it is so normalized and its force is applied so impersonally. Capitalist control and exploitation rely primarily not on an external sovereign power but on invisible, internalized laws. And as financial mechanisms become ever more fully developed, capital's determination of the conditions of possibility of social life become ever more extensive and complete.” (Hardt and Negri 2009: 7)

For instance, central banking practices such as Quantitative Easing with real interest rates at near zero percent can only be implemented if one considers 99% of the population as a mere object, *livestock* to be put as collateral in an existential condition that seemingly leaves no escape:

“They say we have too much debt. We need better credit, more credit, less spending. They offer us credit repair, credit counselling, microcredit, personal financial planning. They promise to match credit and debt again, debt and credit. But our debts stay bad. We keep buying another song, another round. It is not credit that we seek, nor even debt, but bad debt—which is to say real debt, the debt that cannot be repaid, the debt at a distance, the debt without creditor, the black debt, the queer debt, the criminal debt. Excessive debt, incalculable debt, debt for no reason, debt broken from credit, debt as its own principle.” (Moten and Harney 2010)

Indeed, when we were born, nobody asked us to decide the type of money system that we must, by law, buy into. Somehow, magically, as our parents signed our birth certificate, we agreed to play the only monetary game in town: i.e. bank-debt at interest, which is the monopoly of the one type money accepted in the payment of taxes. Moreover, when an adult is so fortunate as to be creditworthy, and has the application for a loan accepted, banks clerks do not inform the borrower about the fact that the amount loaned is created out of thin air and that it acquires value only after the borrower signs (with her/his ‘blood’) the loan contract.

In brief, the monetary blindspot may not be exclusively the result of systemic structure and distribution of power and control within the network, but it could also result from an unwittingly built-in ignorance imprinted in the collective ideology and experienced since an early age by the vast majority of the users about fractional reserve practices and control systems such as the

one exemplified by Ferguson's square of power. The literature on biopolitics provides useful conceptual tools with which to criticise orthodox monetary economics and condescending neoliberal policies, allowing them to be recognised as the current most obnoxious forms of biopower, impeding a genuine evolution of social and economic reproduction of both forms of life and the common allowing for them. As Hardt and Negri put it: "to capture surplus value, capital must alienate the productive singularities, seize control of productive cooperation, neutralise the immaterial, exceeding character of the value, and expropriate the common that is produced" (Hardt and Negri 2009: 270).

Robust academic evidence about the network structure of monetary biopower, framed in relation to its self-preservation under the current regime of neoliberal corporatocracy, recently emerged from a study published in Switzerland in 2011. According to a research team at the Polytechnic of Zurich, the analysis of network topology regarding the ownership structure among a list of 43060 Trans-National Corporations (hereafter, TNCs) identified according to the OECD definition, turns out to be as follows (see also Figure 9, below):

"Besides the usual network statistics [...] two topological properties are the most relevant to the focus of this work. The first is the abundance of cycles of length two (mutual cross-shareholdings) or greater which are well studied motifs in corporate governance. [...] The second characteristic is that the largest connect component contains only one dominant strongly connected component (1347 nodes). Thus, similar to the WWW, the TNC network has a bow-tie structure. Its peculiarity is that the strongly connected component, or core, is very small compared to the other sections of the bow-tie, and that the out-section is significantly larger than the in-section and the tubes and tendrils" (Vitali et al., 2011: 5).

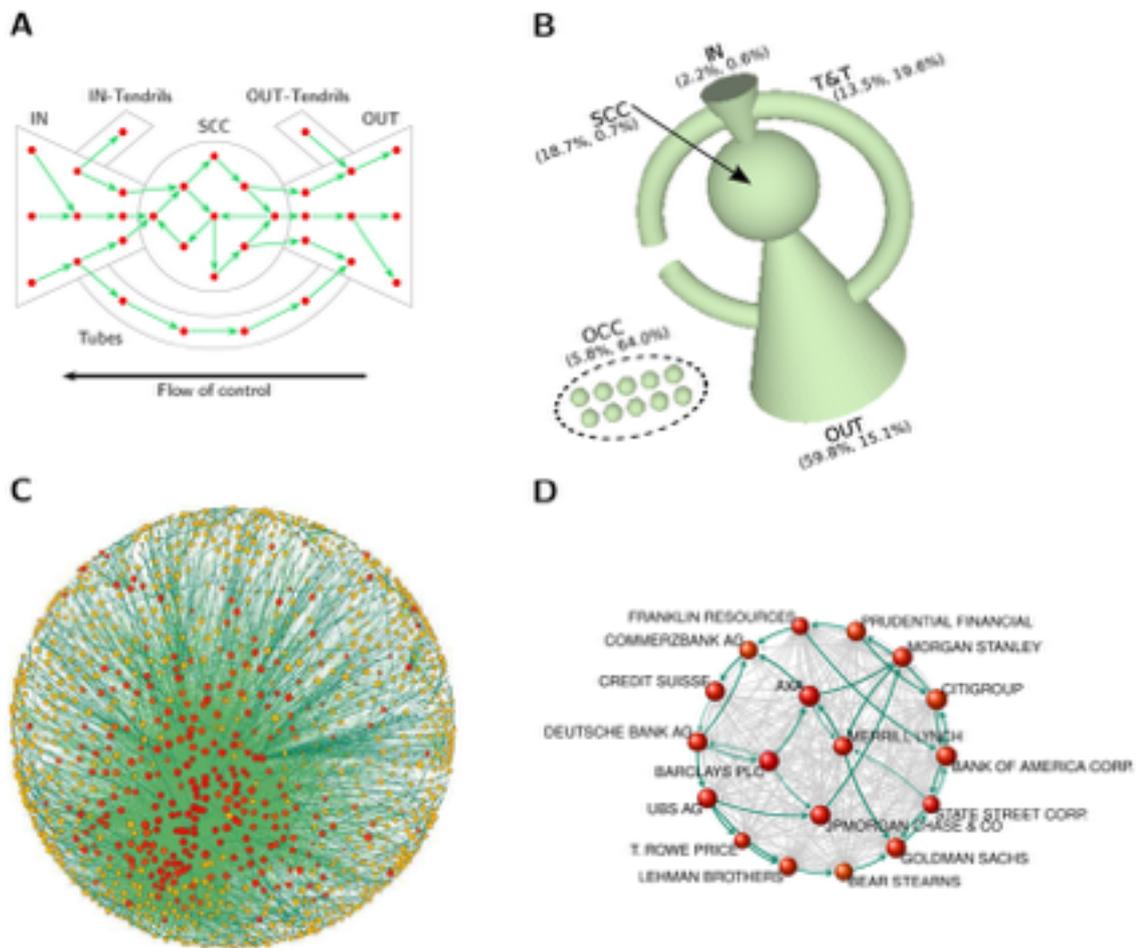


Figure 9: The Network of Global Corporate Control (Vitali *et al.*, 2011: 4)

In particular, the authors stress that the core is densely connected as each core member has an average of 20 links with other core members, resulting in 3/4 of the total ownership being concentrated within the core of the network.

This concentration of control is expressed by 737 top holders with 80% of the control over the value of all TNCs. The researchers in Zurich represent this in a Lorenz-like curve, as the following figure shows:

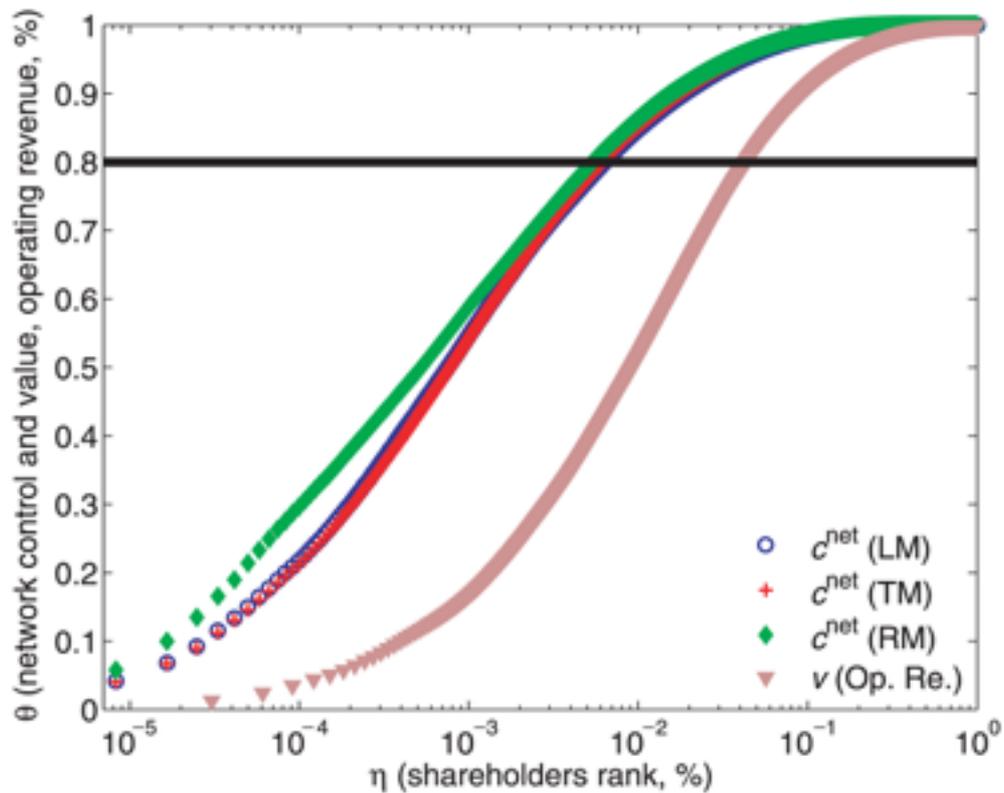


Figure 10: Lorenz-like curve showing the 737 top holders with an 80% of the control over the value of all Trans-National Corporations worldwide (Vitali et al., 2011: 7)

Remarkably for the present critique of monetary biopower – noting that banks are TNCs – the authors observe that network control is more unequally distributed than wealth:

“The fact that control is highly concentrated in the hands of few top holders does not determine if and how they are interconnected. It is only by combining topology with control ranking that we obtain a full characterization of the structure of control. A first question we are now able to answer is where the top actors are located in the bow-tie. As the reader may by now suspect, powerful actors tend to belong to the core. In fact, the location of a TNC in the network does matter. [...] In detail, nearly 4/10 of the control over the economic value of TNCs in the world is held, via a complicated web of ownership relations, by a group of 147 TNCs in the core, which has almost full control over itself.” (Vitali et al., 2011: 6)

According to Forbes Magazine⁴, the top 20 holders are:

1. Barclays plc
2. Capital Group Companies Inc
3. FMR Corporation
4. AXA
5. State Street Corporation
6. JP Morgan Chase & Co
7. Legal & General Group plc
8. Vanguard Group Inc
9. UBS AG
10. Merrill Lynch Co Inc
11. Wellington Management Co LLP
12. Deutsche Bank AG
13. Franklin Resources Inc
14. Credit Suisse Group
15. Walton Enterprises LLC (holding company for Wal-Mart heirs)
16. Bank of New York Mellon Corp
17. Natixis
18. Goldman Sachs Group Inc
19. T Rowe Price Group Inc
20. Legg Mason Inc.

⁴ <http://www.forbes.com/sites/bruceupbin/2011/10/22/the-147-companies-that-control-everything/>
(accessed on 19 October 2014)

Among the members of the core in the bow-tie structure in figure 8b, there are also some of the most powerful private financial power houses worldwide. National, supra-national and global monetary and financial institutions such as Eurosystem, Federal Reserve System, IMF, World Bank and BIS represent the kernel of monetary biopower. In turn, these findings imply a structural increase in systemic risk coupled with an undesirable decrease in market competition (Stiglitz, 2009), both - following Lietaer *et al.*'s argument, presented above - resulting from systemic efficiency gains. The researchers from the Polytechnic of Zurich conclude their article as follows:

“globally, top holders are at least in the position to exert considerable control, either formally (e.g., voting in shareholder and board meetings) or via informal negotiations.[...] From an empirical point of view, a bow-tie structure with a very small and influential core is a new observation in the study of complex networks. We conjecture that it may be present in other types of networks where “rich-get-richer” mechanisms are at work”. (Vitali *et al.*, 2011: 8)

Therefore, among the 147 TNCs that form the core of the network managing monetary biopower are some of those very financial institutions - investment banks for instance - that helped create the global financial crisis in the first place, then externalised the costs to the public and internalised profits in private. All this through constant bailouts acquired in a parasitical fashion and enacted as the most desirable choice (or least bad economic threat) apt to *save* the economy. Monetary biopower is thus a machine that automates the real subsumption of society into capital in post-Fordist economies (Negri *et. al*, 2002). The structure and regulation (or lack thereof) of the globalised network of TNCs favours the drainage of human life as labour force into the mechanics of monetary biopower. As Hardt and Negri highlighted: “Neoliberal government policies throughout the world have sought in recent decades to privatise the common, making cultural products—for example, information, ideas, and even species of animals and plants—into private property” (Hardt and Negri 2009: viii).

Notwithstanding that private property is advocated as the main pillar of a civil world by the financial services industry and most governments, and perhaps as a consequence of the dubious recovery of the global economy after the Lehman Collapse, public perception has been changing slightly in recent years. As I will argue in this section, there are signs coming from academic research that the public is beginning distinctly to feel the presence of a yoke around its neck. That is, there is a growing realisation that positive-interest-bearing bank debt is a system of control not necessarily aligned with the values and interests of the public. There is an accompanying realisation that there is a general deficit of democracy within the decision making structure of monetary theory and policy. If one revisits the metaphor of the parasite mentioned in the introduction of this section, one may argue that the host is beginning to recognise both that the parasite is draining its energies and that it may start to consider it as *persona non grata*. According to Gillespie and Hurley (2013), inquiries into the last two economic crises (DotCom bubble in 2001 and the Great Crash of 2008) resulted

“in an increased level of scrutiny on the financial services industry, and so have made customers more sensitized. [...] Therefore, we might expect organizational trust levels to similarly have declined over this period. This reduction in trust is likely to have consequences for the sector, and the speed and ability to restore confidence. The loss of confidence and the ongoing decline of trust within this sector has consequences not just for the organizations affected, but for us all.” (Gillespie and Hurley, 2013: 180)

Indeed, according to Hurley *et al.*, “there is a theoretical basis to suggest that trust is especially critical in financial services. [Beyond] theory, there is empirical evidence that trust in banking is challenged and is now at an all-time low” (Hurley *et al.* 2014: 349). One may then extrapolate this general sentiment to the European context, which is dependent on the US financial services industry, especially when facing the unintended consequences of the Triffin Dilemma. This is the dilemma that arises because of the paradoxical situation in which a national currency, in this case the US dollar, is also im-

plemented as global reserve currency. In such a situation, monetary policy apt to stabilise the global economy may jeopardise the US economy and *vice versa* (Kregel 1999).

Hurley *et al.* summarise the results of their data analysis as follows:

- Trust in banks has declined significantly over time (Figure 11):

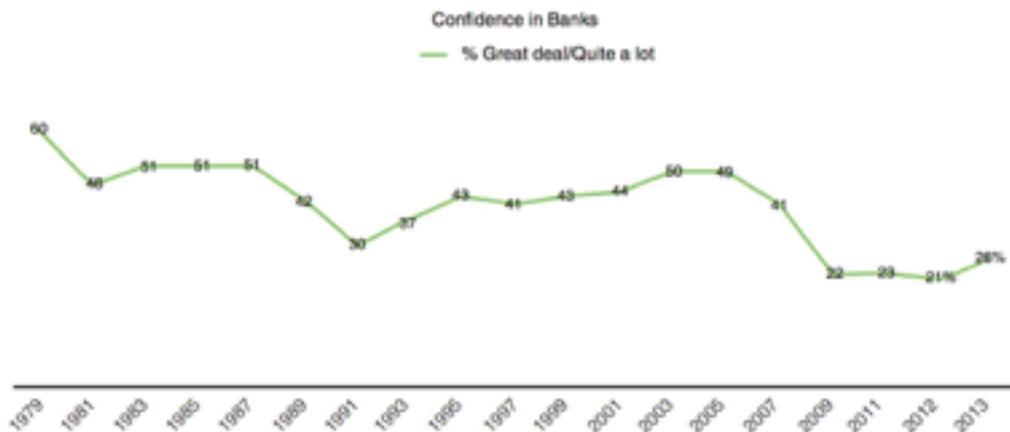
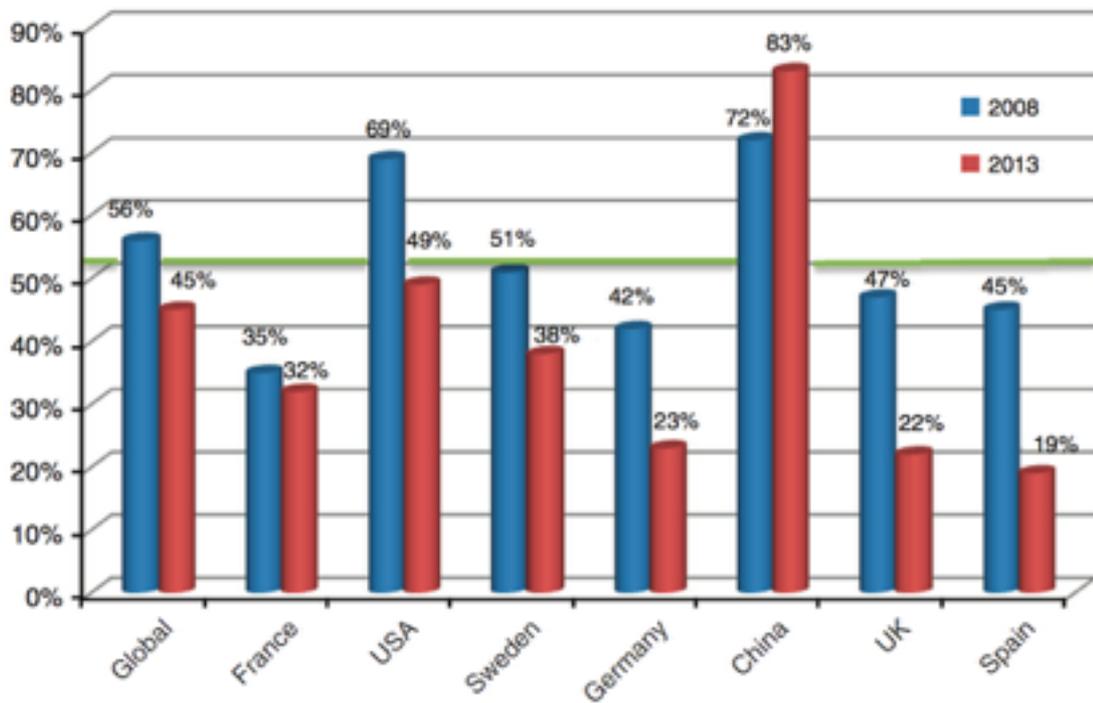


Figure 11: Decline of trust in banks over time. Source: Gallup in Hurley *et al.* (2014: 349).

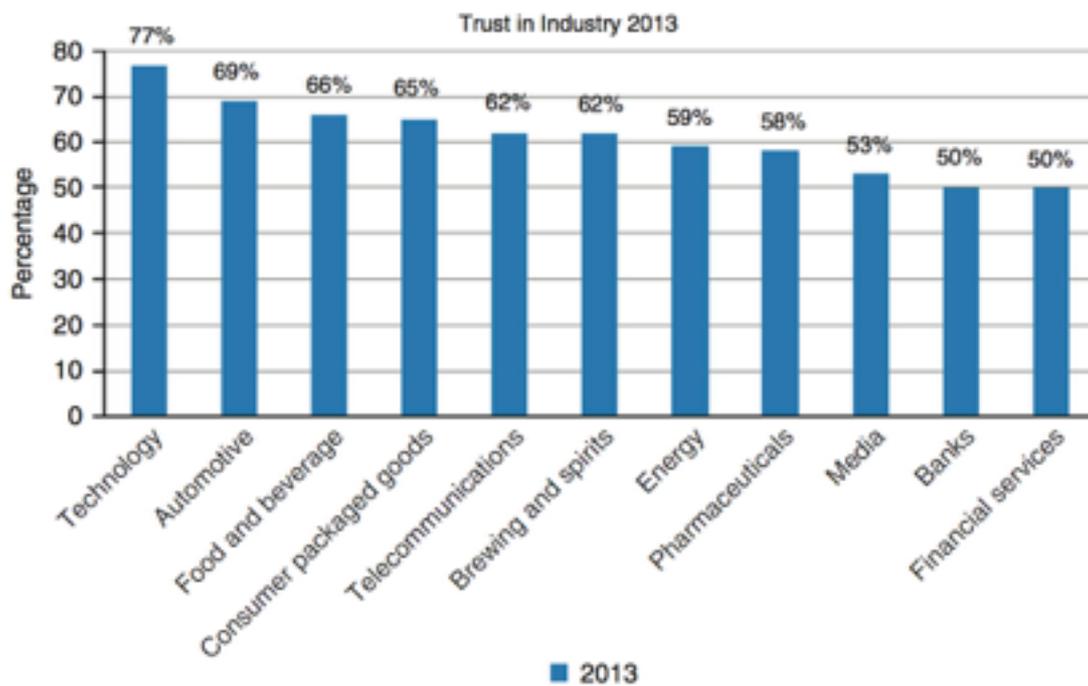
- Trust in banks showed major decline after the global financial crisis and this is true on a global basis with the exception of China, where the data have been questioned by the authors of the study (Figure 12);



Source: Edelman (2013)

Figure 12: Comparative analysis of customers trust in the financial services industry surveyed in 2008 and 2013. Source: Edelman in Hurley et al. (2014: 350)

- Banking is currently one of the least-trusted industries (Figure 13):



Source: Edelman Trust Barometer (2013)

Figure 13: Trust in Industry - Banks and Financial Services are at an all time low. Source: Edelman Trust Barometer in Hurley *et al.* (2014: 350).

In brief, customers are becoming aware that the conventional system does not deserve neither the confidence nor the discretion traditionally accorded to it. Nienaber *et al.* (2014) identify the factors responsible for the loss of trust in the financial services industry. These factors, primarily the power of money creation defended by centralised authorities, substantiate the violence of monetary biopower. Such symptoms are the outcomes of the current “corporate crisis” emerging from two different domains:

“first as the product of external factors that cannot be influenced by the company itself, such as a global negative economic, or structural development inducing unexpected losses of capital resources, customers, suppliers or partners (e.g. dot com bubble; mortgage-related crisis); second, their inception can lie within the organization, through management mistakes or incompetence (e.g. Barclays, Northern Rock, Royal Bank of Scotland), severe compliance deficits including fraud (e.g. Enron, Siemens), management mistakes and large lay-offs (e.g. Kodak, Opel), or fatal avoidable accidents (e.g. Fukushima, BP’s Deepwater Horizon).” (Nienaber *et al.*, 2014: 387)

In the context of austerity imposed by monetary biopower, this lack of trust in the financial services industry, coupled with the monopoly on *money cre-*

ation held by the banking system, has also meant a contraction in productive economic activity. This is because in times of austerity, credit is tight for individuals, especially small and medium sized businesses and even sovereign states as the Greek sovereign crisis of the 2010s shows.

Critiques of this economic model have been in existence since the post-WWII period. Their growth directly correlates with the financialization of the economy, *viz.* the increasing dominance of monetary biopower. In fact, Italian Operaism, or Workerism (Negri 1979/[2007]), Autonomia (Lotringer and Marazzi 2007), the no-global movements (Klein, 1999) and, more recently, the Occupy Movement and Accelerationism (Pasquinelli 2015) offer a radical biopolitical critique of the social incompatibility of *Empire*, the first title of the trilogy by Negri and Hardt (2000), a possible metaphor for what I roughly defined in this section as monetary biopower. This takes the form of the rule of capital, which can endure only through the destruction of the environment favourable for its host. That is, in Marxist terms capital extracts surplus value from the *common* as the locus of biopolitical labour:

“capital is indeed destroying the common in both its physical and social forms at alarming rates. Climate change, resource depletion, and other ecological disasters are ever-increasing threats. Extreme social inequality, barriers and hierarchies of wealth, race, and nationality, crushing poverty, and a host of other menaces too are shattering social forms of the common.” (Hardt and Negri 2009: 272-273)

In particular, capital expropriates the common through various forms of exploitation of the value produced in the biopolitical economy comprising both material and, especially, immaterial production:

“in the paradigm of immaterial production, the theory of value cannot be conceived in terms of measured quantities of time, and so exploitation cannot be understood in these terms. Just as we must understand the production of value in terms of the common, so too must we try to conceive exploitation as the expropriation of the common. [...] Exploitation is the private appropriation of part or all of the value that has been produced as common.” (Hardt and Negri 2009: 150)

Hence, the network structure governing the relations among Trans-National Corporations identified by Vitali *et al.* (2011), in particular the structural instability of the money system *per se* demonstrated by Lietaer *et al.* (2010) and

presented at the end of the previous section appear to be among the major structural components of the failure of trust relationships between the public and the financial services industry as described by Nienaber *et al.* (2014) and Hurley *et al.* (2014). Citizens are wondering why they work longer hours only to be more and more in financial distress in order to save a system whose honesty and integrity is breaking up progressively at each new crisis or scandal. This state of dissatisfaction is counteracted by monetary biopower through the perfection of productive techniques and the subsumption, not only of the physical bodies of the labour force, but also of their minds into capital, producing more and more for a lower and lower wage (Fumagalli and Lucarelli 2007).

Capital is in fact able to drain resources at the physical and, even more efficiently, at the cognitive and immaterial, i.e. biopolitical levels: “Through processes of globalisation, capital not only brings together all the earth under its command but also creates, invests, and exploits social life in its entirety, ordering life according to the hierarchies of economic value” (Hardt and Negri 2009: ix). In a nutshell, “the profits of finance capital are probably in its purest form the expropriation of the common” (Hardt and Negri 2009: 151). As the reader will appreciate in the next chapter, the struggle is thus shifting from the streets (as in the second half of the 20th century) to cyberspace, where monetary biopower is perfecting its extracting techniques of expropriation of the common in order to further and more surgically drain economic value from the very cognitive activity of internet users. An example of such techniques is profiling and personalised advertising on social networking platforms: Google offers email accounts that are superficially free, but in reality users are paying with their data, which Google acquires and then sells.

1.5 Conclusions

In this chapter, I guided the reader through a body of literature that allowed me to start the conversation on the necessity of paradigm shift in monetary economics. Since the object of study of the present research, i.e. money, is one that is so pervasive in human existence that it usually remains in the background as a foundational element of economic and human life, I explored the methodological and theoretical characteristics of the orthodox monetary paradigm. In turn, I described how the general lack of awareness of the paradigm itself results from a monetary blindspot in human economic perception. Following Lietaer, Arnsperger *et al.* (2012), I defined this blindspot as comprising three layers: the influence of single-currency thinking, the political opposition between capitalism and socialism sharing that same single-currency cultural bias, and the orthodox monetary *status quo* institutionalised by the square of power and still present in contemporary society. The multi-dimensional critique that followed related to the philosophical, economic and biopolitical aspects of the relation between humans and money. It is, thus, by beginning to open the black box of the dominant monetary paradigm that it was possible to make explicit the paradigm promoted by orthodox monetary economics, the nature of money according to the history of economic thought and the economic, structural and biopolitical problems that they inflict on society.

Having seen past the monetary blindspot, it is necessary to make the orthodox monetary paradigm explicit by defining its very object, i.e. the origins and nature of money. Indeed, the clarification of the object of study of orthodoxy is the pre-requisite for a recognition of the unappealing mechanics of the conventional paradigm that would desirably justify a reformulation of the ontological definition of money with a clear goal in mind: to re-design the monetary system in a way that does not present the inherent structural problems. My analysis of the genealogies of money presented by Menger, Simmel

and Keynes revealed a misconception of the ontology of money within the history of economic thought and philosophy. Menger's points on the commodity exchange theory framed a superficial, i.e. objectual genealogy of money. Secondly, although he offered an extremely analytical account of money including valuable insights on money as normative symbol, Simmel's sociological and idealist genealogy does not offer an empowering view of the subject who is relegated to an atomistic individualism based on the alleged objectivity of money. Thirdly, although he presented a welcome historiographic account of the origins of money, Keynes's Aristotelian definition of money, instrumental rather than ontological, also fails to help define the nature of money.

I then highlighted how the dominant instrumental misconception of the nature of money as a tool results in a structurally unstable monetary system that operates within the constraints of the monetary blindspot. As I argued for in my economic critique of the paradigm fostered by orthodox monetary economics, the inability of economists to recognise that they are grounded on an instrumental ontology of money - i.e. to describe money in terms of what it *does* instead of what it *is* - allowed for the undesirable development of a system presenting at least five economic and structural shortcomings: the monopolistic nature of fractional reserve banking and its relation with central banking that substantiates the boom-and-bust type of business cycle to which most users are accustomed to. Secondly, the competitive nature of the economy in which only conventional money is allowed to flow - the Hobbesian 'man as the wolf of another man' in the competition to acquire non-issued interest to pay back the principal - enables banks to make a profit out of their business of legalised usury. Third, the poor performance of conventional money in all three facets into which it is usually understood: unit of account, means of exchange and store of value. Even from an instrumental perspective, it should have become evident that after so many recurrent crises, to rely on the same tool, i.e. conventional bank-debt money for the operation of

functions that may well be in conflict, for example means of exchange and store of value, is not perhaps the most clever choice to make, if one is to have a stable economy. A fourth systemic shortcoming is the built-in drainage from the poor to the rich that structurally frames distributive inequality in society. Finally, the very network structure of the current monetary system - strongly devoted to efficiency gains, rather than securing its resilience toward enhanced sustainability - is another reason to explain why the economy exists in a perpetual state of crisis.

After my analysis of these five economic and structural shortcomings of the conventional monetary paradigm, I concluded the chapter with a biopolitical critique of orthodox monetary economics. In these regards, the orthodox monetary system can be thought of as a technique of subjugation and control of the social body as the analysis of the network structure of global corporate control by the team at the Polytechnic of Zurich showed (Vitali *et al.*, 2011). In turn, the effects of what I roughly defined as 'monetary biopower' through a conceptual evolution of Foucault's notion of biopower can be summarised as "[that which] stands above society, transcendent, as a sovereign authority and imposes its order," in the monetary domain (Hardt and Negri, 2004: 164). These are the all-encompassing repressive effects on human development that the dominance of financial capitalism structurally impels, as a parasite that efficiently extracts resources from his host. It does it efficiently, without reaching the host's breaking point so that the emancipation of the social body is always postponed to a future that never arrives. However, as research by Gillespie and Hurley (2013), Nienaber *et.al.* (2014) and Hurley *et.al.* (2014) indicated, the customer base of the financial services industry has begun to lose trust in it, since the aftermath of the 2008 global financial crisis.

In the next chapter I will therefore propose an answer to the ontological question about the nature of money. This will pave the way for the legitimization of a working definition of money by means of a semiotic genealogy of its

ontology. In turn, I will analyse Hardt and Negri's works on the Common and the Multitude in order to supply my intellectual toolkit with theoretical elements suitable for building a new paradigmatic approach – one which removes the monetary blindspot. Indeed, by recognising that monetary biopower can be attacked at its heart through the implementation of new approaches to money, I will detail below the design features of a Foucauldian *dispositif* suitable for the realisation of Hardt and Negri's proposal to strategise what they call the exodus of the Multitude (Hardt and Negri 2009) from the rule of capital through what they define as 'constituent governance'. This *dispositif* will be monetary in character and framed around four components. Rather than necessary elements, they will be thought of as possible examples of monetary reforms suited to encircle monetary biopower from the top down and the bottom up. Hence, I will define them as monetary instances for a constituent governance process suitable for the definition of a paradigm of Money for the Common Wealth of the Multitude.

2 Overcoming the Monetary Blindspot to define Money For the Common Wealth of the Multitude

2.1 Introduction

In the last chapter, I presented a critique of the existing, institutionalised, conventional and dominant monetary paradigm. I will now propose a constructive and proactive critique of the possibilities that sound academic literature, real world best practices and technological innovations in the FinTech sector suggest, if one is to remove the monetary blindspot and build a new paradigm in the monetary domain. The body of literature that I will review in this chapter sews the seeds for possible solutions to the economic and structural shortcomings of conventional money, in order to overcome the biopolitical problem of the subsumption of productive subjectivities and the common sphere to neoliberal market dynamics.

I will argue that it is only by means of a clarification of the ontological characteristics of money that it will be possible to propose relevant structural adjustments and go beyond the built-in limitations of orthodox monetary economics. The working definition of money proposed in this chapter will allow both me and the reader to chart a new course for the re-appropriation of the power of money creation by and for the users of currency and payment systems: the literature on the Chartalist approach to money and that on Basic Income (top-down components of the *dispositif*) will be coupled with complementary currencies, and cryptocurrencies for the common good (bottom-up components of the *dispositif*) as exemplary conditions of possibility to make concrete the exodus of the Multitude from the rule of capital.

To achieve this, I will first propose a semiotic genealogy of the ontology of money in section 2.2. Following this, I will review the literature on the Common and the Multitude in subsections 2.3.1 and 2.3.2. In subsection 2.3.3, I will introduce the notions of *dispositif* and constituent governance in order to formulate an exemplary monetary *dispositif* to strategise the Multitude's constituent governance process in the monetary domain. Section 2.4 will conclude the chapter. In other words, if monetary biopower grounded on private property feeds off of surplus value produced by enclosing both material and immaterial commons, perhaps a solution may lie in designing money itself as a set of components of a *dispositif* apt to substantiate initiatives of constituent governance in view of self-preserving and expanding the common sphere, rather than systematically eroding it.

2.2 A Semiotic Genealogy of the Ontology of Money

Following the negative critique of the orthodox monetary paradigm that I proposed above, I now argue for the type of genealogy of money that I consider as more appropriate to explain the nature of money. Recalling the analogy of the parasite and the host developed in the last chapter, we wish to develop an alternative where the parasite is transformed into a new, productive organism that supplies monetary resources rather than draining them; i.e. we wish to ground money on the Common and stop the syphoning of public surplus value into the service of private capital. The first operation to counteract the parasite, is to answer the ontological question about the nature of money. Having rejected the 'objectual', 'sociological-idealist' and 'instrumental' accounts of Menger, Simmel and Keynes, I will now provide my own answer to the ontological question about the nature of money: if money is neither a commodity, an objective social relation leading to radical individualism, or still a threefold tool, then *what is money?* I will unfold an ontological genealogy of money by looking at its nature through a semiotic lens. In this section, I will argue that money emerged in human affairs as a *writing system*. This philosophical analysis is the first step to make, if one is to understand the nature of money, clear the monetary blindspot and propose desirable solutions.

The definition of the ontological origin of money - i.e. the answer to the question: what is the process which made money emerge into human affairs? - is indeed offered by a semiotic genealogy of the concept. Only a genealogy, i.e. the study of the history of money's concrete emergence in human society as a writing system designed to store and share economic information, will lead to a working definition that will represent a theoretical move to overcome the orthodox paradigm. In general, the relation between money and language is

well exemplified by Nigel Dodd's considerations on Talcott Parsons' work. Indeed, Parsons argues that money is a symbol and its primary function in an economic system is to transfer information:

"It is his understanding of the content and derivation of such information, however, which distinguishes his analysis of money from formal economic theory. Parsons characterises money as a symbolic medium. As language is the prototypical symbolic medium, money is the analogous with language in its properties and functions. More specifically, money is specialised language in the context of the social system as a whole, a role it shares with other media such as power, influence and value commitment." (Dodd 1994: 60)

Drawing from contemporary Italian pragmatism, I suggest that on a genealogical level, the ontology of money is the result of a semiotic process (Sini 2005). As I documented above, it is noteworthy that there is scientific evidence - coming from philology and historiography - to argue with a high degree of certainty for the concomitant instantiation of money, interest-bearing loans and corresponding debts as a consequence of script-based accounting (Bulgarelli 2001). Semiotics is a method of studying signs and symbols and their use or interpretation, from which it is possible to retrospectively infer the nature of money at the ontological level, originally emerging as a writing system for accounting credits and debts. As I will argue below, I will endorse this practice-oriented, or pragmatic, approach to the genealogy of the ontology of money as it also aligns with Hardt and Negri's approach to the emancipation of the Multitude.

In this view, semiotics is the general and continuous interpretative study of signs, which grounds the formulation of every conceivable theory of knowledge and, hence, of every scientific theory, including monetary economics. The scientific roots of the semiotic process responsible in the present genealogy of the emergence of money as debt, *viz.* the process of interpretation of economic signs in monetary terms, dates back, as Keynes correctly observed, to the period 2500 BC –2000 BC in Mesopotamia, the age in which script and

monetary instances as written registrations of economic information had emerged for the first time as documented by modern historiography.

According to semiotician Carlo Sini, as well as Bulgarelli a member of the *Accademia dei Lincei*, throughout this five-century period, there was in Mesopotamia the institutional foundation and consolidation of the city-state, which gave consistency to the Temple Economy or Economy of the Palace together with the first episodes of debt crises (Sini 2005: 91 - 100). At this very beginning script summarises debt on clay tablets (names, seals, measures, quantities, products, etc.). The clay tablet functions as 'memorial support', which may perhaps explain Menger's conception of money as an object. In fact, the memorial support is a representation of money, not money itself. Moreover, the ministers of the temple are the "original repositories and depositories of the exchange - or in other words - the transaction leaves a mark that lasts in time as a reminder of the *public memory*" (Sini 2005: 94 - italics in the original). As oral memory is not a sufficiently well-performing support for processing the complex economic activity of accumulation and exchange, script enabled the expansion of the economic representational horizon of society during the history of Ancient Palatine economies. At this point there are in fact the first instances of economic written registrations in the form of money:



Figure 14: Cuneiform clay-tablet featuring a tally of sheep and goats, from Tello, Southern Iraq (Source: Encyclopedia Britannica - Foto Credits: Gianni Dagli Orti/Corbis)

What are the consequences of this translation from orality to script in relation to the nature of money as we conceive it still today? According to Sini, the original transaction was a living operation carried out by means of utterances: the peasant goes to the temple and receives what he needs (seeds, tools for working, etc.) through the inter-mediation of the ministry. It is obvious to both parties that, after the harvest, the farmer will deliver a part of the produce to the ministry for religious reasons. As the productive economy grows, the temple then becomes a big storehouse for foodstuffs, fodder, agricultural appliances, etc. Sini observes that ministries needed an efficient registration technology other than mere speech for managing increasingly complex accounting. Furthermore, the new and extraordinary multiplicity of transactions deserved a better “exchange mobility,” which was different from simple thing-to-thing barter (Sini 2005: 98)

With the possibility of scripture, the entire transaction is synthetically registered: 'today, at the date X...the farmer Y...coming from the village Z...' and so on and so forth. Let's check what happened in detail at a philosophical level. First the 'present,' which until that moment was eternal in its unperceived and unmeasured (because not measurable) timelessness, is transferred through the registration from the action of exchange into a signed "trace" (Sini 2005: 91). In fact, before the registration (on the *signed* clay board) there is not a precise place, an exact time and a definite duration of the transaction. Now, script initiates a new semiotic and economic scenario: from living action and generic speech, the transaction is now definable as a set of stable coordinates that are recoverable exactly in a predetermined future. However - and more importantly - I will strongly argue that time *per se* in its linear flow (as we usually conceive it) is the result of a semiotic process possible by virtue of both handwriting and its being "subsequent" in character (*ibid.*).

As historiography documents, the life of the farmer and of his community originally made reference to a cyclic experience of time: the alternation or rotation of day and night, the rotation of seasons, the renewal of the year, the revolution of celestial bodies are suitable examples. However, since the translation of time from oral symbols into subsequent written signs, which register the 'now' and forecast a precise moment in the future (which inescapably will arrive), according to Sini, "there is the emergence of a new experience of time. Both the circularity of time and the eternal return of the present glide into the background of oral-memory: in fact, there is a semiotic super-imposition of both a horizontal and a linear wait onto the oral memory of the cyclic time" (*ibid.*). In less technically philosophical terms, this means that circular time associated with oral communication is - through script - translated into linear time as we know it today. In a similar fashion, by virtue of the current translation of writing language into binary code, today real-time (the actual time during which a process or event occurs, i.e. the time between demand

and response) is being super-imposed on linear time. Indeed, at a semiotic level, languages for coding software contain and concomitantly expand alphabetical script. As a result, the possibilities to conceive money, as I will argue for in the case studies below, are hugely increased. As Dodd put it, referring to Simmel: “money is capable of being completely manipulated by its holder, in principle at least, a pure instrument through which an almost unlimited array of opportunities for its use is possible” (Dodd 1994: 56).

The semiotic process of discursively accounting for debts by means of script through the translation of the ‘said’ into the ‘written’ leads, in my view, to a more comprehensive understanding of the nature of money in general. Thereby, the ontology of money does not reside either in the features of the objects that symbolise it (shells, silver bars, clay tablets, metal coins, paper banknotes, plastic credit cards, etc.) or in those monetary functions it can be used for (unit of account, means of exchange, store of value, standard of value, etc.). Instead, the emergence of money at the ontological level is the result of an abstract formulation of value measurement, which is immaterial, conventional and inter-subjectively shared just as semiotic processes and natural language are with regards to discourse *per se*. Thus, at the ontological level, money is immaterial in character.

Because the genealogy of the semiotic process leading to the institutionalisation of money is based on script, a currency and payment system takes its existential strength from the fact that money as a contract is the economic expression of the “performativity of language”, whereby “the uttering of a sentence is, or is part of, the doing of an action which again would not *normally* be described as, or as ‘just’, saying something” (Austin 1962: 5 - italics in the original). In this respect, Marieke De Goede proposed a genealogy of finance, in which the latter is thought of as a “discursive domain made possible by performative practices” (De Goede 2005: 7). Thus, the record of a debt on a clay tablet formally is a *written* illocutory speech act - an act that includes the

concrete commitment to what is said (or written) such as “‘I bet you sixpence it will rain tomorrow’” (Austin 1962: 5); or ‘I promise to pay the bearer to pay the sum of...’ The implication is that the written registration of a debt, for instance on a promissory note issued by a bank, has a real effect on the economic reality of both lender (ministry of the temple, i.e. principal) and borrower (farmer, i.e. agent).

Since the translation of the ‘said’ in the written form brings about the written contract, which - as well as the utterance - is illocutory, it imposes an action to be accomplished within a certain time (repayment of one’s debt). Thus, the semiotic process harnessing the monetary power inherent in script allows to record faithfully the utterance; the speech act is therefore projected in time on the clay-tablet memorial support. The contract is concrete as it is the liability of the farmer. Indeed, from this point of view, each of the scribes in Ancient Mesopotamia, the scrivener at the Bank of England in 1694, a clerk at a central bank today and even a virtual (crypto)currency software developer is a performative actor. They literally create - in Austin’s terminology ‘do’ - money in the form of a written ‘promise to pay,’ be it on an analog support (clay-tablet, paper ledger, etc.) or on a digital one (Internet, hard drives, smartphones, etc.). According to Dodd, Simmel also noticed this aspect as “he contends that money is capable of being completely manipulated by its holder to the point of being co-extensive with the will” (Dodd 1994: 56).

Hence, if money is neither a commodified object, a social relation or a tool, what *is* then money? According to Lietaer, at the ontological level, “money is an *agreement* within a community to use something as a means of payment” (Lietaer, 2001: 47). In particular, money as an agreement is a notion that enables identification of the ontology of money as a writing system in that monetary agreements, in their various forms (treaties, government bonds, banknotes, bills of exchange, accounting ledgers, etc.) are composed as semiotic processes in the practices of writing. Further, as these semiotic

processes are performed for economic reasons, they are illocutory, i.e. they have themselves real world effects, or constitute intended actions. In effect, the illocutory power of money is to clear and settle transactions among economic actors as an effect of bargaining processes of interpretation of value. Because Lietaer's definition forms the working definition of money that I will use throughout the rest of this thesis, an analysis of its components is essential.

2.2.1 *The notion of Agreement*

Having recognised that money as debt emerged in Ancient Palatine economies by virtue of the development of script for economic purposes, it is legitimate to consider the ontology of money as immaterial and abstract as that of agreements - and the confidence in the contracts that they represent. In this regard, Lietaer claims that "money has much in common with other social contracts, such as political parties, nationality or marriage. These contracts are real, even if they exist only in the people's minds. The money agreement can be attained formally or informally, freely or coerced, consciously or unconsciously" (Lietaer, 2001: 47). Indeed, without agreement to give money illocutory strength, i.e. to believe in the value and trust in a currency as a means of payment, the seller would not accept the money from the buyer, who in turn would be not able to purchase goods or services from the former. In a nutshell, there would be no commerce and money would be a dead symbol with no performative power, instead of a means of exchange as it happens, for example, with ceremonial forms of money such as the *Uang Kepeng* in Bali (DeMeulenaere 2004).

In more detail, the word 'agreement' is not casually selected. Etymologically, 'agreement' means 'a negotiated and typically legally binding arrangement between parties as to a course of action' (Oxford English Dictionary). A synonym of 'agreement' is 'accordance' ('bring to an agreement' - Oxford English

Dictionary) from the Latin 'Cor', genitive 'Cordis', which means 'heart'. Therefore, at the monetary level the term 'agreement' crystallises the collective economic process, whereby money is real only if each party decides to abide to the condition of the illocution at hand. The type of approach to money that we still implement at the collective level - *mutatis mutandis*, the peculiar agreement enacted in the monetary domain - descends from practices dating back to the beginning of recorded history. That approach is mainly a top-down agreement based on the creation of money as debt at interest by an authority in the form of a promise to pay, and while this agreement has taken many material forms, its conceptual substance has not changed up to today.

This peculiar arrangement framing monetary biopower, today expressed in the orthodox paradigm of conventional bank money, stems from the very institutional configuration regulating monetary matters: "with the 1930 Copenhagen agreements, the Bank for International Settlements (BIS) was created, and with the Bretton Woods agreements of 1944, the International Monetary Fund (IMF) and the World Bank came into existence" (Lietaer, Arnsperger *et al.*, 2012). Furthermore, in 1976, five years after the Nixon Shock, the Articles of Agreement of the International Monetary Fund were amended for the legitimation of floating exchange rates as Nixon declared the end of the gold standard for the US dollar on August 15th, 1971. More recently, the Treaty of Amsterdam in 1998 represented a milestone toward the chartering of the European Central Bank, as the European version of the 1913 Federal Reserve Act in the US.

Within the Eurozone, economic agents share the same confidence in the European Monetary Union (EMU) based on the Euro, which derived from the creation of the European Currency Unit (ECU) whose policies are enforced by the European Central Bank. In general, just as it happened in ancient Pala-

tine Economies, a central bank has exclusive power - by agreement sealed with the authority of international and business laws - to create new money by purchasing government debt or via more exotic measures such as Quantitative Easing. All these agreements contributed to frame the current paradigm of money. They are writing systems that allow a money system to be initialised and enforced on its users through the incentive structure that it systematically puts in place.

These agreements take the form of statutes and international treaties defining the institutionalisation of money in society. From a biopolitical perspective, none of them have been *underwritten* by the citizenry of affected countries; and as mentioned above, citizens are beginning to distrust such institutions (Gillespie and Hurley, 2013). However, at the same time as the conventional monetary system has entrenched itself, citizens have experimented throughout history with monetary alternatives. Today, they are updating such experiments to use new tools made possible by the digital revolution, as I will show below. These complementary and subaltern agreements, in the form of currency and payment systems, are first and foremost designed in order to meet the needs of the users – something which should be the primary objective of a monetary system.

2.2.2 *The notion of Community*

The second component in the working definition of money is the term 'community'. Because the ontology of money resides in the philosophy of language and semiotics (as money systems are essentially writing systems), it is reasonable to make use of ideas and methods from disciplines related to linguistics in order to better elucidate the factors operating in the working definition of money. For instance, in sociolinguistics a community is a group of people who share the same language - or sub-parts such as specific slang, jargon and technical language (Berruto and Beretta 1977). Given the entanglement of language and the concept of money *via* semiotics, in a bank-debt based monetary community, everybody wanting to be operative in economic terms needs to share the same set of beliefs about modern bank money with other members of the same community. It is these shared beliefs that give individuals confidence to use a given means of payment. As Lietaer put it:

"Money as an agreement is valid only within a given community. Some currencies are operational only among a small group of friends (e. g. tokens used in card games), for certain time periods (e. g. the cigarette medium of exchange among frontline soldiers during World War II), or among the citizens of one particular nation (e. g. most 'normal' national currencies today). Such community can be the entire global community (as in the case of the US dollar by treaty, as long as it is accepted as reserve currency), or a geographically disparate group (such as Internet participants)" (Lietaer, 2001: 48).

In this thesis, I will define community as the Multitude (Hardt and Negri 2004). Indeed, I embarked in the biopolitical critique of the orthodox monetary paradigm with the central character of the monetary system in mind. That is, my critique was based on an awareness of the users and those who are excluded from the few benefits of the system's workings. As I will describe in more detail below, the Multitude represents those that are the singularities subsumed into capital who can be thought of as the heirs of the commoners composing the *Diggers Movement* expropriated during the enclosures in early modern England.

2.2.3 *The notion of Means of Payment*

The working definition of money that Lietaer proposes necessitates a terminological distinction between the expressions 'means of exchange' and 'means of payment'. As he put it: "note that the words 'means of payment' is used instead of the more traditional 'means of exchange'. The nuance is useful to be able to include transactions which have ritual or customary purposes, instead of just commercial exchanges. After all, it is only in Western culture that total priority has been given to commercial exchanges, neglecting other purposes of payment", for example marriage dues (Lietaer, 2001: 48). Indeed, the curator of the Department of Coins and Medals at the British Museum in London, Jonathan Williams, argues that the focus on commercial exchanges is peculiar of Westerners: "it is arguable that Western culture and its money systems, far from being 'normal', are actually an historical anomaly in their fixation on the commercial. If this indeed is right, it would be an even greater mistake for Westerners to interpret other monetary systems as a more primitive version of their own" (Williams, 1997 quoted in Lietaer 2001: 50).

In conclusion, semiotics, linguistics and sociolinguistic considerations offer a broader and inter-disciplinary scope of analysis for a sound unfolding of money's ontology, now recognised by drawing from semiotics as a writing system in the form of agreements defining money. In other words, money is now ontologically thought of - roughly - as the inter-subjective agreement in the adoption of a peculiar means of payment for processing economic activity. Such expanded scope of inquiry gives, I will argue, a new and more complete understanding of the nature of money in general, which will be useful in the following analysis of structural solutions to those structural problems that the narrow and ultimately flawed understanding of the nature of modern bank money triggers in financial and economic environments. Moreover, the semiotic genealogy of money as writing system that I proposed above is

also a legitimization of the working definition of money as an agreement within a community to use something as a means of payment.

In the following sections I will detail the features that, in my view, are desirable in order to deploy Lietaer's working definition of money to address the issue of the monetary blindspot and neutralise monetary biopower. Moreover, I will advance on Lietaer's work by proposing new and generative elements for a new monetary paradigm intended to stop the subsumption of society into capital, an aspect that Lietaer did not address. My main proposals are as follows. (i) To change from a single-currency paradigm to a multi-currency one (removing the first aspect of the monetary blindspot). (ii) To change from a monetary system that is either private or public toward a system that is common, i.e. a system that foster the production of the common by and for the Multitude and avoid the extraction of surplus value from the common itself (and so remedy the second aspect of the monetary blindspot). (iii) To achieve this by conceiving a *dispositif* made by both top-down and bottom up proposals and practices for monetary reform in order to proactively change the *status quo* (and so remove the third aspect of the monetary blindspot).

2.3 The Common, the Multitude, and the *dispositif* for monetary reform

In this section, I will go into more detail on the notions of Common, Multitude, *dispositif* and constituent governance as they are presented by Hardt and Negri in *Multitude* and *Commonwealth* (Hardt and Negri 2004 and 2009). In these works, the authors “give numerous examples of how people are working today to put an end to war and make the world more democratic, but do not expect our book to answer the question, What is to be done?” (Hardt and Negri 2004: xvi) As for what Keynes stated about capitalism, quoted at the end of subsection 1.2.3 above, Hardt and Negri are also aware of the problems of capitalism and monetary biopower. However, all these authors seem hesitant to propose solutions. In contrast, I will suggest what could be done in the monetary domain by offering examples of monetary reform and practices that will form together my main theoretical contribution to knowledge in this thesis. In a nutshell, my main theoretical contribution will be to propose a set of monetary reform proposals, which are not to be understood as absolutely suitable as they need institutionalisation and testing before validation, but can however enable the Multitude to begin envision the exodus from the rule of capital.

In order to propose meaningful solutions, which are used to enrich the academic discussion of the topic of money, in the following subsections, I will firstly discuss Hardt and Negri’s notion of Common. Secondly, I will detail the notion of Multitude and its economic field of action, namely biopolitical production. Third, I will present two components that Hardt and Negri suggest adopting in order to make the exodus of the Multitude from capital real: Foucault’s *dispositif* and Hardt and Negri’s constituent governance. Finally, I will argue for the top-down and bottom-up institutionalisation of monetary reform and practices by presenting four components of the monetary *dispositif*.

2.3.1 *The Common*

With their analysis of the Common, Hardt and Negri offer desirable elements to counteract the monetary blindspot that I described above by drawing from Lietaer, Arnsperger *et al.* (2012):

“When we take off the blinders of capitalist society that limit our vision, we can see with Marx that material wealth, including commodities, property, and money, is not an end in itself. [...] The real wealth, which is an end in itself, resides in the common; it is the sum of the pleasures, desires, capacities, and needs we all share. The common wealth is the real and proper object of production.”(Negri and Hardt 2004: 149, my italics)

Accordingly, as a first step to cure the blindspot or take off the blinkers of capitalist society that limit our vision, Negri and Hardt recall that “to reverse the conventional economic formulation, capital is increasingly external to the productive process and the generation of wealth. In other words, biopolitical labor is increasingly autonomous. Capital is predatory, as the analysts of neoliberalism say, insofar as it seeks to capture and expropriate autonomously produced common wealth” (Hardt and Negri 2004: 141).

In other words, they argue that capitalistic control - as I analysed it in the biopolitical critique of orthodox monetary economics presented above - “is increasingly becoming a fetter to the productivity of biopolitical labor” (Negri and Hardt 2009: 148). By contrast, “for economics to function today it has to be formed around the common, the global, and social cooperation. Economics, in other words, must become a biopolitical science”(Negri and Hardt 2009: 147). More importantly, “the biopolitical process is not limited to the reproduction of capital as a social relation but also presents the potential for an autonomous process that could destroy capital and create something entirely new” (Negri and Hardt 2009: 136).

Such novelty is what Dyer-Witherford (1999 and 2007) defined as Commonism, a notion he introduced in order to detach the idea of the Common from the more traditional notion of communism, which is essentially state-run capitalism in *via* central banking. Hence, at a glance, an initial way to go

beyond capitalism and socialism, i.e. counteract the second component of the blindspot (the false ideological opposition between either capitalist or socialist-communist totalitarian regimes) is to reframe the semantics around communism:

“the difference between socialism and communism, a difference that has been thoroughly obscured through the last century. In standard journalistic usage today communism is likely to be used to mean centralized state control of the economy and society, a totalitarian form of government parallel to fascism. Sometimes when a concept has been so corrupted, it seems one ought to abandon it and find another way to name what we desire. But instead, in this case at least, we find it better to struggle over the concept and insist on its proper meaning. At a purely conceptual level we could begin to define communism this way: what the private is to capitalism and what the public is to socialism, the common is to communism.” (Hardt and Negri 2009: 273)

In turn, Hardt and Negri describe the Common as something to be discovered as the emerging element that is *both condition of possibility of its own production and resulting product of the biopolitical economy* populated by the Multitude which shares it to generate its own Wealth:

“The common is thus in the paradoxical position as being a ground or presupposition that is also the result of the process. Our analysis, then, from this point on in our research, should be aimed at not “being common” but “making the common.” (Hardt and Negri 2009: 123)

Moreover, Hardt and Negri point clearly out their reluctance to refer to the ‘commons’, but praise the notion of ‘common’ as it reveals a novelty that the commons cannot offer:

“The common we share, in fact, is not so much discovered as it is produced. (We are reluctant to call this the commons because that term refers to pre-capitalist-shared spaces that were destroyed by the advent of private property. Although more awkward, “the common” highlights the philosophical content of the term and emphasizes that this is not a return to the past but a new development.)” (Hardt and Negri 2009: xv)

In order to highlight such conceptual novelty, Negri and Hardt theoretically detach themselves from the notion of ‘commons’ that is dear to orthodox economics (see for instance, Ostrom 1990). I will follow Hardt and Negri in their distinction between common and commons as Money for the Common Wealth of the Multitude is also a novel notion that needs intellectual space to evolve. The notion of ‘commons’ cannot offer a fresh start for discussing the possibilities to build a new paradigm in the monetary domain in that it

would either echo or invite imitation of the early modern context of the enclosures. It is also unsuitable because this thesis is oriented toward new societal developments in the monetary domain, where, in my opinion, it is not strictly speaking possible to manage money as a commons.

Indeed, an analysis of Brazilian micro-finance institution Banco Palmas (Hudon and Meyer, 2013) shows that the framework for the governance of common-pool resources formulated by the 2009 winner of the Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, economist Elinor Ostrom (Ostrom, 1990; Hess & Ostrom, 2003), cannot be fully applied to currency systems as the latter cannot be reduced to traditional material commons. Because it derives from either contracts with the banking system or the repayment of interest bearing micro-loans, not only can this resource not be considered definite, but it cannot also be thought of as a commons like a field for pasture in that ownership of the resource is not belonging to the actors enjoying it. In effect, bank-debt ownership is privately owned by the banking system, an asset in the writing system that is double entry bookkeeping; while, by contrast, traditional commons ownership was shared by the community, the commoners, before the expropriation in early modern times. For these reasons, I will follow Hardt and Negri in their distinction between 'common' and 'commons'.

After this terminological clarification, Hardt and Negri further detail the concept of desirable forms of Common by offering concrete economic examples, i.e. positive externalities:

"Economists register the common in mystified form through the notion of "externalities. [...] Positive externalities are benefits that accrue through no action of one's own. The common classroom example is that when my neighbour makes his house and yard more beautiful the value of my property also goes up. More generally and fundamentally, positive externalities refer to social wealth created outside the direct productive process, the value of which can be captured only in part by capital. The social knowledges, relationships, and forms of communication that result from immaterial production generally fit into this category. As they become common to society they form a kind of raw material that is not consumed in production but actually increases with use. [...] An enterprise in Michigan, northeastern Italy, or southern India benefits from the education system, the public and private infrastructure of

roads, railways, phone lines, and fibre optic cable, as well as the general cultural development of the population. The intelligence, affective skills, and technical knowledges of these populations are positive externalities from the standpoint of businesses. Capital does not have to pay for these external sources of wealth, but neither can it control them entirely. Such externalities, which are common to all of us, increasingly define economic production as a whole (Hardt and Negri 2004: 242-243)

With these examples of positive externalities as the desirable forms of the Common, it is then easier to grasp the paradoxical - albeit non-contradictory - conceptual nature of the common, which is both presupposition and result of biopolitical value production of the Wealth of the Multitude through the Common:

“A theory of the relation between labor and value today must be based on the common. The common appears at both ends of immaterial production, as presupposition and result. Our common knowledge is the foundation of all new production of knowledge; linguistic community is the basis of all linguistic innovation; our existing affective relationships ground all production of affects; and our common social image bank makes possible the creation of new images. All of these productions accrue to the common and in turn serve as foundation for new ones. The common, in fact, appears not only at the beginning and end of production but also in the middle, since the production processes themselves are common, collaborative, and communicative. Labor and value have become biopolitical in the sense that living and producing tend to be indistinguishable. Insofar as life tends to be completely invested by acts of production and reproduction, social life itself becomes a productive machine. These new properties of value in the paradigm of immaterial and biopolitical production, such as its immeasurable character and its tendency to be common and shared, undermine all the traditional mechanisms of accounting. The standard measures of production, reproduction, circulation, consumption, and investments all have to be rethought” (Hardt and Negri 2004: 147-148)

In order to remove the third element of the blindspot grounding monetary biopower that I presented above (the institutionalised *status quo*), therefore, it is necessary to rethink the notion of public interest, shifting from Ferguson’s square of power towards the affirmation of the common interest. Indeed, Hardt and Negri argue for a new meaning of sovereignty which, if implemented, would mean attacking monetary biopower at its heart:

“The common interest, in other words, is a general interest that is not made abstract in the control of the state but rather reappropriated by the singularities that cooperate in social, biopolitical production; it is a public interest not in “the hands of a bureaucracy but managed democratically by the multitude. This is not simply a legal question, in other words, but coincides with the economic or biopolitical activity we analyzed earlier, such as the commonality created by positive externalities or by the new informational networks, and more generally by all the cooperative and communicative forms of labor. In short, the common marks a new form of sovereignty, a democratic sovereignty (or, more precisely, a form of social organization that displaces sovereignty) in which the social singularities control

through their own biopolitical activity those goods and services that allow for the reproduction of the multitude itself. This would constitute a passage from Res-publica to Res-communis.”(Hardt and Negri 2004: 206)

Accordingly, I will argue that this holds also - if not primarily - for the sovereignty of monetary biopower. In other words, this movement of the Multitude toward the common sphere usually expropriated by capital, i.e. by monetary biopower through the mechanics of conventional bank-debt presented above, is expressed in an activity of re-appropriation of the Common:

“All that is general or public must be reappropriated and managed by the multitude and thus become common. This concept of the common not only marks a definitive rupture with the republican tradition of the Jacobin and/or socialist state but also signals a metamorphosis in the law, its nature and structure, its matter and form”(*ibid.*)

This shift from public interest towards common interest is already taking place, as Bollier put it:

“This is, in fact, a burgeoning new arena of political innovation in subsistence commons of the global South, digital commons on the Internet, and knowledge and design commons for physical production. New legal regimes are being created to manage public spaces, water systems and education as urban commons; provide social services, and introduce credit and barter systems through co-operatives. A vanguard of commoners is proposing stakeholder trusts for large common-pool resources such as oil, minerals, water and the atmosphere. Others are developing new organizational structures such as “omni-commons,” open value networks and community charters to provide legal stability and protection for commoning. [...] Remarkably, there are now many successful adaptations of laws dealing with contracts, trusts, co-operatives, municipal government, copyright, patents, and other bodies of law, that aim to protect common assets and the social practices of commoning. One might say that this experimentation and exploration are producing a new, not-yet-recognized body of socio-legal-political innovation, “Law for the Commons”.” (Bollier 2015: 2)

This has consequences for how one can deal with monetary reform in that re-appropriation is first and foremost re-appropriation of the means of production of money. Before presenting such consequences in the subsection 2.3.3 below, in the next subsection, I will explain the notion of Multitude, the community of users, to recall and expand on Lietaer’s definition of money, which the monetary reform proposals and experimentation laid out in the research sites below will be about.

2.3.2 *The Multitude*

If the arena becomes the Common, who are, then, the players? In other words, who are the components of the 'community' as the term appears in the Lietaer's definition of money: "an agreement within a community to use something as a means of payment"? According to Hardt and Negri, "*the multitude is composed of a set of singularities*—and by singularity here we mean a social subject whose difference cannot be reduced to sameness, a difference that remains different. [...] The multitude, however, although it remains multiple, is not fragmented, anarchical, or incoherent." (Hardt and Negri 2004: 99, my italics) Moreover, "*the multitude, designates an active social subject, which acts on the basis of what the singularities share in common.*" (Hardt and Negri 2004: 100, my italics) In particular, the relation between 'Multitude' and 'Common' is a coherent one in that "the key to this definition is the fact that there is no conceptual or actual contradiction between singularity and commonality" (Hardt and Negri 2004: 105). This is expressed as a dynamic and self-reinforcing relation between the common and singularities composing it. That is, the more the latter cooperate in Common by virtue of the common sphere that they share, and the more they produce new Common both at the material and immaterial levels:

"Singularities do communicate, and they are able to do so because of the common they share. We share bodies with two eyes, ten fingers, ten toes; we share life on this earth; we share capitalist regimes of production and exploitation; we share common dreams of a better future. *Our communication, collaboration, and cooperation, furthermore, not only are based on the common that exists but also in turn produce the common. We make and remake the common we share every day.*" (Hardt and Negri 2004: 128, my italics)

Although the value of material production is then expropriated by capital through the inherent dynamics of the conventional monetary system, which systematically drains the value produced by the Multitude, it is becoming increasingly harder for monetary biopower to tap into immaterial value produced by the singularities. Indeed, as the reader will appreciate below in more detail, the more capital expropriates immaterial value, the less value

may be expropriated in the following production cycle because the Common that allows for the production of such value is itself eroded. This is why biopolitical production, i.e. the Wealth of the Multitude, is becoming more and more autonomous from monetary biopower: “this production of the common tends today to be central to every form of social production, no matter how locally circumscribed, and it is, in fact, the primary characteristic of the new dominant forms of labor today.” (Hardt and Negri 2004: xv)

This becomes more evident, if one looks at the Multitude as a network, i.e. as “an open and expansive network in which all differences can be expressed freely and equally, a network that provides the *means of encounter* so that we can work and live in common” (Hardt and Negri 2004: xiii/xiv, my italics) As I will argue in the next subsection, from a monetary economic point of view, the ‘*means of encounter*’ are monetary and payment systems designed to foster the production of the Common by the Multitude. Thus, as it is a network, the multitude is not merely a group “defined by a shared identity” like the peoples of each nation (Hardt and Negri 2004: xiv). Secondly, the Multitude is not defined uniformly as the masses in that “the essence of the masses is indifference: all differences are submerged and drowned in the masses” (Hardt and Negri 2004: xiv - xv). Thirdly, Hardt and Negri avoid defining the Multitude as the working class in that “in its most narrow usage the concept is employed to refer only to industrial workers, separating them from workers in agriculture, services, and other sectors; at its most broad, working class refers to all waged workers, separating them from the poor, unpaid domestic labourers, and all others who do not receive a wage” (Hardt and Negri 2004: xiv).

Nevertheless, they still define the Multitude as a class concept that is primarily related to socio-economic and political, or as they put it, biopolitical production:

“Class is really a biopolitical concept that is at once economic and political. When we say biopolitical, furthermore, this also means that our understanding of labor cannot be limited to waged labor but must refer to human creative capacities in all their generality. The poor, as we will argue, are thus not excluded from this conception of class but central to it.” (Hardt and Negri 2004: 105)

In particular, the poor are central to biopolitical production as the poor form a huge share of the productive labour population:

“the closer we look at the lives and activity of the poor, the more we see how enormously creative and powerful they are and indeed, we will argue, how much they are part of the circuits of social and biopolitical production. [...] The poor’s inclusion in various forms of service work, their increasingly central role in agriculture, and their mobility in vast migrations demonstrate how far this process has already developed. [...] The poor, the unemployed, and the underemployed in our societies are in fact active in social production even when they do not have a waged position. It has never been true, of course, that the poor and the unemployed do nothing. The strategies of survival themselves often require extraordinary resourcefulness and creativity.” (Hardt and Negri 2004: 129 and 131)

In summary, the Multitude is a network of singularities that can be represented by the class of all those that are exploited by monetary biopower: from precarious workers especially in the creative industries to the poor; from immigrants to the unemployed and the underemployed; from those who perform social reproductive work to volunteers; to workers in the affects market, for instance fast food waiters that have to smile each time they serve a customer; to lawyers, psychologists, doctors and all social workers who manage affects-related aspects of the lives of everyone; and so on and so forth. In short, all those that are active in the new dominant form of labour, the post-Fordist paradigm - “a flexible production process based on flexible machines or systems and an appropriately flexible workforce” (Amin 1995: 72) - which results from all forms of biopolitical production:

“We will call this newly dominant model “biopolitical production” to highlight that it not only involves the production of material goods in a strictly economic sense but also touches on and produces all facets of social life, economic, cultural, and political. This biopolitical production and its expansion of the common is one strong pillar on which stands the possibility of global democracy today.” (Hardt and Negri 2004: xvi)

As the Common enables the Multitude to produce goods and services and reproduce itself, according to the upward-spiralling definition of the common, by its very economic activity the Multitude produces the Common it-

self. This is coherently possible through the production of new habits that resist the dynamic of expropriation of the common by monetary biopower. As I will argue for in the next subsection, habits are central to the substantiation of new agreements, i.e. writing systems defining Money for the Common Wealth of the Multitude in that “habits constitute our social nature. [...] Habits are living practice, the site of creation and innovation [...] Habits form a nature that is both produced and productive, created and creative—an ontology of social practice in common” (Hardt and Negri 2004: 197-198).

In particular, and although they still lack a monetary paradigm that makes them thrive, new habits spontaneously form as a result of the shift from the Fordist to the post-Fordist model of labour organisation at the service of economic production:

“In general, the hegemony of immaterial labor tends to transform the organization of production from the linear relationships of the assembly line to the innumerable and indeterminate relationships of distributed networks. Information, communication, and cooperation become the norms of production, and the network becomes its dominant form of organization. The technical systems of production therefore correspond closely to its social composition: on one side the technological networks and on the other the cooperation of social subjects put to work.” (Hardt and Negri 2004: 113)

To be more terminologically precise, Hardt and Negri specify that the notion of immaterial production is quite abstract and they prefer to adopt ‘biopolitical production’ to “highlight that it not only involves the production of material goods in a strictly economic sense but also touches on and produces all facets of social life, economic, cultural, and political” (Hardt and Negri 2004: xvi). In turn, this change in the quality of the composition of the labour market, wherein biopolitical production is becoming more and more hegemonic, also means a democratisation of labour itself: “Today’s biopolitical production shows how much human nature has changed. People don’t need bosses at work. They need an expanding web of others with whom to communicate and collaborate; the boss is increasingly merely an obstacle to getting work done” (Hardt and Negri 2009: 353). However, a money system that works for the Multitude is still needed, because bosses will continue to exist, if the

capitalist paradigm does not evolve into a better economic system. And *Money for the Common Wealth of the Multitude* is indeed an effort in the direction of monetary democracy.

Within the post-Fordist paradigm fuelled by biopolitical production, it has been argued that the organisation of economies under capitalistic rule is increasingly based on horizontal communication to share information, which induces cooperation among the singularities composing the Multitude. For instance, the emergence of business models such as that of AirBnB and Uber clearly exemplify this trend. Accordingly, Hardt and Negri suggest that society is reaching a tipping point, whereby capital increasingly loses control over the rules that frame economic production. This in turn enables the Multitude to self-manage production more and more autonomously:

“In the era of imperial sovereignty and biopolitical production, the balance has tipped such that the ruled now tend to be the exclusive producers of social organization. [...] the ruled become increasingly autonomous, capable of forming society on their own. [...] We spoke earlier of the newly hegemonic forms of “immaterial” labor that rely on communicative and collaborative networks that we share in common and that, in turn, also produce new networks of intellectual, affective, and social relationships. Such new forms of labor, we explained, present new possibilities for economic self-management, since the mechanisms of cooperation necessary for production are contained in the labor itself.” (Hardt and Negri 2009: 336)

The shift from Fordism to post-Fordism necessitates a redefinition of the notion of economic value, as value no longer emerge, for instance, from the dynamics of win-lose competition among economic agents but is instead created through win-win cooperation of the singularities composing the Multitude. As Hardt and Negri put it:

“What, then, is the definition of value in economic terms? This is a meaningless question unless we can make economics into bio- economics with reference also to biopolitics and bio-society, as well as, obviously, bio-resistance, bio-revolution, and even bio-happiness! Whereas capitalists have destroyed economics by turning it into mathematics, it is up to us to bring it back to the terrain of life and the ancient meaning of *oikonomia*. Economic value is defined by the over owing, exceeding process accomplished by cooperative activity (intellectual, manual, affective, or communicative) against and beyond the capitalist regulation of society exercised through the financial conventions of the market. *If the measure of value is still to have any meaning, it must be determined through the democratic exercise of the production of the common.* It would be useful to reclaim an old adage for ourselves as communists: freedom is not just a

political value but above all an economic or, better, a bio-political value.” (Hardt and Negri 2009: 320-321, my italics)

Since money is the measure of economic value, I will argue for a shift in its purpose: from serving monetary biopower at the expense of the Multitude and the environment, it should now be designed to serve the latter thanks to the institutionalisation of a multi-currency ecosystem thought so as to give a stable ground for what Hardt and Negri define as ‘ecology of the common’:

“And whereas according to the traditional notion, for thinkers like Locke and Rousseau, the formation of society and the progress of history inevitably destroys the common, fencing it off as private property, the biopolitical conception emphasizes not only preserving the common but also struggling over the conditions of producing it, as well as selecting among its qualities, promoting its beneficial forms, and fleeing its detrimental, corrupt forms. We might call this an ecology of the common—an ecology focused equally on nature and society, on humans and the nonhuman world in a dynamic of interdependence, care, and mutual transformation. (Hardt and Negri 2009: 170)

This inversion of the trend towards a tipping point opens up the possibility of ending the subsumption of society into capital. Negri and Hardt define this process of emancipation as ‘exodus’:

“By exodus here we mean, at least initially, a process of *subtraction* from the relationship with capital by means of actualizing the potential autonomy of labor-power. Exodus [is] an expression of the productive capacities that exceed the relationship with capital achieved by stepping through the opening in the social relation of capital and across the threshold. [...] This exodus does not necessarily mean going elsewhere. We can pursue a line of flight while staying right here, by transforming the relations of production and modes of social organization under which we live.” (Hardt and Negri 2009: 152 Italics in the original)

In other words, exodus is a set of new habits and practices that foster the autonomy of the Multitude from the rule of capital. From a monetary point of view, this is today more and more possible as both knowledge and technological development in this field are becoming more and more widespread. Indeed, in the following sections and chapters, and more extensively in the case studies presented below, I will offer a concrete representation of how germinal forms of exodus look like today. Exodus is the contemporary form of class struggle: “And, more important, exodus does not mean getting out as naked life, barefoot and penniless. No; we need to take what is ours, which means reappropriating the common—the results of our past labours and

means of autonomous production and reproduction for our future. That is the field of battle” (Hardt and Negri 2009: 164).

In the context of this thesis, the re-appropriation of the means of production and reproduction means primarily the re-appropriation of the means of production of money. As I will argue below, re-appropriation of the means of production of money is possible, if revolution happens within the conventional monetary and economic system through the institutionalisation of the struggles against monetary biopower. Contrary to all transitory revolutions in the past, Hardt and Negri propose Foucault’s notion of *dispositif* and their own version of ‘constituent governance’. They are the components that I will propose to weaponise money in order to fuel a revolutionary transition against monetary biopower, to ensure that exodus endures in the long term. Negri and Hardt summarise this as follows:

“Keep in mind that the one with the most fire power does not always win. In fact our estimation is that increasingly today a “disarmed multitude” is much more effective than an armed band and that exodus is more powerful than frontal assault. Exodus in this context often takes the form of sabotage, withdrawal from collaboration, countercultural practices, and generalized disobedience.” (Hardt and Negri 2009: 368)

As exodus is the path toward the liberation of the Multitude from the rule of capital, in the next subsection, I will examine the two tactical elements - the notions of *dispositif* and constituent governance - that Negri and Hardt propose to adopt in order to make exodus both real and stable, struggle after struggle. It is important to underline that the revolutionary and battle-oriented tones of this discussion are not due to a misunderstanding of exodus. Indeed, the Multitude could also do without monetary biopower by avoiding a revolution. However, it is monetary biopower that opposes the exodus, which would mean its own demise just as a parasite dies if the host manages to find ways to detach from it; and this is why the Multitude has to struggle against monetary biopower to make exodus happen. Therefore, such revolutionary activity for a transition and reform in the monetary domain is of utmost importance as “only the power of money, in fact, can represent the gen-

erality of the values of production when they are expressions of the global multitudes” (Hardt and Negri 2004: 156).

2.3.3 *The monetary dispositif as constituent governance for the exodus of the Multitude*

Since the scope of their theoretical effort is primarily political, Negri and Hardt do not offer a concrete plan of action for the re-appropriation of the power of money. However, they continue their argument by pointing to concepts likely to promote the exodus within a biopolitical framework, which is political and socio-economic at the same time. Thus, their strategic framework can be suitably adopted, if one is to put forward specific proposals that explicitly aim to foster the exodus from monetary biopower. First, they discuss the importance of the *dispositif* as theorised by Foucault, which they define “as a network of heterogeneous elements oriented by a strategic purpose” (Hardt and Negri 2009: 126). In particular, Foucault defined the *dispositif* as follows:

“By *dispositif* I understand a sort of formation, let’s say, whose primary function, at a given historical moment, is to respond to a demand [*urgence*]. The *dispositif* thus has an eminently strategic function [which means that] it involves a certain manipulation of relations of force, a rational and concerted intervention in those relations of force, either to *develop* them in some direction or to *block* them or to *stabilize* and *utilize* them.” (Foucault quoted in Hardt and Negri 2009: 126, my italics)

As I will argue below, a *dispositif* for monetary reform at the service of the Multitude can indeed be thought of as a network of heterogeneous elements, which together could offer a desirable and stabilising response to the urgent demands for monetary reform in the present historical critical period of monetary economic crisis described in the chapters above. As for the Foucauldian *dispositif*, such elements have a strategic function suited to help with the manipulation of forces within the dynamics of monetary biopower in order to intervene in it from various directions on the vertical axis of top-down

(to “block” and “stabilise”) and bottom up processes (to “develop” and “utilise”). In other works, I will develop both top-down and bottom-up proposals for monetary reform that will endogenously block and stabilise the nefarious dynamics of the conventional monetary system, while advocating for the institutionalisation of the development and use of monetary tools that operate exogenously from the conventional system and in a bottom up direction.

A second element that is needed for the exodus of the Multitude from monetary biopower is “constituent governance”. Negri and Hardt begin the analysis of this concept by describing the mainstream and dominant meaning of governance practices by monetary biopower. It “derives from corporate discourse, where it highlights the structures of authority and the mechanisms of management and accountability typical of capitalist corporations in contrast to state structures” (Hardt and Negri 2009: 224). However, by drawing from Luhmann and Foucault, they propose a second notion of governance whose meaning stands at the polar opposite with respect to corporate governance:

“Luhmann and Foucault both attempt to transcribe traditional concepts of sovereignty and its power of dictation into more flexible structures of decision making and more open processes of negotiation. Governance marks, in this context, an inversion of the direction of political communication: *a bottom-up process is substituted for a top-down one, and an inductive procedure replaces the deductive one*, as the system’s center of gravity shifts toward greater collaboration between state and non-state actors within the decision-making networks at multiple levels.” (Hardt and Negri 2009: 226, my italics)

In my proposal for monetary reform, I will endorse both perspectives, i.e. the top-down and the bottom-up, in order to come at conventional monetary biopower from all directions as prescribed by my interpretation of Foucault’s *dispositif*. This will also apply to inductive and deductive procedures, whereby top-down monetary reform will follow a deductive way of reasoning while bottom-up ones will be inductive. The common rationale is to build a framework for effective institutionalisation of “constituent governance” in the monetary domain: “just as insurrection has to become institutional, so too must revolution, in this way, become constitutional, building, through strug-

gle after struggle, on successive levels that indefatigably overcome every systemic equilibrium, toward a democracy of the common.” (Hardt and Negri 2009: 374-375) Constituent governance is, therefore, the optimal model to adopt in that “institutions form a constituent rather than a constituted power” (Hardt and Negri 2009: 359). This especially applies in the monetary domain made by performative writing systems by using natural and binary languages.

As I argued in subsection 1.1.2 on the monetary blindspot above, such a democracy of the Common is not systemically possible to realise within the political arena of opposing capitalism and socialism, or capitalism and communism. Dyer-Witheford’s notion of Commonism cannot work in a world in which the conventional monetary system is allowed to function as usual, i.e. both capitalist US and communist China run their economies through central banking. This is why I will argue for a top-down and bottom-up process of monetary reform suitable to reverse engineer the corporate governance structure of conventional monetary biopower. In other words, as Negri and Hardt put it by drawing from Balibar: “The multitude may be a sound sailing vessel, to borrow Balibar a metaphor, but without a rudder there is no way to predict where it will end up” (Hardt and Negri 2009: 173).

Indeed, I am firmly convinced that the rudder on the ship sailing the Multitude in its exodus from the rule of capital is the application of a *dispostif* to drive constituent governance for the production of its own Wealth. Such a *dispostif* draws from Hardt and Negri’s approach to constituent governance to make monetary reform real through the careful substantiation of its components. In turn, the components of the *dispostif* can be seen as the cannons of the ship. The cannons of the ship are, in turn, filled by those weapons that one can use to destroy monetary biopower and, therefore, enable biopolitical production to become structurally hegemonic. What kind of weapons? Monetary ones: changing from habituation to the conventional bank-debt mono-

culture to habituation to a multi-currency ecosystem made by writing systems that perform as money systems at the service of the Multitude.

Although the Multitude would happily avoid a violent confrontation with capital, monetary weapons are needed because monetary biopower will not allow the Multitude to simply depart from its rule. Therefore, on the one hand there is the need for new institutions to replace the ones governing the conventional monetary system. Since this is not novelty, outside the spectrum of orthodox economics, other researchers have already offered top-down proposals for monetary reform of the current institutional framework. In the next chapter, I will discuss two of them: first, the proposals for a universal unconditional Basic Income, mentioned also by Negri and Hardt and reinforced by the recent literature on Commonfare, i.e. a common-aware approach to welfare provisioning. Secondly, the contemporary version of the Chartalist approach inaugurated by Georg Knapp in the first half of the XX century and re-proposed in its recent version, i.e. Neo-Chartalism by mainly drawing from the work by Randall Wray at the end of the 20th century. These top-down proposals are the first two elements of the monetary *dispositif* proposed in order to reform the conventional central and commercial banking systems from within, thus enabling the payment of the Multitude for its economic production of goods and services while enjoying a basic income. Indeed, the physical infrastructure of the conventional system should not be destroyed, but I will argue that modification of its legal features and monetary mechanics can lead to an enduring exodus from capital.

On the other hand, I will discuss in more detail two bottom-up constituent governance processes that happen outside the realm of central and commercial banking. First, complementary currencies, which are useful both to stabilise the commercial sector and to pay for non-commercial value production by biopolitical labour (social reproduction). Secondly, I will introduce cryptocurrencies and distributed ledger technologies, especially those designed for

the common good. Subsequently, the latter will be the focus of the research sites that I will present in the chapters on fieldwork. In other words, complementary currencies and cryptocurrencies designed for the social good are the two bottom-up elements of the *dispositif* that I will argue more extensively for.

In conclusion, the two top-down and two bottom up components of the *dispositif* for monetary reform frame the rudder of the ship of the Multitude sailing away from capital. Hence, if one further extends Balibar's naval metaphor, the four components of the *dispositif* for monetary reform have to be thought of as cannons containing cannon balls in the form of the various types of currencies they can shoot against monetary biopower: Chartalist approach money and full-reserve banknotes; complementary currencies notes and their digital representations; cryptocurrencies and related digital financial assets issued to boost biopolitical production by design.

2.4 Conclusions

In this chapter, I presented the theoretical elements needed to remove the monetary blindspot. I indicated the elements necessary to propose desirable solutions to the problems that I presented in chapter one. The semiotic genealogy of money that I argued for at the beginning of this chapter allowed me to propose its ontology as a writing system. The latter is expressed by the agreement defining the features and the governance structure - be it subjected to the monetary blind-spot or not - of a certain kind of money regime instead of another. Indeed, the semiotic genealogy of money made the original meaning of money emerge through evidence from Ancient clay tablets, suggesting that money systems are first and foremost performative writing systems. With the semiotic nature of money crystallised in the notion of agreement, I then turned to the literature on the Common and the Multitude in order to contextualise Lietaer's working definition of money as an agreement within this post-graduate research thesis on Money for the Common Wealth of the Multitude.

After discussing the notions of Common (and its distinction from that of 'commons'), Multitude, *dispositif* and constituent governance, I however brought to the attention of the reader that in order to also solve the opposition between capitalism and socialism/communism, go beyond the institutionalised *status quo*, and therefore liberate the Multitude from the rule of capital, it was not only necessary to introduce diversity of currencies, but also a reformulation of the systemic architecture and governance structures of the conventional monetary system. I thus proposed to reframe complementary currencies as pieces of artillery in the dynamic of money weaponization for non-violent antagonism to monetary biopower. This military imagery came from Hardt and Negri's work on the Common Wealth and the Multitude. This body of literature made me realize that the question of governance of the conventional monetary system, i.e. the necessity to change its governance

structures in order to avoid by design the violent imposition of monetary biopower, was attainable by re-framing the strategy of the exodus of the Multitude by proposing an exemplary *dispositif* to ground a constituent governance strategy in the monetary domain.

Conscious of my own intellectual limitations, Foucault's *dispositif* should be thought of as a set of four exemplary strategies apt to stimulate academic conversation - rather than completely valid monetary reforms to be adopted beyond the shadow of any doubt - and deployed to institutionalise a framework for constituent governance in different political and economic constituencies at the service of the emancipation of the Multitude from the rule of capital. In the next chapter, I will describe these four exemplary components of a *dispositif* for monetary reform intentionally designed to serve the Multitude in the monetary domain, i.e. Basic Income, Neo-Chartalist money, Complementary Currencies and Crypto-currencies / Distributed Ledger Technologies. The latter will be the focus of the case studies presented below. In the context of this thesis, all four are elements that are intended to help substantiate a monetary ecosystem, wherein the Multitude shall thrive in the exodus from private banking and capitalist socio-economic regimes.

3 The four components of the *dispositif* to frame Money for the Common Wealth of the Multitude

In this chapter, I will focus primarily on the bottom-up direction of the *dispositif* to strategise constituent governance in the monetary domain. I will briefly introduce the main features of the top-down components, i.e. Neo-Chartalist approach (section 3.1) and the concept of basic income within the new framework of Commonfare (section 3.2). Subsequent sections describe the bottom-up components in more detail. This choice is justified because the academic literature is rich on both Neo-Chartalist approach and basic income, while I aim to make a novel contribution by focussing on bottom-up approaches. It is for this reason that the case studies presented and analysed in the chapters below focus on the bottom-up practices that complementary currencies and cryptocurrencies for the common good represent. Indeed, I focus on complementary currencies in section 3.3, highlighting their history (subsection 3.3.1), their benefits and best practices (subsection 3.3.2) and arguing for a critique of them (subsection 3.3.3). In section 3.4, I will introduce crypto-currencies designed and implemented to serve the monetary needs of the Multitude. Finally, in section 3.5 I will draw the conclusions for this chapter.

3.1 Top-down 1: Basic Income within Commonfare, a bottom up emerging form of welfare provision for the Multitude

A first top-down component of the *dispositif* able to frame a strategy for constituent governance in the monetary domain to facilitate the exodus of the Multitude from monetary biopower - also advocated by Hardt and Negri - is the institutionalisation of basic income (Atkinson 1996; Van Parijs 1991). Indeed, this would be the primary new approach to introduce in order to guarantee the means of payment to a Multitude that produces biopolitical value within the common socio-economic space that the singularities populate. According to Van Parijs (2004), “a basic income (or demogrant) is an income paid by a political community to all its members on an individual basis, without means test or work requirement” Van Parijs (2004: 1). In other words, it is a form of monetary provision by the State to all citizens independently of their social status. Van Parijs also specifies the “central case for basic income, as a strategy against both poverty and unemployment” (*ibid.*). Moreover, in the context of the narrative developed by Hardt and Negri on the becoming hegemonic of biopolitical production, economics professors Andrea Fumagalli and Stefano Lucarelli argue that “basic income can be seen as a viable economic policy able to contrast the instability generated by the present form(s) of accumulation, as it increases productivity through network and learning processes.” (Fumagalli and Lucarelli 2008:80).

Constituent governance proposals in favour of basic income as a form of re-appropriation of the means of production and distribution of money by the State are generating increasing debate and proposals from the public nowadays. For instance, in June 2016 Switzerland was the first country in history that held a referendum to ask the population to decide whether to switch from the current central banking system, supporting private fractional reserve practices, to a new form of ‘monetary sovereignty’, which promotes a central role of the public sector in the management of the money supply with

the adoption of financial practices such as full reserve banking in the country. In the same voting round, the population was asked to decide whether to introduce universal basic income provided by the State within a full reserve banking regime (Jackson and Dyson 2013). According to the organisers of the Swiss citizens' initiative, the Vollgeld Initiative:

"In a nutshell, the proposal extends the Swiss Federation's existing exclusive right to create coins and notes, to also include deposits. With the full power of new money creation exclusively in the hands of the Swiss National Bank, the commercial banks would no longer have the power to create money through lending. The Swiss National Bank's primary role becomes the management of the money supply relative to the productive economy, while the decision concerning how new money is introduced debt free into the economy would reside with the government" (<http://www.vollgeld-initiative.ch/english/>)

Even though the referendum did not pass as only 23% percent voted in favour of a universal basic income of the equivalent of US\$ 2500 per month, the Vollgeld Initiative is, in my view, another attempt of constituent governance that animates the effort toward a substantiation and institutionalisation of a monetary system working for the Multitude to build its Common Wealth. Another example comes from Finland, which started a concrete experimentation on universal basic income at the beginning of 2017. According to the website of Kela - an independent social security institution in Finland:

"The study population will consist of 2,000 persons selected at random in December 2016. They will be paid a basic income for a period of two years (1 January 2017 - 31 December 2018). Set at €560 per month, the basic income is paid unconditionally and without means testing. Recipients get it automatically once a month. A follow-up study will be conducted about the basic income experiment in which the study population is compared with a control group. The control group comprises all those who are not selected into the study population. They will not be paid a basic income. The purpose of the study is to examine the impact of the basic income. One of the topics studied is whether there are differences in employment rates between those receiving and those not receiving a basic income." (Kela website -<http://www.kela.fi/web/en/basic-income-objectives-and-implementation>)

It is still early to understand how effective this kind of policy will be. However, it is encouraging that such experimentation is taking place as it gives concrete evidence to the argument that I am developing in this section.

In the next section, I will review the Neo-Chartalist approach, which is a proposal for top-down monetary reform that can accommodate a sustainable

basic income provided by the State. First, however, I will describe the institutional framework wherein a proposal for basic income may fit as part of a larger theoretical movement for the reconceptualisation of the notion of welfare provisioning for the common. The larger framework in which basic income might be located has been termed Commonfare (Fumagalli and Lucarelli 2015). As the name suggests, Commonfare derives from the narrative of the common argued for by Hardt and Negri. It is to be understood as an economic specialisation of this narrative. Within academia, economist Andrea Fumagalli is a scholar publishing alongside other advocates of the concept of Commonfare. According to Fumagalli, the distinction between material and immaterial commonwealth can be expressed as *“re/productive commonwealth vis a vis cognitive commonwealth”* (Fumagalli 2015: 168). The production of wealth is no longer based solely on material goods. Indeed, it is now learning economies, which generate new knowledge, and network economies, which allow knowledge to diffuse beyond the network in which it was generated.

Therefore, Fumagalli proposes to frame welfare provisioning as a way to tackle the subsumption of society into capital by grounding Commonfare on two main pillars: the institutionalisation of universal basic income and a new management framework of common goods and the commonwealth. Since I am interested in the analysis of constituent governance proposals in the monetary domain, I will focus only on the former. In relation to this, Fumagalli argues that

“an unconditional basic income should be understood as a kind of monetary compensation (remuneration) of the social productivity and of productive time which are not certified by the existing labour contracts. It occurs at the primary level of income distribution (it’s a primary income), hence it cannot be considered merely as a welfare intervention, according both to workfare and Keynesian logics.” (Fumagalli 2015: 170)

However, critiques to basic income point to, for instance, “the risk of driving down wages, the risk of undermining collective bargaining for employer-provided benefits, or still the risk of undermining collectively-provided public services” (Huws 2016a; see also Huws 2016b). Nevertheless, as Huws put it and I underwrite:

“[these three major challenges] need to be confronted if UBI is to be introduced as a genuinely progressive initiative that can restore some dignity and security to the most vulnerable members of our society, enable a flexible labour market to function in ways that avoid exploitation while encouraging entrepreneurship and creativity and reduce social inequality. In doing so, I do not wish to pour cold water on the very idea. On the contrary, I think that, at this moment in history, it is crucially important – so important that what is needed now is a debate, not about the abstract idea of a UBI, but about how it could be introduced in the real world in a way that is genuinely compatible with social-democratic and feminist ideals and starts to rebuild the train-wreck that is currently all we have left of the 20th century welfare state that so many people worked so hard to create.” (*ibid.*)

In other words, an unconditional basic income can be thought of as a universal right of the Multitude – a right to access to money and financial infrastructures in general. In conclusion, as it is a means of redistribution, i.e. reappropriation of money by and for the advantage of the Multitude, basic income is the first component of the *dispositif* and, at the same time, it is an initial strategy to implement in the framework of constituent governance to overcome the third aspect of the monetary blindspot, i.e. the institutionalised *status quo*.

3.2 Top-down 2: the Neo-Chartalist approach

In order to institutionalise Basic Income within a framework of sustainable economic practices at the service of the Multitude and the Common Wealth it creates, a second structural change to the institutionalised *status quo* is needed. This second top-down type of monetary reform was also put in clear terms in the Swiss referendum proposal by the Vollgeld Initiative: not only to endow the State with the exclusive right to issue coins and notes, but to also include bank deposits under a full reserve, rather than a fractional reserve, banking regime. In this section, I will present this second possible component of the *dispositif* intended to overcome the monetary blindspot: the Neo-Chartalist approach to money. I selected this second example as it is one of the top-down proposals for monetary reform most discussed in academic literature. If implemented as a second strategic facet of constituent governance, it could decisively help the Multitude to effectively accelerate its exodus from monetary biopower.

Indeed, basic income might be more feasible had the public sector re-appropriated the power of money creation as suggested by the proponents of Modern Monetary Theory (Parguez 2002). To support such a re-appropriation, professor of economics at the University of Missouri-Kansas City, L. Randall Wray revived the Chartalist approach to money (Wray 1998). This resembles the main tenets of Keynes's *Treatise* with a particular focus on the role of the State as a third party rather than two parties trading through bilateral barter (Wray 1998, ch. 2). In fact, according to the Neo-Chartalist approach, money is still defined by its most fundamental function, namely the 'unit of account' function. Wray draws on both Knapp and Keynes with regards to their important works in the definition of the nature of money in analytical terms. Firstly, Knapp argued the case for a theorization of money which departs from the strictly traditional commodified and objectified view that I described in relation to Menger's work:

“When we give up our coats in the cloak-room of a theatre, we receive a tin disc of a given size bearing a sign, perhaps a number. [*The*] ‘ticket’ is then a good expression... for a movable, shaped object bearing signs, to which legal ordinance gives a use independent of its material. Our means of payment, then, whether coins or warrants, possess the above named qualities: they are pay-tokens, or tickets used as a means of payment. ... Perhaps the Latin word ‘Charta’ can bear the sense of ticket or token, and we can form a new but intelligible adjective - ‘Chartal’” (Knapp [1924] 1973: 31 - 32, my italics).

Knapp thus underlines the symbolic characterisation of money, a move which resonates with the semiotic genealogy of the ontology and origins of money as a writing system that I proposed above.

Moreover, Wray endorses Keynes’s stance in the *Treatise* as he argues that “[with] the rise of the modern state, the money of account (‘the description’ [or what I referred to as *agreement*] is chosen by the state, which is free to choose that which will qualify as money (‘the thing’ that answers to the description)” (Wray, 1998: 31). In this particular sense, Keynes stressed that the State not only chooses the dictionary - i.e. the name or the description in the contracts. In addition, the state “claims the right to re-edit the dictionary. This right is claimed by all modern states and has been so claimed for some four thousand years” (Keynes, 1930: 4).

Thus, according to Wray, “the ‘thing’ which answers to the ‘description’ is widely accepted not because of sovereignty alone, not because of legal tender laws and not because it might have (or have had) gold backing, but because the state has the power to impose and enforce tax liabilities and because it has *the right to choose that which is necessary to pay taxes* (‘twintopt’)” (Wray, 1998: 36 - my italics). Therefore, as Knapp put it: “money always signifies a Chartal means of payment. Every means of payment we call money. The definition of money is therefore a Chartal means of payment”, mainly used to pay taxes, because taxes themselves give value to the money issued by the State” (Knapp [1924] 1973, pp. 34 - 38).

According to the Neo-Chartalist approach, money is represented by a piece of paper, which is used either to represent a piece of gold owned by the Trea-

sury for backing the currency or nothing at all as it is the case in *fiat* money systems. Indeed, each and every modern and advanced economy operates a *fiat* money system, “which is created and issued by the State, but is not convertible by law into anything other than itself, and has not fixed value in terms of an objective standard” (Keynes 1930: 7). According to Wray, the contractual agreement is such that the citizen acquires money from the State by exchanging it for goods and services, which s/he supplies and the State prints the money for paying all the agents involved in the supply of goods and services to the State:

“The government does not ‘need’ the public’s money in order to spend; rather the public needs the government’s money in order to pay taxes. This means that the government can ‘buy’ whatever is for sale in terms of its money merely by providing that money... [Because] the public will normally wish to have some extra money, the government will normally have to spend more than it taxes; in other words, the normal requirement is for a government deficit.” (Wray, 1998: 18)

In other words, the role of the State is to enforce by *fiat* the monetary agreement which Chartal money represents. The agreement, roughly, is that the State promises to pay the population national money in exchange for goods and services. The citizens have therefore the right to legitimately ask for the money that the State owes to them, while they have the duty to pay taxes through the means of payment that the State decides to accept as ‘TWINTOPT’, i.e. ‘that which is necessary to pay taxes’. As Wray points out: “in the Chartalist approach the public demands the government’s money because that is the form in which taxes are paid... [the] modern state [uses] taxes as a means of inducing the population to supply goods and services to the state, supplying in return the money that will be used to retire the tax liability” (Wray, 1998: 37).

According to Wray, the State would become an employer of last resort in order to facilitate the acquisition of ‘TWINTOPT’ by all members of society by “exogenously set[ting] the ‘marginal’ price of labour” (Wray, 1998: 124).

However, Wray presents this very centralized perspective of the State, and consequently of money issuance and control, with an orthodox footprint by referring to the *Treatise*. Therefore, Wray's proposal is an element of the *dispositif* that, if incorporated in the framework of constituent governance, could serve the Multitude with respects to basic income provisioning and banking at large. In the Neo-Chartalist context, although centralised, the monetary system will be publicly owned, rather than privately owned by central banks that today lend money to the State in exchange for treasury bills collateralised by the Multitude's biopolitical production. According to *Positive Money* (a United Kingdom campaign for monetary reform):

"By creating sovereign money, the government can help the economy to grow without relying on households to take on ever larger amounts of debt. The Bank of England starts by creating £10 billion of new money, which is transferred to the government and spent into the real economy. As it flows through the economy, this new money can generate up to £28 billion of extra spending, boosting GDP by around 1.5%." (Positive Money website: <http://positivemoney.org/how-money-works/advanced/how-central-banks-create-money/> last access on 10th April 2017)

However, within the conventional system that operates today, the Multitude pays taxes to the State which in turn transfers this money to the central bank to serve interest payments and the issuance of new debt.

Secondly, Wray's proposal relates to the possibility of helping to solve the issue of unemployment, as the State would become the employer of last resort, substituting for the central bank as lender of last resort. As an employer of last resort the State could help counteract adverse dynamics of the business cycle while also amending banking regulation. Commercial banks would lose the privilege to operate under the fractional reserve regime and would be put under a regime of full reserve banking (Fisher 1936; Allen 1993; de Soto 2012). In the latter regime, commercial banks would be required to keep the full amount of each depositor's funds in cash, ready for immediate withdrawal on demand.

Notwithstanding its suitable features as a component of the monetary *dispositif* to counteract the shortcomings of privately issued bank-debt money, the Neo-Chartalist approach has been object of critique under three main respects. First, as I discussed above, advocates of the Neo-Chartalist approach argue that money has value as TWINTOPT. However, this is tenable only in Anglo-Saxon fiscal regimes, and not in general. For instance, in the European Union this approach to public money would be problematic to implement as Wray prescribes in that “central banks are utterly independent on national states where the fiscal authority resides.” (Febrero 2009: 540). Secondly, Neo-Chartalists claim that under such regime the State can decide the value of money, but as Febrero put it, “there are some factors (workers struggling for higher wages, or energy and raw material shortages) affecting the power of state money.” (Febrero 2008: 524). Thirdly, according to the Neo-Chartalist approach, “private bank money can be understood as a leverage of fiat state money.” (*ibid.*) As private bank money precedes historically State money as “banks create deposits when they accept demand for credit from creditworthy borrowers first and look for reserves later,” (Febrero 2008: 540), the State would not be the creator of money in the first place. These critiques are valid from a positivistic point of view as Febrero argues. However, he also admits in his critique of Neo-Chartalist money that from a “normative standpoint, [...] things become very different” (*ibid.*) in that, as a theory, this approach to public money creation can be normatively sound. Nevertheless, when analysed in relation to the conventional monetary system, as for my fieldwork experience discussed in chapter five below, it becomes harder to inductively prove the validity on this and other elements of the monetary *dispositif* as only a full implementation of Neo-Chartalist money could give a satisfactory answer around its validity.

Indeed, apart from complementary currencies which have a long and documented history showing both their strengths and limits, the other components of the monetary *dispositif*, i.e. basic income, Neo-Chartalism and cryp-

to-currencies together with distributed ledgers had not been sufficiently tested in the real world to prove or disprove their soundness as an alternative to conventional bank-debt money. Therefore, I believe that my proposal is in principle valid, with the caveat that in order to validate it in practice, there is the need for extensive experimentation on the real world implications of the components monetary *dispositif*, which I both advocate theoretically and also attempted to apply with arguable success into practice. In conclusion for this section, with the Neo-Chartalist approach, not only the State could operate as employer of last resort, but it could also distribute credit in the form of basic income as a civil right that each citizen would enjoy. Although the Neo-Chartalist approach presents critical aspects around its validity, which need to be tested in the real world, I suggest that this second component of the *dispositif* to frame the strategy for constituent governance could help overcome the current institutionalised *status quo*, i.e. to cure the monetary blindspot.

3.3 Bottom-up 1: Complementary Currencies

As I argued in the sections above, a prerequisite for overcoming the second aspect of the monetary blindspot is a shift in narrative from the opposition between capitalism and socialism-communism to the the opposition between capitalism and commonism. Furthermore, the two top-down components of the *dispositif* described above can also be seen as strategic constituent governance initiatives likely to neutralise the negative effects of the third aspect of the monetary blindspot, i.e. the current institutionalised *status quo*. In this section, I will discuss a third component of the *dispositif*, which is a third strategy for constituent governance suited for tackling the first aspect of the monetary blindspot, single-currency thinking: complementary (Lietaer 2001) or “subaltern currencies” (North 2010b: 32) creating a multi-currency ecosystem. If one defines money in general as a writing system expressed in the form of an agreement, one may then see that the agreement that regulates a certain type of money system such as conventional bank-debt at interest is one among many possible ones. As John Kenneth Galbraith put it: “the process of money creation is so simple that the mind is repelled” (Galbraith 1975: 29).

This realisation is then the basis for questioning the agreement onto which the single-currency system is grounded. More importantly, a pluralistic approach to money makes it possible to propose new and better agreements in order to tackle societal challenges that the conventional system either neglects or cannot structurally address to promote the exodus of the Multitude. The work by Vivian Zelizer is in this sense a valuable conceptual bridge, as she proposes to look at conventional money itself in a pluralistic fashion. Indeed, Zelizer acknowledges the importance of referring to the different meanings that one can assign to conventional US dollars:

“the classic economic inventory of money’s functions and attributes, based on the assumption of a single general-purpose type of money is thus unsuitably narrow. By focusing exclusively on money as a market phenomenon, it fails to capture the very complex range of characteristics of money as a non market medium. A different, more inclusive coding is necessary, for certain monies can be indivisible (or divisible but not in mathematically predictable portions), non fungible, non portable, deeply subjective, and therefore qualitatively heterogeneous.” (Zelizer 1989: 351)

Zelizer argues, correctly in my view, that dollars can present qualitatively different uses that go beyond the utilitarian framework, for example as a bribe is different from a salary.

However, she still operates within the sphere of single-currency thinking promoted by monetary biopower. Indeed, Zelizer's qualitative study of extra-economic uses of conventional money does not go beyond the domain of national currencies such as the US dollar. By contrast, what I am proposing as the third element of the monetary *dispositif* opens up a pluralism of monies that increases the possibility of framing a structurally sustainable money system. As I suggested in section 1.3 above, in the money creation process, the current dominant monopoly of a monoculture of national currencies (Euro, Pound, Dollar, Yen, Yuan, Rupee, etc.) frames a system which is inherently characterised by a significantly fragile structure prone to poor systemic performance. Since more efficiency triggers more brittleness rather than reducing it - and since another monoculture of currencies will resemble the present systemic framework without improving it - what is, therefore, the parameter to take into account when designing a monetary framework to overcome the shortcomings of the present monetary system?

The answer that also solves the economic and structural problems identified in the previous chapter is to increase systemic diversity in the *types* of currencies that compose the money system as a whole:

“more diversity means an increase in structural interconnectivity with the deployment of several types of currencies [put in circulation] among people and businesses to facilitate their exchanges, through the implementation of [community] and complementary currencies. [These] different types of currencies are called ‘complementary’ because they are designed to operate in parallel with, as complements to, conventional national moneys” (Lietaer, Ulanowicz *et al.*, 2010: 13).

In particular, Lucarelli and Gobbi (2016) give more clarity to the terminology defining these types of currencies as they state:

“‘Unofficial’ currencies have many labels such as *complementary*, *parallel*, *targeted*, *local*, *social*, *mutual help* and *cooperative* or *community*, all of which are significant qualifications describing different features of these social institutions. They are *complementary* (and *parallel*) because they do not replace official money but circulate alongside it for specific purposes (in which sense they can also be called *targeted*). They can be called *local*, as they usually circulate in a delimited territory and respond to the peculiar needs of a given community. They therefore meet certain social needs by providing the purchasing power needed to engage in productive activities, create employment and buy goods and services. They are also called *mutual-help* currencies because they can be used to nance non-pro t organisations. Finally, they are called *cooperative* (or *community*) when they represent the labour and social cooperation of the members of the community.” (Lucarelli and Gobbi 2016: 6. Italics in the original)

Indeed, such currencies are defined as *complementary* in that they are, in my opinion, cleverly designed to operate in parallel with conventional bank-debt, rather than trying to substitute for it completely. As figure 15 below suggests, the systemic effect of the introduction of complementary currencies is, primarily, to give more sustainability to the monetary system as a whole:

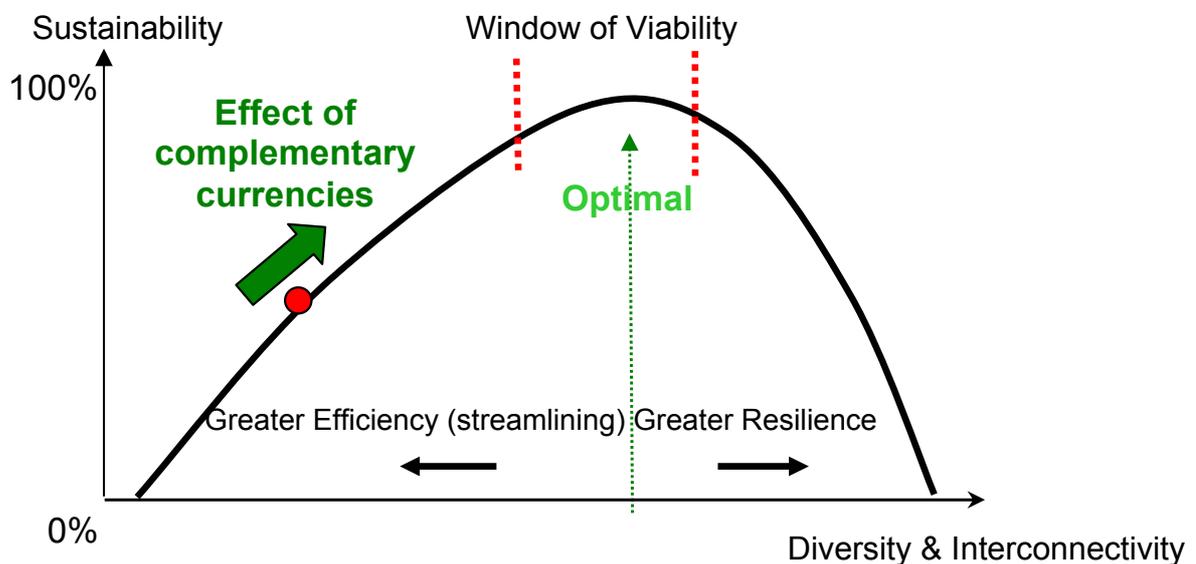


Figure 15: the effect of complementary currencies is to address economic and structural shortcomings of the conventional system. (Lietaer *et al.*, 2010: 13).

The implementation of different types of complementary currencies changes the structure of the monetary system and, by definition, such modification can structurally improve the level of overall systemic resilience due to increased interconnectivity and resilience. This in turn will increase the overall sustainability of the monetary system. In a nutshell, the possibility of making more economic connections through the use of different types of currencies - framed around tailor-made agreements within communities - will enhance the potential capability of every economic agent, i.e. every singularity of the Multitude, to proactively respond to unexpected or unpredicted systemic failures in the domain of either conventional bank-debt money or in the Neo-Chartalist framework, both of which are based on single-currency thinking. In the next subsection, I will present a brief history of complementary currencies.

3.3.1 A brief History of Complementary Currencies

The history of monetary systems is not as linear as it may seem at a first glance. Indeed, even within the historically dominant forms of money, change and diversity have manifested continuously, albeit the substance has remained the same. According to Marieke De Goede, “Braudel’s work documents [that] various forms of money, barter networks, silver and gold coin, paper money, and credit, existed side-by-side instead of subsequent stages of monetary evolution” (De Goede 2005: 18). In this evolutionary context of dominant forms of money, complementary currencies emerged every time that an alternative means of payment needed to be found. According to scholar Peter North, “it is worth exploring how people have responded to previous financial crises, as I think that what they did can teach us one thing or two” (North 2010a: 59). Although in modern times there has been an ex-

pansion in the number of complementary currencies adopted in different parts of the world, it is possible to find traces of such systems also in ancient epochs.

For instance, in Ancient Egypt, gold was the currency for long trade transactions used by the higher strata of society. In parallel, common Egyptians used a more widespread and less valuable currency, the *ostraca*, which was connected to the food storage system:

“Imagine you are a farmer in ancient Egypt who, after the harvest, has a surplus of ten bags of wheat. You bring them to your local storage site and the scribe gives you a receipt saying, “Received ten bags of wheat,” followed by an official’s seal and today’s date. Those receipts were usually written on pottery shards, technically called “*ostraca*,” of which many thousands have been found all over Egypt. They were used as currency for most ordinary exchanges.” (Lietaer 2000: 117)

In more recent times, the period from roughly 1050 A.D. to 1290 A.D. is acknowledged in Medieval Europe as the Age of the Cathedrals. Indeed, most of the cathedrals were built in this period of economic well-being and systemic resilience. At this time, as well as using gold as a long distance trade currency, there was another type of currency in circulation for reinforcing local credit lines. According to Lietaer, “this ‘First Renaissance’ happens to coincide with the period where the demurrage-charged currency systems were prevailing” (Lietaer 2000: 143). Demurrage-charged currencies - or negative interest-bearing currencies - had indeed the following two main features: they discouraged hoarding in the form of currency while they “encouraged savings in productive goods that would last for a long time. The ideal investment vehicle became land improvements or high quality maintenance of equipment, such as water wheels or windmills, or long-term investments for the community, such as the cathedrals” (Lietaer 2000: 144).

Throughout the modern era, the most documented systems adopting complementary currencies had been set up in the Western world with the U.K. as the starting point. In Britain, as a socio-economic and political response to the difficult economic decade of the 1830s, artisans belonging to cooperative so-

cieties in London, Birmingham and Liverpool designed and deployed complementary currencies. Indeed, the ideas of Welsh manufacturer turned social reformer, Robert Owen (1771 - 1858), gathered momentum when he designed a currency to help craftsmen who were unable to sell their goods on the open market. This led to some cooperatives establishing Exchange Bazaars, in which craftsmen traded with each other using “Labour Notes - a money denominated in time” (North 2010a: 59). As North stresses “Robert Owen developed the first practical examples of alternative currencies as a political challenge” (North 2007: 43).

A second remarkable example of the implementation of complementary currencies as bottom-up expressions of resistance to monetary biopower is the institution of ‘Banks of the People’. In the 1840s, French anarchist Pierre-Joseph Proudhon organised “confederations of 50-100,000 artisans who would agree to issue exchange notes and guarantee their reciprocity, to meet social needs and without speculation or charging interest, which was condemned as usury” (North 2010a: 62). In the following decade, complementary currencies were also implemented in the USA with the first example of a Time Bank issuing Labour Notes. In Cincinnati, Josiah Warren ran the bank for three years and later constituted two “intentional communities”, which lasted twenty years: “‘Modern Times’ and ‘Utopia’” (North 2010a: 62). Moreover, in the 1880s and 1890s, America experienced mass struggles for a silver currency to use in parallel with gold (Gramm 2004).

In the twentieth century, Hugo Bilgram and L. E. Levy started up the first Credit Clearing Union. They assumed that “it is manifestly due solely to *a consensus of the members of the community to accept certain valuable things, such as coin and certain forms of credit, as mediums of exchange*” (Bilgram and Levy 1914: 95 - italics in the original). By recognising the nature of money as writing system, in 1914, as a bottom-up response to the 1913 Federal Reserve Act, they drafted a Credit Clearance plan written in plain English. The goal was to

fight monetary biopower at its own game by combining “[a number of businesses] for the purpose of organizing a system of exchange, effective among themselves. [The] greater the number of businessmen that would thus cooperate, the more complete would be their own emancipation from the obstruction to commerce and industry which existing currency laws impose” (*ibid.*). In this system, the method for clearing accounts was “similar to that used by depository banks to clear accounts among its depositors” (Greco 1994: 49). Indeed, members’ personal credit was the medium of exchange in the form of credit cheques.

During the Great Depression, “besides learning how to ‘make do, or do without’, people began to establish mutual support structures, like workers’ cooperatives, many of which would recycle and repair donated or broken items. People learned to share what they had, and to by-pass the market and financial systems” (Greco 1994: 39). This happened within more or less politically charged initiatives, such as the Green Shirts movement in the UK in the 1930s. According to North, their members “provided food and clothing for the hungry, camping opportunities, excitement, and solidarity to unemployed people in grave economic times as well as a philosophy that explained a way to a better future and, it must be said, a convenient scapegoat—high finance and the banks” (North 2007: 69). Moreover, the Green Shirts had a programme that “was clear, concise, and simple” (North 2007, *ibid.*):

1. Take control.
2. Close the “chatterbox” at Westminster.
3. Take over the Bank of England in the name of the people.
4. Open the National Credit Office.
5. Issue the National Dividend to every citizen.
6. Enforce the scientific price.
7. Set up Local Hundreds (constituent assemblies) in every district to give expression to the will of the people throughout the country.
8. Put down any counter revolutionary “fascist” activity, or attempts to overthrow the party of the people’s credit (the Green Shirts).
9. Defend the victorious Social Credit revolution from international financial sabotage. (Zavos 1981: 203 quoted in North 2007: 70)

In 1935, the movement moved from the underground to the mainstream by becoming part of the Social Credit Party of Great Britain and Northern Ire-

land, but it did not last to see the start of WWII as it was outlawed by the 1937 Public Order Act (*ibid.*)

A second example from the Great Depression years comes from Germany, thanks to the efforts of German businessman Silvio Gesell (1862 - 1930). He proposed and implemented the issuance of a provisional and complementary form of money subscribed to a company entitling the holder to a formal certificate, namely 'scrip'. The most common denominations were certificates of indebtedness, tax anticipation notes, payroll warrants, trade scrip, clearing house certificates, credit vouchers, moratorium certificates, and merchandise bonds. In his book *The Natural Economic Order* (1913), Gesell set out his views on the nature of money and its functioning in the economy. In fact, one of the problems afflicting Europe in those years was the hoarding of conventional currency and none of the stimulus packages was as effective as forecasted by central authorities managing monetary policy. Accordingly, the nuisance of money hoarding at a systemic level was opposed by a strong and widespread desire of free circulation of money among economic agents. One such idea, based on the concept of *Freigeld* (Freemoney), had been developed in German-speaking countries and Scandinavia. According to Swiss Prof. Tobias Studer, Freemoney theory can be reduced essentially to three axioms:

- 1) To stabilise sales of goods of all kinds, money in circulation must be precisely adjusted to the supply of goods.
- 2) In order for money to function solely as means of payment for the free flow of commerce, it must have the character of an interest-free clearing certificate.
- 3) A demurrage-charged currency should be adopted to complement the positive interest characterising conventional money (Studer 1998).

On the other side of the Atlantic ocean, Greco showed that these three principles were represented in the main features of Gesell's 'stamp scrip': the lat-

ter “was designed to have 52 spaces on the reverse side, one for each week of the year, and the scrip was to have the value of its stated denomination only for one week. In order for the scrip to maintain its face value, a stamp, costing two percent of the face value of the note, had to be affixed on the back, in the space allocated to that week” (Greco 1994: 42). Since the Reichsmark was being overly hoarded as a side effect of a three-year period of deflation, the stamp was purposely a device introduced in order to discourage the hoarding of scrip and, thereby, to increase its velocity of circulation within the community adopting it as a means of payment. The result was that people tried “to spend it prior to the day the stamp had to be affixed and thus avoid the cost of the stamp” (*ibid.*) In 1931, Gesell’s friend Hans Timm decided to set up an association for deploying the stamp scrip idea. Scrips were named Wära, “a name derived by combining two words - ‘Ware’, the German word for goods, and ‘Wahrung’, the German word for currency” (Greco 1994: 43).

In 1932, Wära was deployed in the Bavarian town of Schwanenkirchen, where associations of factories, merchants, a bank and any other business issued stamp scrip in order to improve the level of trade within the small city. Indeed, Gesell-inspired scrip was issued in convenient denominations to be used either for the payment of wages or for trading. In the specific case of Schwanenkirchen, Mr. Hebecker, the owner of coal mine, used Wära notes “to reopen his mine, with the Wära passed on to local merchants, then to the wholesalers, then on to the manufacturers who returned [them] to the coal mine for coal” (North 2007: 64). Gesell’s mechanism created a dual-currency system which boosted business improvement only at a municipal level. However, the experiment was so successful that Irving Fisher acknowledged that “even in the United States one read about it in the financial sections of most big papers” (Fisher 1933). The following lucid account appeared in a journal of that time:

“Herr Hebecker assembled his workers. He told them that he had succeeded in getting a loan of 40,000 Reichsmarks, that he wished to resume operations but that he wanted to pay

wages not in Marks but in *Wara*. The miners agreed to the proposal when they learned that the village store would accept *Wara* in exchange for goods.

When, after two years of complete stagnation, the workers for the first time brought home their pay envelopes, no one was interested in hoarding a cent of it; all the money went to the stores to pay off debts or for the purchase of necessities. The shopkeepers, too, were happy. Although at first they had felt a little hesitant about *Wara*, they had no choice, as no one had any other kind of money. The shopkeepers then forced it on the wholesalers, the wholesalers forced it on the manufacturers, who in turn tried to pass it on to those who carried their notes, or they exchanged it at Herr Hebecker's mine for coal.

No one who received *Wara* wished to hold it; the workers, storekeepers, wholesalers and manufacturers all strove to get rid of it as quickly as possible, for any person who held it was obliged to pay the 2 cent stamp tax. So *Wara* kept circulating, a large part of it returning to the coal mine, where it provided work, profits and better conditions for the entire community. Indeed, one could not have recognized Schwanenkirchen a few months after work had resumed at the mine. The village was on a prosperity basis, workers and merchants were free from debts and a new spirit of freedom and life pervaded the town" (*The New Republic* - August 10, 1932)



Figure 16: Face and reverse sides of Two Wära note from Schwanenkirchen, Germany, 1932 (Source: <http://community-currency.info>).

The adoption of the Wära complementary currency resulted in a win-win situation for all participants involved: production surged and coal began to be extracted after two years of forced mine closure. Workers started to work and wages flowed into their pockets to pay debts and buy goods. Retailers returned to serve customers and had the money to pay their suppliers. Wholesalers in turn received a reliable means of payment to transfer to man-

ufacturers. Finally, the latter purchased the local raw material with local currency.

Wealth was thereby retained in the community. A person absent for a year and coming back in Schwanenkirchen some months after the introduction of stamp scrip would have expected to see a community experiencing hard times. Surprisingly, s/he would have entered a town where citizens were experiencing new economic prosperity. Wära spread in various parts of Germany. Unfortunately, the central bank exerted pressure on the government, and the experiment in Schwanenkirchen ended. To recap, scrip was implemented to supplement scarce supply of conventional national currency in 1930s Germany. According to Greco, the lesson of Wära to monetary economics is that “the permanent use of a locally issued and controlled exchange medium, such as scrip, has clear advantages for insulating local economies from the distorting effects of global finance and banking” (Greco 1994: 46).

According to North, “by the Second World War, subaltern forms of money had died out as modernist state planning became the new norm. It was not until the breakdown of the Keynesian settlement in the late 1980s that we saw new forms of money generated from below” (North 2007: 78). Indeed, in the last quarter of the past century, the design of complementary currencies included valuable practices inherited from the experiences of the interwar period. Although the “fifties and sixties did not see many grassroots alternative or complementary currency experiments” (North 2010a: 68), the following decades were a period of intense innovation. For example, in 1983 Michael Linton designed LETSsystem, which is the first type of LETS system. A LETS - Local Exchange Trading Scheme - is a not-for-profit community enterprise, which is democratically organised and local. The goal of the enterprise is to provide commercial information to the community and record transactions of members who exchange goods and services through rebalanc-

ing LETS credits. The only requirement for prospective subscribers is that they must accept credit in payment while there is no need for securitisation such as bonds, stocks, mortgages, etc., as it was the case in Bilgram and Levy's Credit Clearing System (Greco 1994).

A final historical example is a new and successful practical implementation of Owen's Labor Notes idea. In the 1990s, the city of Ithaca (upstate New York) adopted Ithaca Hours, with 1 Hour = US\$10 (Glover 1995). According to North, Ithaca Hours are a "form of currency valued in just time [which] passes from person to person and among businesses like cash. You find out where to spend Hours by looking to newspapers, or seeing flyers in shop windows" (North 2010a: 106). Most importantly, Hours are loaned with no interest charges. Since it may be fiddly to relate Hours and conventional national currencies for mixed payments, Ithaca Hours are printed with a denomination of a 'tenth of a hour', worth a dollar, for facilitating calculations to retailers. Such problem would virtually disappear with the massive technological framing - as I will show in the chapters below - that complementary currency design is experiencing in the 2000s.

From the 1990s through the new Millennium, as the mainstream economy suffered various crises globally, complementary currencies found a resurgence that is still continuing at the time of writing. For instance, in Argentina with the *redes de trueque*, researched and documented by North:

"The complementary currency movement that emerged in the late 1990s and the first three years of the twenty-first century in Argentina, the *redes de trueque*, seems to be different in scale, with levels of mobilization previously achieved perhaps only by the Populists: literally millions of users. The literal translation of *redes de trueque* is "barter networks." In Argentina, "barter" is not used in the sense of one-to-one exchange without use of money; it refers to exchange using nonstate forms of currency generated by community groups, nongovernmental organizations (NGOs), communities, and private business people. We call it "barter," as Argentines do, but technically it is not barter." (North 2007: 149)

Indeed, in response to the crisis of 1990s, which was ushered in by deregulation and privatisation processes and which saw the Argentine Peso pegged to the US dollar, at the beginning of the 2000s Argentinians almost sponta-

neously formed neighbourhood barter networks and the practice successfully spread in all corners of the country involving millions of people. However, this massive adoption of different local currencies collapsed as “overissuance or political attack led to their decline” (North 2007: 177).

Finally for this section, in the 2010s, what can be considered one of the best complementary currency experiences is the Bristol Pound. In fact, this local complementary currency is to be thought of as a barrier-breaking project, if one looks at it as a bottom-up component of the *dispositif* designed to remove the monetary blindspot through constituent governance initiatives:

“In March 2015, Bristol City Council became the first local authority in Britain to accept a community currency - in this case the Bristol Pound - as a means to pay council tax. As well as representing a landmark project for the community currency movement, the council’s announcement essentially *guarantees that anyone holding Bristol Pounds will always have a spending opportunity - everyone needs to pay council tax*. Gaining this level of participation from a council helps hugely in building trust in a currency and establishing belief in its value” (NEF 2015: 78, my italics)

This innovative initiative, backed by Bristol’s former Mayor, George Ferguson, can be considered as a watershed in the complementary currency domain as, finally, the circuit closes in that to be able to pay taxes with the Bristol Pound is an important step towards a more widespread social acceptance and institutionalisation of this monetary instrument. Similar developments at the regulatory level are springing globally as the recent motions in California (Alternative Currencies Act, AB-129, approved by the Governor on June 28, 2014) and France (French Law for the Economie Social et Solidaire passed on July 2014) illustrate.

In conclusion, from Ancient Egypt to the present Digital Revolution, many times when the mainstream economy suffered a crisis, various forms of alternative, complementary currencies emerged from the bottom up. This happened in different contexts and with different degrees of success, but the common theme of the resistance of the Multitude against its oppressors had been - and is - well documented by academic and activist literatures. From

the *ostraca* to the Bristol Pound, people of different social status and culture have designed and implemented currencies that attempted, some more successfully than others, to counteract the shortcomings of conventional money in the various forms that the latter embodied during the past by offering an array of benefits and best practices to overcome the *status quo*. In the next section, I will draw on the body of literature on complementary currencies to identify those benefits and best practices that they offer that may cure the monetary blindspot and overcome the hegemony of monetary biopower.

3.3.2 Complementary Currencies Benefits and Best Practices

Complementary currencies, by their multifaceted nature, offer an extremely diverse array of implementations with consequent benefits and best practices that were an important inspiration for me in the definition of Money for the Common Wealth of the Multitude. In this subsection, I will focus on the ones that I consider more useful to give the reader a sense of their relevance, i.e. the socio-economic benefits with concomitant environmental ones. Apart from their desirable action toward systemic sustainability that I suggested above, the most general benefit for arguing in favour of complementary currencies is that these types of moneys facilitate “different types of relationships and behaviour, and they ask questions about how money could serve us – society and the environment – better” (Seyfang 2009: 141). In other words, complementary currencies are intentionally designed to foster monetary habits that emancipate the users of money systems from the yoke of bank-debt at interest. Therefore, by introducing new types of monetary

agreements, i.e. new performative writing systems, designed to better the social and economic conditions of the users, complementary currencies foster and increase exchanges that would not otherwise happen, especially for the lack of a means of payment to facilitate them.

A second benefit of complementary currencies is the fact that they facilitate transactions by promoting closed economic circles that intentionally do not operate within the conventional system in order to promote community building, i.e. biopolitical production, as a way to insulate, rather than isolate, local economies from adverse dynamics of the mainstream business cycle. One of the most famous examples, especially in the UK, is the LETS, Local Exchange Trading Systems. I mentioned LETS in the brief history presented above and I will discuss this type of currency in more detail here by drawing from North, who highlighted that the simplicity of the LETS design is also its beauty:

“The elegant LETS system worked using a computerized accounts system that would balance currency issued by one trader with that paid into the recipient’s account. If I pay you ten green dollars, my account goes down by ten and yours goes up by ten; the balance of the system as a whole is zero. This simplicity and elegance caught the imagination.” (North 2007: xiii ; see also North 1999)

According to North, across the 1980s and the 1990s, LETS spread in the UK as a response to Britain’s exit from the European exchange rate mechanism, which worsened the national economic recession. Various groups formed LETS around the nation, although it is not known exactly how many. What is sure is that the number of LETS active at the time were in the order of the few hundreds. In particular, North researched Manchester LETS and the framework and values behind this experience is very relevant and helpful to build my own approach to Money for the Common Wealth of the Multitude (North 2006 and 2007). According to North, “Manchester LETS was also different from many LETS systems in that the early joiners hoped and believed that LETS was a *revolutionary new financial innovation* that would be able to bring about *significant social change and cure many of the pathologies from which the cap-*

italist economy suffered." (North 2007: 80, my italics). Moreover, North stressed that Manchester LETS fostered decentralisation while promoting freedom of economic interaction in that users were allowed to set the value for each transaction - the floating standard of value was the 'bobbin' - without any top-down mandate. As he put it:

"[the] Manchester LETS core group saw it as a "free association" of members using LETS as a "tool" that was little more than an accounting package and directory. They thought nothing should be done centrally except to deliver this tool to members to use as they saw fit. [...] Thus members were free to decide how to value their work, how to value the bobbin, and how much sterling to charge, and individual members with differing sets of values were left free to interact." (North 2007: 82-83)

All these elements favoured a local economic environment that fostered cooperation as the most rewarding behaviour without clashing with the need to secure the self-interest of each participant, in the general spirit of social purpose subaltern currencies best practices. This line of thought also resonates with Hardt and Negri's definition of the relation between the singularities composing the Multitude and the Common in that complementary currencies respect the differences of cooperating participants within a common field of economic action.

A third benefit of complementary currencies is that they enable users to support local economies by increasing the local multiplier effect. The best example of this may be the WIR system promoted in Switzerland during the Great Depression. The system evolved and is still functioning today after more than 80 years. In 1934, a group of Swiss entrepreneurs initiated the following best practice: they *agreed* to use a means of payment issued by a Basel-based Economic Circle in parallel to the Swiss Franc. Members of the Circle designed a currency for trading among themselves and they named it 'WIR', a term that in German means 'us' and is also the root of the word 'Wirtschaft', which means 'economy'. According to Studer, aligned with LETS *ethos*, and as a further exemplification of money's primary semiotic nature as writing system, "WIR exists merely as a bookkeeping entity that entitles the holder to

purchase certain goods and services” (Studer 1998: 4). Indeed, in the Great Depression years, European countries faced hard times and the Swiss economy experienced a puzzling situation from 1929 to 1932.

In this period, worldwide bank deposits plummeted while in Switzerland the volume remained nearly unchanged. According to Studer, the paradox resulted in the following vicious circle: “on the one hand, far too little money was flowing into public demand for goods and services that would create jobs, while on the other hand a lot of money remained on deposits in the bank” (Studer 1998: 15). The remarkable bottom-up reaction to this slow velocity in the circulation of money came from the 16 founders of the WIR Economic Circle Cooperative, which began operations in October 1934 with a start-up capital of SFr 42,000. This group of businessmen chose a “self-help route, a union of small-medium sized businesses with the goal of reducing underutilized capacity through a cashless barter system. This barter was not to replace the accustomed money commerce but to complement it, thus providing genuine increases in turnover” (Studer 1998: 23).

After an initial experimental period, the WIR system followed a near-constant growth from 1952 to 1988 in the total volume of transactions processed, resulting from the proficient implementation of the experimental results under the tenets of *Freigeld* theory - albeit the demurrage feature had been considered as not fully performing and was abandoned early on. Today, the WIR system is the network of the numerous WIR Banks operating under Swiss commercial banking regulation. In fact, WIR Bank also offers services in Swiss Francs that were normally provided only by conventional commercial banks. This dual-currency system involved, as of 2010, around 60,000 Swiss businesses, and had an annual volume of over 1.5 billion WIR Francs - exchanged at par with the Swiss Franc (Kennedy *et al.*, 2012: 31). This turnover increases the local multiplier especially in times of crisis for the national currency. As a final observation, on a fiscal level WIR does not exert side effects

on the conventional Swiss Franc system as the WIR currency flows in parallel with the national one. Since WIR currency supply is less than 0.5% of Swiss M1 (notes and coins in circulation), WIR currency is not a fiscally disruptive factor. Hence, “one should take account of the fact that the WIR system serves not only its own membership, but the entire economy as well, since like other barter-trade organizations it supplements conventional economic trade and thus facilitates jobs-creating transactions that otherwise would not transpire” (Studer 1998: 46).

A third, more biopolitically oriented benefit made possible by the adoption of complementary currencies is, according to New Economics Foundation, the fact that these monetary initiatives can be framed to counteract inequality and social exclusion. As they put it:

“Exclusion of certain social groups from social life weakens community relationships overall. Specially designed currencies can be used to oil the wheels of social participation, ensuring that all groups are given realistic, relevant and meaningful opportunities to get involved in their communities.” (NEF 2015: 58)

Indeed, complementary currencies can help top up the income of disadvantaged members of society by giving a line of credit to use in parallel with national currencies. This is the case of Time Banking, whose features are summarised by Gill Seyfang as follows:

“The stated principles of time banking are: recognising people as assets and that everyone has skills to share; redefining work to include the unpaid ‘core economy’ of work in the neighbourhood and community; nurturing reciprocity and exchange rather than dependency; growing social capital; encouraging learning and skills- sharing; involving people in decision-making.” (Seyfang 2009: 152; see also Cahn 2004)

Although it is important to remind the reader that complementary currencies alone are unlikely to be sufficient to completely address social inequality (a Neo-Chartalist approach with full reserve banking and universal basic income should be added to the picture, as I argued above), a concrete example of a system that helps curb inequality is ‘Spice Time Credits’ in the UK, whose features echo Owen’s Labour Notes:

“Spice partners with local authorities, schools and housing associations to offer time-credits to individuals participating in voluntary programmes. Credits can then be traded between individual members - as in a traditional timebank - or spent at various non-profit, public or corporate partners. These currently include cinemas, gyms, family activities and vocational training. [...] At both earning and spending stages, one credit equals one hour of a person’s time or organisation’s services. The Spice system has its historical roots in the Welsh labour movement, when mining communities would contribute part of their wage to both support and access mutually owned local services, such as clinics, workingmen’s clubs and libraries.” (NEF 2015: 59)

As happened with LETS, and possibly as a logical continuation of the Labour Notes and Green Shirts movements, in the UK complementary currencies show a notable political charge coming from the Left and following a bottom-up approach to system design: all elements that resonate constructively with and encourage my efforts to build and test the notion of Money for the Common Wealth of the Multitude.

A final benefit of complementary currencies that is worth mentioning is a reduction in ecological footprint (Seyfang and Longhurst 2011: 10). Indeed, as a byproduct of economic localisation, complementary currencies favour behaviours that reward proximity trade among participants. This holds for all the examples that I mentioned above, but there have been experiments that intentionally framed currency systems for such purposes. According to Seyfang and Longhurst,

“An early experiment was the *Nu Spaarpas* which was piloted in the Dutch city of Rotterdam between May 2002 and October 2003 (see van Sambeek and Kampers 2004). The systems rewarded people for points for recycling, using public transport and shopping in local shops.” (Seyfang and Longhurst 2011: 11)

In other words, this green loyalty scheme demonstrated the possibility to implement complementary currencies to reward members who helped address climate change.

In summary, complementary currencies present systemic benefits such as increasing the resilience and sustainability of the money systems together with bettering people’s economic experience at large. In particular, the introduction of complementary currencies increases interconnectivity within a socio-

economy and, by doing so, makes the overall economy more resilient and sustainable. Moreover, I argued that LETS, WIR, Spice Time Credits, and green currencies such as the *NU-Spaarpas* offer an array of benefits deriving from the adoption of complementary currencies. From strengthening local economies (LETS) and regional/national ones (WIR) by building incentive structures that change users behaviour; to decreasing social inequality (Spice Time Credits) by offering a complementary line of credit to users; to, finally, boost sustainable consumption in view of tackling climate change (*NU-Spaarpas*). Such experiments had and are having success in other parts of the world, but I focused on Europe in order to give an illustration of these new forms of money; it is not the aim of this thesis to give a complete assessment of the thousands of different complementary currencies used worldwide. Hence, complementary currencies and the best practices that they foster are the third possible component of the *dispositif* for developing constituent governance strategies that favour the exodus of the Multitude from the control structure of monetary biopower. In the next subsection, I will propose a critique of complementary currencies themselves. This critique will enable me to argue for the necessity of building the notion of Money for the Common Wealth of the Multitude in order to overcome the drawbacks of complementary currencies themselves. In effect, complementary currencies present both conceptual and scaling issues, which my proposed approach aims to help address.

3.3.3 *A Critique of Complementary Currencies*

Today, complementary currencies are beginning to gain recognition not only from local authorities (Bristol Pound initiative) and state/national ones (California and France legal frameworks), but also from both supra-national institutions such as the United Nation Institute for Social Development and the

International Labor Organization⁵ . Such an opening from the highest echelon institutions invites one, therefore, to cautiously assert that complementary currencies can be legitimately thought of as monetary vehicles for effectively reframing the structure of the conventional monetary system toward increased resilience and overall systemic sustainability. As I argued in the sections above, complementary currencies are financial vehicles designed to facilitate trading by virtue of enhanced interconnectivity of the system as a whole, especially in those situations in which the supply of conventional bank-debt money is tight. Hence, complementary currencies might potentially help to address the issue of monetary instability typical in the hyper-efficient orthodox paradigm that is grounded on single-currency thinking. These types of monetary agreements enable communities to use a variety of means of payment. In turn, the resulting multi-currency ecosystem of currencies can be thought of as a financial portfolio giving more options to users of money systems, therefore increasing their capability to adapt to change.

However, complementary currencies have problems in scaling, as there is not a normative framework to accommodate them (the WIR might be seen as the exception that confirms this rule). Moreover, history suggests that once they begin to scale, for example with the experience of the Wära during the Great Depression, central banks and governments are quick in legally smashing the system and then wiping such initiatives for constituent governance from the social memory. Furthermore, there are also conceptual and ideological issues that complementary currencies leave open. Indeed, I firmly contend that they are not, and would not, be a sufficient social innovation even if a normative framework were consistently adopted to bring about a money system that operate at the advantage for the Multitude.

⁵ I personally took part to an event on Social and Solidarity Economy in Geneva in 2013 where I presented a draft paper on complementary currencies (Sachy 2013).

In effect, on the one hand by introducing the notion of complementary currencies, it is possible to give a concrete illustration of Lietaer *et al.*'s theoretical demonstration that a lack of diversity and an exclusive emphasis on efficiency can jeopardize the viability of complex flow networks, including money systems. Since the problem is not the antagonism toward capital as for the biopolitical critique of monetary biopower, the complementary currency movement does not propose to eliminate conventional money and replace it with another type single currency such as Neo-Chartalist money. Indeed, through his demonstration and the analogy with process ecology, Lietaer creates a space wherein both conventional and complementary currencies can co-exist evoking the duality between Yin and Yang. The other authors that I discussed - apart from North who is critically engaged by virtue of his Foucauldian critique - simply build a narrative in which focussing on complementary currencies could magically counterbalance the nefarious effects of capitalism on society.

On the other hand, since the deleterious effects of capital on biopolitical production are likely to continue alongside any complementary currencies which are capable of adding resilience and curbing the socially disruptive effects of sovereign, banking and monetary crises, the vast majority of users are still not structurally shielded from the subsumption of their labour-force to capital. The reader should remember that monetary biopower operates as it does, especially by virtue of the monopoly on violence that forces users of conventional money to exclusively use national currencies in the payment of taxes. Consequently, even if complementary currencies found legitimation through a recognised legal framework for their institutionalisation, they would be somehow effective to counteract capital only if the legislation gave them legal tender power.

However, even in this case conventional bank-debt would be the the dominant form of money. In brief, it is not enough to solve structural, legitimation

and single-currency thinking problems while leaving the door open to the continuation of the drainage of surplus value from the labour force by the inherent dynamics of conventional bank-debt with complementary currencies as a palliative remedy. In other words, I will argue that complementary currencies are a first welcome set of bottom-up initiatives necessary in order to counterbalance the monopolistic forces of conventional money while giving society the tools to start understanding how the conventional system works and what the Multitude can implement to offset its drawbacks. Notwithstanding such positive outcomes, as they are implementations that focus on the delivery of economic and structural solutions, complementary currencies do not directly provide a strategy to change the way in which the conventional system works.

In short, while they give a narrative for fixing economic and structural issues related to conventional money, especially with regards to single-currency thinking, complementary currencies need in my opinion to be institutionalised alongside those top-down components of the *dispositif* that I gave examples of above. As I argued in section 1.4, drawing from Vitali *et. al.* (2011), the power structure of the conventional system resembles a bow-tie that acts top-down by fostering its exclusive dominance through the dynamics of Ferguson's 'square of power'. Accordingly, without a change in the governance structure of the network of global corporate control promoting a monoculture of national currencies, it will not be realistic to argue in favour of a multi-currency ecosystem wherein bank-debt money will co-exist in peace with other forms of money. Alas, bank-debt at interest created with fractional reserve practices is not the optimal model to apply for a stable economy and one can try to counteract its influence with the deployment of complementary currencies as suggested by Lietaer, but this will not fully address the issue of the monetary blindspot.

To go beyond the monetary blindspot, I will argue that there is a need for a dialectical change in the conceptualisation of monetary biopower, i.e. a change in the top-down money creation process and the governance of money systems as Neo-Chartalism (Wray 1998) and Basic Income narratives (Atkinson 1996; Van Parijs 1991 and 2004), together with full reserve banking (Jackson and Dyson 2013) exemplify. As the reader will appreciate below, this is not only a desirable monetary reform, I will argue, but a necessary paradigm shift that a conscious approach to critical theoretical and technical innovations can facilitate. The idea is not to destroy the commercial and central banks as the Green Shirts movement promoted, but to reverse engineer their infrastructure in a way that would start to serve the 99% and stop giving almost everything to the 1%, as the converse of a great concentration of personal wealth is the great deficit in needed social services for the public at large.

In conclusion, either those within the conventional monetary system who are critically aware of the nature of the agreement framed by conventional money or those who are epistemologically, financially and juridically excluded (even better, the two groups together) can organise, as a Multitude, spaces of effective monetary resistance, starting with the implementation of complementary currencies. From a biopolitical perspective, complementary currencies are therefore to be thought of - as history suggests - as an initial form of resistance to capital and a form to re-appropriate biopower for the stewardship of the Common at the service of biopolitical production. They represent a form of non-violent resistance as they cleverly do not pretend to cast out conventional money while at the same time they re-invent the monetary domain in a multiplicity of ways as many are the types of subaltern currencies existing worldwide. Their diversity and the improved interconnectivity among the organs of the social body already represent a form of monetary empowerment that is one of the necessary ingredients for long-term paradigmatic change in the monetary domain.

Notwithstanding the valuable arsenal of complementary currencies, they are not enough for the exodus of the Multitude from the control structure of monetary biopower, i.e. their institutionalisation is valuable in overcoming single-currency thinking, but their implementation needs to be coupled with top-down constituent governance initiatives. In the following section, I will ask the reader to delve with me into the literature on cryptocurrencies and distributed ledgers, especially those designed to serve the Multitude. Alongside complementary currencies, these new innovations in the monetary domain will be the fourth, and final, possible bottom-up component of the *dispositif* framing the notion of Money for the Common Wealth of the Multitude.

3.4 Bottom-up 2: Crypto-currencies and Distributed Ledgers Technology

The fourth and final component of the *dispositif* that I am proposing as examples to fuel the constituent governance framework for the defence of the Multitude against attacks by, i.e. to promote the effective exodus from monetary biopower is another bottom-up approach involving crypto-currencies and Distributed Ledgers Technology. Indeed, these new digital social innovations in the monetary domain offer new design and implementation possibilities to facilitate the exodus of the Multitude from the yoke of financial capital, as I will argue more extensively in the case studies presented below. The contemporary digital currency revolution, using decentralised crypto-currencies and distributed ledgers, began with Bitcoin in 2008 (Nakamoto 2008).

Crypto-currencies and distributed ledgers implemented to manage trust in a decentralised and transparent fashion qualitatively change the meaning of currency and payment system design. This is because they require a shift from the formulation of the agreements that define money systems in written natural language to the encoding of such agreements into binary language,

the language of digital machines. As I argued at the beginning of the previous chapter, money is a writing system emerging *via* semiotics. As Ancient Palatine economies started to create money as written registrations of debt, thus substituting registration made with utterances, today, thanks to technological innovation there is a shift from defining money as written registration in natural language to computer language.

Thus, we are witnessing a shift from agreements defining the management of economic transactions on paper and ink to embedding the rules of the monetary game directly into computer language - a series of zeros and ones. I will argue that, because of this, it is today technically possible to decouple the experience of money from the apparatus of monetary biopower and to start to conceive advanced and scalable currency and payment ecosystems designed and managed by the Multitude from the bottom-up. As I will extensively argue in the four research sites below, it is nowadays possible to define money by programming algorithms in ways that make more concrete the possibility of Money for the Common Wealth of the Multitude that were inconceivable just a few years ago. That is, encoding currency design and systemic governance structures within algorithms offers new opportunities for the exodus proposed by Hardt and Negri.

To put it succinctly, a crypto-currency is a digital currency which is issued according to a consensus algorithm, whereby the effort for money creation is distributed and takes place in a decentralized network with an interaction among the members of a community of money creators or validators who are named *miners* and *validators*, respectively. The history of the transactions deriving from the consensus process of decentralised money creation and transaction validation is defined as a distributed ledger which is owned by all users containing the full history of the transactions of the system, thus giving total transparency for auditing.

The most remarkable and famous example, albeit controversial for its eight years of existence, is Bitcoin (Antonopoulos 2014), the first crypto-currency, and its distributed ledger, or Blockchain, which appeared in 2009 in cyberspace. Initially, Bitcoin was rooted in a reaction to monetary biopower, although it has since become a mere speculative instrument. Indeed, in the first block of the chain of transactions, or genesis block, the author of the Bitcoin algorithm engraved a picture coming from the *The Times* edition of Saturday 3rd of January 2009. As Figure 17 below shows, the front page of the newspaper presented the following title: “Chancellor on brink of second bailout for banks.”



Figure 17: the front page of *The Times*, 3rd of January 2009 (Source: <http://bit.ly/2nLDtLy> last accessed on 13 May 2017).

Accordingly, I will argue that the author of the Bitcoin codebase, allegedly Satoshi Nakamoto, wished to highlight the deflationary nature of Bitcoin as a currency, since there will be a total 21 million bitcoins in circulation at the end of the mining process. Therefore, because it has a finite supply of currency, Bitcoin is a deflationary money system. Nakamoto did this to warn of the dangers of the inflationary and hyper-inflationary nature of *fiat* currencies such as conventional bank-debt at interest. The original nature of Bitcoin as a piece of software created to weaponise money against monetary biopower was confirmed when it represented a form of resistance against and beyond the blockade of donations streaming from VISA, MasterCard and Paypal to the whistleblowing organisation Wikileaks. In that case, hackers organised around the world in Operation Payback, united to sustain Wikileaks financial needs through bitcoin donations.

According to the alleged primary author of the Bitcoin Core implementation (the most widespread among the Bitcoin developers' community), Satoshi Nakamoto:

"Bitcoin is a decentralized electronic cash system that uses peer-to-peer networking, digital signatures and cryptographic proof so as to enable users to conduct irreversible transactions without relying on trust. Nodes broadcast transactions to the network, which records them in a public history, called the blockchain, after validating them with a proof-of-work system. Users make transactions with bitcoins, an alternative, digital currency that the network issues according to predetermined rules. Bitcoins do not have the backing of and do not represent any government-issued currency" (Nakamoto, 2008: 3).

In particular, a distributed ledger is a timestamped digital accounting book shared by all nodes participating in a system based on, in this example, the Bitcoin protocol (Bitcoin Core). The Bitcoin distributed ledger, or Blockchain, allows for the creation of a new architecture in payment systems design: every device participating in the network - and the people using them - share the same transaction history by abiding by the *longest chain rule*. The Blockchain is a tree-like structure that consists of all valid blocks whose en-

ture ancestry is known, up to the genesis block. This common understanding, or consensus, creates a shared agreement within the whole Bitcoin community about the reliability of using the decentralised currency in that the Blockchain is a programmable database that allows exclusively 'write-only' operations, i.e. *tertium non datur*: what is written on the Blockchain cannot be modified as was the case of signed clay-tablets in Ancient Palatine Economies.

In order to create coins and validate transactions on the Blockchain, the community that takes care of these two aspects, i.e. the Bitcoin miners, runs an algorithm that makes computers work to find a pre-configured string of numbers. This process is called Proof-of-Work. When computers work, they spend electricity and this gives cryptologic strength to the network as it becomes increasingly difficult to reverse and, therefore, re-write the history of transactions. Indeed, the more electricity is consumed to create new coins, i.e. new blocks on the chain, the more electricity is needed to reverse the history of transactions by a malevolent attack by a group of miners. Moreover, since there is no central point of single failure, and since it is available to everybody, a distributed ledger like the Bitcoin's Blockchain is structurally more resilient and transparent than either the centralised ledgers typical of the conventional monetary system based on double entry bookkeeping or even those used in most complementary currency systems (for instance, an Excel spreadsheet to track exchanges in a LETS). In fact, when a transaction is validated and stored in the Blockchain, both ends of the transaction plus a miner have to sign the transaction to make it valid and broadcast it on the ledger. This process is called triple-signed accounting or triple-entry bookkeeping; it represents an evolution from conventional banking and complementary currency accounting practices.

However, Bitcoin has been the object of critique. Some consider centralised exchanges where Bitcoin is traded as prone to fraudulent behaviour. It has

also been accused of being a Ponzi scheme in that those who started mining and exchanging first enjoyed a speculative advantage with respect to newcomers (Moore and Christin 2013). Moreover, although they still do not consider it as a threat to financial stability, the European Central Bank warned about the risk that Bitcoin poses in terms of “money laundering” (European Central Bank 2016: 9). Apart from the centrality of Bitcoin in the mainstream perception of crypto-currencies, the technology underlying them, the Blockchain, or more generally the Distributed Ledgers Technology, enables a new way to collectively self-manage trust within a decentralized system in a transparent and dis-intermediated fashion. For instance, in a monetary system, transactions are the most important biopolitical element as they represent economic relations of trust among peers in the network. More than tracking reputations and propagating them, Bitcoin can be thought of as a decentralised trust management system that allows for the exchange of value in a trust-less environment, in the sense that the two participants to the transaction do not need to trust each other in order to be sure that the transaction will go as agreed. This architecture is indeed very different from the one typical of the financial services industry, where vertical inter-mediating hierarchies and compartmentalisation are in-built and trust in them is an issue dealt with mainly through top-down law enforcement, rather than by force of shared mathematical certainty coupled with P2P crowd-sourced rating mechanisms to counter free riding.

An interpretation of the biopolitical implications of the emergence of Bitcoin is offered by Denis Roio, a senior software developer and researcher in philosophy of technology, in his recent biopolitical critique of Bitcoin:

“The computation of mining, and hence the electricity, is designed to strengthen the authentication of Bitcoin. Now let us consider the energy that was required, before the existence of Bitcoin, to authenticate the minting process of currency made in paper and less noble metals. It consists of a secret minting procedure, big machinery, a monumental building with thick walls and armed guards on its perimeter: an unstable kind of energy, very difficult to govern, as it relates to a monopoly on violence imposed by the sovereign state. This very energy is substituted by Bitcoin with a qualitatively different approach: Bitcoin distributes peers to

the task of building trust in its authenticity. The networked computation of all miners serves as a mint and dissolves the need for violence into an unlimited, unreachable and decentralized power. Clustering the mint gathers the energy necessary to establish and protect the authenticity of the currency. In other words: participation has substituted violence in physical implementation of currency authentication - a recognizable pattern when we observe historical manifestations of the digital plane of immanence." (Roio, 2013: 11)

Thus, Distributed Ledgers Technology enables crypto-currencies and other digital assets to flow in a decentralized and dis-intermediated fashion. This translates money into a data structure, making it virtually impossible for anyone to stop the creation and transaction of crypto-currency in a structurally transparent and democratic environment in which all nodes are equal peers. Hence, currencies designed and managed with Distributed Ledgers Technology may be a game-changer in the arena of money creation, access and distribution. With decentralized technologies for the implementation of currency and payment systems, the Multitude has the potential to re-appropriate the power of money and conceive methods to manage currency and payment systems whose architectures can structurally be designed and legally owned to foster biopolitical production.

As I have argued above with my review of the academic articles by Nienaber *et al.* (2014) and Hurley *et al.* (2014), the community of customers of the financial services industry has lost trust in their suppliers, and the resulting lack of confidence inevitably undermines any market recovery. In accordance with the strategy of constituent governance, as one becomes more confident with the fourth component of the *dispositif* framed around crypto-currencies and distributed ledgers, it is only a question of techno-political awareness and will that is needed to make currency and payment systems designed to safeguard and enhance the common sphere. Distributed ledgers can, therefore, help to create currency and payment systems that are transparent, cheap and decentralised by design. As I will argue in the case study analyses below,

with crypto-currencies the money creation process can be regulated to favour the Multitude by fostering biopolitical production by and for the Common.

In other words, the development of algorithms designed and implemented to create and manage money in a distributed way between organisations and individuals can become an experimental constituent governance initiative. This initiative will allow the transparent orientation of collective perception and awareness toward the circulation of value in a dis-intermediated environment, where users control their own symbolic statements around money for credit-risk management purposes. Indeed, algorithms can be designed in order to execute governance functions alongside the normal transaction functions. This can be seen in second generation distributed ledgers such as Ethereum⁶:

“Ethereum is a decentralized platform that runs smart contracts: applications that run exactly as programmed without any possibility of downtime, censorship, fraud or third party interference. These apps run on a custom built blockchain, an enormously powerful shared global infrastructure that can move value around and represent the ownership of property. This enables developers to create markets, store registries of debts or promises, move funds in accordance with instructions given long in the past (like a will or a futures contract) and many other things that have not been invented yet, all without a middle man or counterparty risk.” (<https://ethereum.org/>)

To put it succinctly, second generation distributed ledgers integrate currency creation and circulation with systemic governance in a completely decentralised and transparent fashion.

In conclusion, money is a writing system that provides memorial support of an economic agreement. Moreover, there are already concrete examples of such hybridisation of crypto-currencies designed as complementary currencies as instances of Money for the Common Wealth of the Multitude. For example, FreiCoin is a cryptocurrency that applies Gesell's principles of

⁶ <https://ethereum.org/>

Freigeld in order to give empowering monetary tools to the Multitude. According to the website of the Spanish and German developers:

“FreiCoin is a decentralized, distributed, peer-to-peer electronic currency designed to address the grievances of the working class and re-align financial interests of the wealthy elite with the stability and well-being of the economy as a whole. Whereas inflationary currencies like the U.S. Dollar or Euro are controlled by central bankers under rules that intentionally or not benefit the establishment, FreiCoin is completely decentralized and self-regulating, with a demurrage fee that ensures its circulation and bearers of the currency pay this fee automatically to those community members who contribute work to secure the currency.”⁷

A second example comes from Spain, where in 2014 the Integral Cooperative of Catalunya launched FairCoin, which is endorsed by Fair Coop, the Earth Cooperative that aims to develop a fair global economy:

“FairCoin is the first fairly distributed crypto currency. 99.99% Proof-Of-Stake, FairCoin rewards savers. All the coins were pre-mined and fairly distributed to thousands of people from all over the world. Backed by a strong, diverse and committed community. Promotes prosperity and financial freedom with real value. Working to become the coin of fair trade. Faircoin is the first project where the coins are not bought but rather distributed equally between everyone who wants them regardless of their current financial status, and promotes equality.”⁸

Indeed, contrary to what happens with Bitcoin, and to be more environmentally friendly, faircoins have been created, or pre-mined, within the genesis block. Faircoin is based on a different proof for reaching decentralised consensus validation of transactions on its ledger, i.e. the Proof-of-Stake rather than the Proof-of-Work. In this case, transactions are validated on the basis of how much hard-drive memory a participant to the network shares with the network as whole.

Furthermore, Faircoin2 goes beyond the critique of Bitcoin about the waste of electricity to mint the currency and validate transactions, one of the main critiques to Bitcoin’s Proof-of-Work so far (and also beyond the limits of Proof-of-Stake). In fact, developers at Faircoin2 implemented a new consensus

⁷ <http://freicoins.io>

⁸ <https://fair-coin.org/>

mechanism, still based on strong cryptography (the Schnorr signature algorithm [Schnorr 1991] instead of Secure Hashing Algorithm - SHA256 as for Bitcoin), which I consider to be a watershed in the design and implementation of crypto-currencies and distributed ledgers technology for the common good. This new consensus mechanism is not based on machines' clock cycles wasting electricity as happens with Bitcoin, but on another proof to validate transactions, i.e. the Proof-of-Cooperation (König and Duran 2016). Under this regime, consensus is reached among Certified Validation Nodes (hereafter, CVN) operated by trusted participants. According to the core developers of Faircoin2, the node certification procedure has the purpose of

“expos[ing] the applicant to the public to some extent. This is to ensure that all CVNs are operated by honest individuals who would not risk to get a bad reputation. The system can cope with a certain degree of misbehaving CVN. Moreover misbehaving nodes will be banned from the network and the certification revoked and thus will no longer be able to do harm to the network. Bad CVN will be automatically banned by all nodes in the network and later the certification will be revoked manually. Adding a new CVN is also a manual process.” (<https://fair.coop/groups/faircoin2/forum/topic/node-certification-procedure-ncp/>; see also König and Duran 2016)

As a node is validated by Faircoin2 developers, essentially by identifying the node operator through personal contact and verification, each CVN simply verifies the new block by following a chronological order without making machines work just to find the new block. Instead, there is a more cooperative process where one waits one's turn to sign the next set of transactions to broadcast within the Faircoin2 distributed ledger.

In conclusion for this subsection, these two examples, Freicoin and Faircoin/Faircoin2, suggest that there are already systems designed and deployed which could be used to implement Money for the Common Wealth of the Multitude. Although they have few users, they represent instances of a paradigm of money that is qualitatively different from orthodox monetary economics. Moreover, they are timely as they are meant to replace the paradigm of conventional bank-debt money. Finally, they are examples of design and implementation of currency systems that have the potential to be socialised

through a dis-intermediated, decentralised, transparent, in a word democratic monetary system for the exchange of economic value. This reveals a system that by design does not present the framework and network structures of the kind imposed by monetary biopower.

3.5 Conclusions

In this chapter, I presented the four components of the *dispositif* to strategise constituent governance at the service of the Multitude in the monetary domain. In the first two sections, I argued for the two top-down components of the *dispositif*, i.e. Basic Income and the Neo-Chartalist approach. I then moved on to the two bottom-up components of the *dispositif*, i.e. complementary currencies, and crypto-currencies and distributed ledgers technology. I suggested that these four components of the *dispositif* could be used to conceptualize the implementation of new currency and payment systems at the service of the Multitude, with related repercussions on both the hegemony of monetary biopower and the subsumption of biopolitical labour. This theoretical move enabled me to actively argue for the curing of the monetary blindspot. Firstly, the monetary *dispositif* that I sketched in this chapter opens up new possibilities in monetary reform whereby it is possible to frame a multi-currency ecosystem that overcomes single-currency thinking.

Secondly, the monetary *dispositif* enables one to think beyond the usual alternatives between capitalism and socialism/communism in that it shifts the context of the monetary domain from the public or private to the common sphere, wherein commonism can be the basis and result of biopolitical production. Thirdly, and consequently, the monetary *dispositif* entails a change in the governance of the institutionalised *status quo* as the precondition for an

effective defeat of monetary biopower through novel monetary constituencies. Indeed, by bridging the literature on complementary currencies and the one on the Common, the Multitude and the monetary *dispositif* for constituent governance, I thus proposed the shift to a monetary paradigm that would offer diversity in currency while it would be managed from both the top down and the bottom up.

The main result of this interdisciplinary literature review has been the search for theoretical legitimation of the following proposal for a tentative working definition of Money for the Common Wealth of the Multitude, which I stated in the introduction to the thesis:

Money is an agreement within a community to use state money, receive basic income in the form of crypto-coins stored on a distributed ledger, or more traditional forms of currency, as a means of payment democratically self-managed by the Multitude in a multi-currency environment to create biopolitical value.

This working definition of Money for the Common Wealth of the Multitude that I propose above in italics, results then in the following research question: within the scope of bottom-up constituent governance initiatives, what happens when money system users are empowered to use complementary crypto-currencies explicitly co-designed, self-managed and co-owned for building their own common wealth? In particular, how can communities deal with the issue of what can be named 'crowd-sourced monetary policy' such as e-participatory budgeting rewarded with national currency as a form of meritocratic basic income? What does it mean to collectively issue and access money as a complementary currency for smoothing the operations of the Small and Medium-sized Enterprises sector counting thousands of firms, or for self-remuneration in a community supported agriculture initiative, or as a collection of the above?

In other words, what are the consequences of a shift from a private monopoly of a single type of currency enforced with violence by *fiat* to a multi-currency payment system that is complementary at first but intended to be designed, implemented and self-managed by the singularities of the Multitude to grow their common wealth? As Lilley, Lightfoot *et.al.* (2004) put it, in general, for any information management system and, I will argue more specifically, for currency and payment systems: “conventionally the objective of a system, in the enlightened end-user computing times in which we live, is the need that is satisfied in the user by system use” (Lilley *et al.*, 2004: 41). Starting from this hint, I will centre the following analysis of the research sites on the manifestations of Money for the Common Wealth of the Multitude as a fourfold implementation of the Distributed Ledgers Technology to frame complementary currencies and regulate basic income provision. Before delving into the four research sites of this thesis, however, I will dedicate the next chapter to the methodology that I followed in order to conduct the fieldwork research.

4 Methodology: Participatory Action Research and Critical Multi-Sited Ethnography

4.1 Introduction

Following the review of relevant theories grounding Money for the Common Wealth of the Multitude in the previous chapters, in this chapter I will present the methodology that I followed in my fieldwork (which I will present the next chapter). Methodological choices inevitably contain a political aspect that needs to be made explicit, as this research is also an effort of political activism and theoretical militancy. According to Pennycook, all knowledge is “produced within a particular configuration of social, cultural, economic, political, and historical circumstances and therefore always both reflects and helps to (re)produce those conditions. Furthermore, since all claims to knowledge represent the interests of certain individuals or groups, we must always see knowledge as interested” (Pennycook, 1989: 595). Therefore, the following methodological discussion will take into account my personal, political and theoretical partiality. That is, I explicitly acknowledge that I conducted fieldwork from a biased perspective, informed by the theories and technological standpoint presented in chapters two and three.

In contrast with the orthodox paradigm of economics research, which is traditionally based on quantitative analysis, the methodological framework that I will propose in this chapter draws on Qualitative Research Methods (Denzin and Lincoln 2005). My approach is to research to what extent it can be argued that the details and practicalities of Money for the Common Wealth of the Multitude emerge directly from the stories offered by those who are either designing and experimenting with alternative currencies, or who are already experiencing them in their own lives. To this end, I will adopt a combination of Participatory Action Research (hereafter, PAR) and Critical Multi-Sited Ethnography (hereafter, CMSE) and. These methodological choices re-

sulted from the fact that during the years of my postgraduate research, I had the possibility to take part in two EU-funded projects on Collective Awareness Platforms for Sustainability and Social Innovation, which I will introduce in the next chapter. As part of these projects, I worked with communities participating in pilots experimenting with digital monetary innovations. As I worked with these pilot communities, together with the helpful support of my supervisors, we agreed that the kind of research presented in this thesis was better served by these methodological choices. In this chapter, I will describe how these two qualitative research methodologies shaped my effort to look for real world evidence of Money for the Common Wealth of the Multitude in each of the four sites that I will present below: Site 1 - Social Krónas - Iceland; Site 2 - Eurocat - Spain; Site 3 - Muultapaakku - Finland; and Site 4 - Commoncoin - Italy.

However, the nature of my engagement in the two EU projects prevented me from conducting a pure ethnographic work, as I could not visit the communities in Iceland while I have been able to conduct interviews for the other sites - albeit spending with sites' communities a limited amount of time by virtue of Eu projects' general schedule constraints. Therefore, in order to present the data that I collected as clearly as possible, in the next chapter I will present the four sites as case studies in the form of narrative vignettes. The present chapter will proceed as follows: in section 4.2, I will present PAR and CMSE together with the particular problematics associated with both methodologies. I will conclude this chapter in section 4.3.

4.2 Participatory Action Research and Critical Multi-Sited Ethnography

In this section, I will present the way in which the combination of two methodological components will allow both the observation of and conditions for the emergence of Money for the Common Wealth of the Multitude in the following chapter on fieldwork. At the beginning of the research presented in this thesis, I had intended to adopt a pure mixed method research (Creswell 2007 and Creswell and Clark 2009), including quantitative and qualitative research methods in order to have a broad scope for analysis. However, as the research continued and case studies started to become more clearly defined, it appeared that the best strategy was to adopt elements from the literature on qualitative research by endorsing two methods at the same time, i.e. PAR and CMSE.

The synergy between PAR and CMSE open new methodological possibilities as they can be thought of as a mutually reinforcing (Coleman and von Hellermann 2011). On the one hand, I wanted to observe the various relevant aspects for the study of Money for the Common Wealth of the Multitude. On the other, I had the possibility to actively participate in the construction of the very sites of analysis as the currency designer partner in each of the two EU-funded projects from October 2013 to the first quarter of 2017. In the first three sites in Iceland, Spain and Finland, I embarked on a deep qualitative process of observation, interaction with end users and participatory problem solving for co-design. In the fourth site, in Italy, my work also included the real-world deployment of a software prototype to run a complementary crypto-currency, i.e. what I will define in the next chapter as the Freecoin Social Wallet. It is from this perspective that I will present the four sites in order to search for real-world evidence of Money for the Common Wealth of the Multitude.

4.2.1 Participatory Action Research

As I was a member of a partner organisation⁹ involved in the two EU-funded projects, whose role was to work with pilot communities to define their needs and develop suitable currency solutions to meet them, PAR can be seen as the primary methodology that I *de facto* adopted in this thesis. In effect, I examined the four sites through PAR, searching for evidence of real world possibilities of Money for the Common Wealth of the Multitude. PAR allowed me to take advantage of “applied”, “collaborative” and “committed” approaches to research (McNiff, 1992).

As a qualitative methodology, whereby the researcher is also involved in the community that s/he researching, PAR focuses on infield problem-solving by a participatory community sharing with the researcher the definition and operationalisation of the process toward the solution of the problem previously identified. As Burawoy put it: “rather than bringing the “subject” into the laboratory or into the world of the interviewer, the observer leaves the security of the university for the uncertain life of the participant.” (Burawoy 2000: 26) The researcher can be a part of or an advisor of such community, or both. In the context of this research, although we shared a common passion for monetary innovation, I believe that it is correct to identify myself as an advisor of the four communities, rather than part of them apart from the fourth site. Especially in the first three sites in Iceland, Spain and Finland, I was only a researcher taking part to the co-design process. Nevertheless, as I am a native Italian, I took part to the research by co-designing with users as a researcher sharing the cultural traits of the people around me only in the fourth site. In effect, I had been aware of the limitations implicit in the PAR methodology such as the difference between being a researcher and being a native.

⁹ Stichting Dyne.org, a Dutch Foundation with a mission to develop free and open source software (<http://dyne.org>)

However, I selected such methodology in that it puts the researcher in the condition to “walk shoulder to shoulder with ordinary people rather than one step ahead.” (Swantz 2008: 31) Moreover, I strove to endorse a critical approach in PAR in order to account for my biases as an activist and a researcher. As Kemmis put it:

“In critical participatory action research, participants aim to be ‘critical’ in this way, trying to find how particular perspectives, social structures and practices ‘conspire’ to produce untoward effects, with the aim of finding ways to change things so these consequences can be avoided. Being critical in this sense means acting negatively against identified irrationality, injustice and suffering, rather than positively for some predetermined view of what is to count as rational or just or good for humankind.” (Kemmis 2008: 125)

Hence, during the years of research, I learned how to implement my knowledge of complementary currency systems and distributed ledger technologies in four countries in the North and South of the European Union in such a way as to create a narrative for Money for the Common Wealth of the Multitude, by working with interested communities while remaining in an advisory position.

As I will argue in the next subsection, alongside PAR, CMSE was the second major component that I adopted at the methodological level. Both research methods helped me to build a narrative for the bottom-up design and implementation of currency solutions, shielding those at the base of the pyramid from the current crisis in a process potentially leading to economic democracy. Indeed, those at the base of the pyramid provided the content for the stories narrating the features and emergent manifestations of Money for the Common Wealth of the Multitude and their potential transformative societal effect. Hence, the intention behind this methodological arrangement is to suggest how design choices and descending constituent governance practices emerging from the sites can be understood as examples of Money for the Common Wealth of the Multitude.

4.2.2 Critical Multi-Sited Ethnography

In this subsection, I will present the second qualitative methodology that I adopted to give substance and structure to my PAR effort, i.e. *critical ethnography* (Simon and Dippo, 1986) applied to *multiple sites* of research - CMSE. This second methodological choice can be understood as the concrete way in which I applied PAR to collect qualitative data for this thesis. As one can think of critical ethnography as “conventional ethnography with a political purpose” (Thomas, 1993: 4), this second component of the research methodology is intended to serve my research needs coupling the theoretical elements forming the four components of the monetary *dispositif* with the narrative on the Common and the Multitude, which are indeed explicitly political in nature.

Fieldwork chiefly consisted in my constant search for testimonies and demonstrations of the ‘Money for the Common Wealth of the Multitude phenomenon’ in real-world communities among four different countries. As the sites were selected in order to increase both diversity and access to funding within the two EU projects, I could not select them strictly for the purposes to build a data set specific to this thesis. By contrast, I had to adapt myself to the needs of communities which were selected within a broader bidding context onto which I had no power to influence the selection process. However, I will argue that this drawback had been mitigated by the nature of the communities researched in the two projects, i.e. social movements and the new poor in the European Union. Hence, both types of communities were part of the Multitude and I will argue that this quality made them proper candidates to be considered as good research samples.

This critical ethnographic approach has been applied in four different research sites. Therefore, it is correct to describe my methodological not only as Critical Ethnography, but also as Multi-Sited Ethnography:

“This mobile ethnography takes unexpected trajectories in tracing cultural formation across and within multiple sites of activity that destabilise the distinction, for example, between lifeworld and system by which much ethnography has been conceived. Just as this mode investigates and ethnographically constructs the lifeworld of various situated subjects, it also ethnographically constructs aspects of the system itself through the associations and connections it suggests among sites.” (Marcus 1995: 96)

In other words, I investigated four different sites connected by the same theme of research into concrete manifestations of Money for the Common Wealth of the Multitude, in both the North and South of the European Union, with communities willing to experiment in innovation within the monetary domain. However, Multi-Sited Ethnography - or extended case method - by its very nature presented a set of problems :

“These in a nutshell are the four moments of the extended case method: extending from observer to participant, extending observations over time and place, extending from process to external forces, and *extending theory*. The fact that each dimension is limited by a corresponding face of power is not an indictment of the method but of the world. The shortcomings of our method only underline the ubiquity of domination, silencing, objectification and *normalisation*. The extended case method seeks to highlight those limitations not by ignoring them but by centering them by entering into a dialogue with those we study, by encouraging different voices to challenge our emergent accounts of process, by recognizing there can be no one-way determination between processes and forces, and by developing theory through a process of dialogue with other theorists as well as with the world we encounter as ethnographers. We are engaged in a reflexive science in which the limitations of method become the critique of society.” (Burawoy 2000: 28 - my italics)

Burawoy presented both components and problems regarding Multi-Sited Ethnography in the context of the possible role of ethnography in describing globalisation. In my research I focused on the fourth component of the extended case study, i.e. ‘extending theory’, whereby I put to test a theoretical framework by means of qualitative research. From a self-critical point of view, among the various problems identified by Burawoy, in this thesis the main problem that I faced in selecting a multi-sited ethnography to test the theory of Money for the Common Wealth of the Multitude described in chapters two and three was the risk of *normalising* my own theoretical framework, i.e. attempting, unconsciously, to produce evidence proving my own beliefs from the sites that I both researched and helped to shape with my very presence as an observer and advisor.

In other words, the challenge was to avoid ‘normalisation’ by “straightjacketing the world we study, disciplining it so that it conforms to the framework through which we observe it” (Burawoy 2000: 28). In summary, with the awareness on my own fallibility as a theorist and researcher in the monetary domain who could falsify my own findings through the ‘normalisation’ of my own theoretical framework, I nevertheless adopted CMSE as a method to enable me to provide an account of my own experience and theoretical proposals, while avoiding idealising the testimonies that I gathered with the interviews as “ethnographer as circumstantial activist” (Marcus 1995: 113).

4.3 Conclusions

In the previous section, I presented the two qualitative research methodologies that allowed me to locate expressions of the monetary *dispositif* in the real world. Indeed, both PAR and CMSE have been extremely useful in designing and implementing the instances of monetary innovation that I will present in the next chapter. The theory of Money for the Common Wealth of the Multitude will be put to test in the next two chapters on fieldwork and data analysis, respectively. The goal of this exercise is to assess to what extent it is possible to argue for compelling evidence about the concrete manifestation of Money for the Common Wealth of the Multitude by presenting concurring inferences built with PAR and informed by CMSE in the four sites.

In the following chapters, I will answer the question, what happens when money systems’ users are empowered to use complementary crypto-currencies explicitly co-designed, self-managed and co-owned for building their own common wealth? The answer to this question will emerge from the stories collected through on-site interviews coupled with participant observation, and narrated in the form of vignettes. This practice-oriented process is

meant to elicit the differences that this notion can present in the various forms and contexts in which I found, in my view, the concrete manifestations of instances of the monetary *dispositif* for the exodus of the Multitude from the subsumption by capital of their biopolitical value production.

5 Fieldwork Findings

5.1 Introduction

In the previous chapter, I proposed a participatory action research approach to a multi-site ethnographic methodology for the design and real-world implementation of the set of theories that I described in chapters two and three above. In this chapter, I will present its application. Thus, I will detail the research that I conducted in four sites as part of two projects for the design and development of Collective Awareness Platforms for Sustainability and Social Innovation funded by the European Commission (<http://capssi.eu/about/>). I participated in these projects as a crypto-currency and distributed ledgers designer for the design and development of the Freecoin Social Wallet (Figure x).



Figure 18: The Freecoin Social Wallet "cornucopia" logo is an artwork by Andrea Di Cesare (2015).

The first project, which ran from October 2013 to June 2016, was named Decentralised Citizens Engagement Technologies (hereafter, the DCENT project - <http://tools.dcentproject.eu/>). In this project focused on research and tech-

nological development, I contributed to the design of three “complementary” (Lietaer 2001), *viz.* “subaltern” (North 2010b) crypto-currency systems by working with pilot communities in Iceland, Spain and Finland under the umbrella of Freecoin Social Wallet, a Free Software codebase for the implementation of decentralised digital currency systems that is the subject of the present chapter. I traveled to both Spain and Finland to collect interviews and conversations with users, managers and pilot partners, providing the data for an ethnographic study. Unfortunately, it was not possible to conduct onsite interviews in Iceland and so the ethnographic work based there is better understood as a collection of conversations that I conducted with pilot partners. More in general, my relation with the DCENT team included extremely stimulating and informing conversations for pilots design for all three project’s pilots with all DCENT consortium members during our periodic meetings in various cities in Europe, i.e. Barcelona, Helsinki, Berlin, Amsterdam, Rome, Paris and London as the coordination of the project was by NESTA (the National Endowment for Sciences Technology and Arts in the United Kingdom).

By virtue my networking activities with other communities which were not officially pilots in DCENT, I was also able to involve a group in Milan, which became a use case in DCENT as its needs could be satisfied by the solutions developed for the Finnish pilot. Further, the community in Milan became a pilot in a second project in which I am involved at the time of writing this thesis. This project is named ‘Poverty Income and Employment News’ (hereafter, the PIE News project - <http://pieproject.eu/>), and it is running in three pilot sites in Italy, Croatia and the Netherlands. The PIE News project started in July 2016 and it will end on June 2019 with the launch of a platform for bottom-up welfare, named Commonfare (<http://commonfare.net/>), which is to be understood as a design and test of the theory for participatory welfare provisioning that I introduced in section 3.1 (Fumagalli 2015).

As a cautionary note at the outset of this chapter, I inform the reader that the three pilots - and thesis sites - from the DCENT project did not see a real world test of the Freecoin Social Wallet. Indeed, both lack of resources to complete the software coupled with the inability of pilot partners to prepare the ground for prototype testing were the main reasons that hindered a real world testing of the solutions that I co-designed with pilot partners and communities in the DCENT project. However, as I am a crypto-currency and distributed ledger designer, I will argue that the process of design for the solutions to the problems identified by DCENT pilot communities is a legitimate ethnographic work to include in this thesis for two reasons. First, as a process of co-design with users and managers of the system to be deployed in these communities it was meaningful in the sense that it was a valuable multi-site ethnographic research effort *per se*. Secondly, the multi-site ethnographic research and co-design process that took place in the three pilots in DCENT has been the basis for the real world test of the Italian pilot in PIE News as the community that I worked with in Milan - before as a use case in DCENT and after as a fully-fledged pilot in PIE News - is to be thought of as the concrete application of the design elements developed in the three pilots in DCENT.

The remainder of this chapter will proceed as follows: in section 5.2, I will describe the context of the two projects in which I conducted the multi-site ethnographic, i.e. DCENT and PIE News projects, together with the general features of the Freecoin Social Wallet. I will present the four research sites in sections 5.3, 5.4, 5.5 and 5.6. For each of the first three sites, I will detail their context, system description and the relevance for the test of the Freecoin Social Wallet for the fourth site. In particular, in section 5.3, I will present 'Social Krónas' - a complementary crypto-currency and meritocratic basic income provision system to reward e-participatory budgeting. In section 5.4, I will

discuss the second vignette, i.e. 'Eurocat' - a micro-endorsement and mutual credit system for a regional currency in Catalunya. In section 5.5, I will present Multapaakku - a decentralised self-remuneration system for a project on community-supported agriculture in Helsinki.

In section 5.6, I will present the test of the Freecoin Social Wallet, i.e. Commoncoin: a multi-signature self-remuneration complementary crypto-currency and basic income provision system for the precarious artists' collective named Macao and based in an occupied building in Milan. According to the literature that I presented in chapter two above, the stories, or vignettes on the four sites presented in sections 5.3 to 5.6 have been developed as examples of Hardt and Negri's constituent governance by and for the Multitude as bottom-up practices to promote the exodus from the subsumption of monetary biopower. This has been achieved with the design (first three sites) and implementation (fourth site) of three components of the monetary *dispositif*: basic income (Atkinson 1996; van Parijs 1991 and 2004), complementary and subaltern currencies (Lietaer 2001 and North 2010b) and crypto-currencies and distributed ledgers (Nakamoto 2008; Sachy 2015; and König and Duran 2016). Finally, section 5.7 summarises the previous sections and introduces the next chapter.

5.2 DCENT, PIE News and the Freecoin Social Wallet

As stated on the D-CENT project website, “DCENT is a Europe-wide project creating open, secure and privacy-aware tools for direct democracy and economic empowerment.” (<http://tools.dcentproject.eu/>). A social network for social movements, D-CENT can be understood as an ecosystem of tools for collective political and socio-economic engagement (Figure 19):

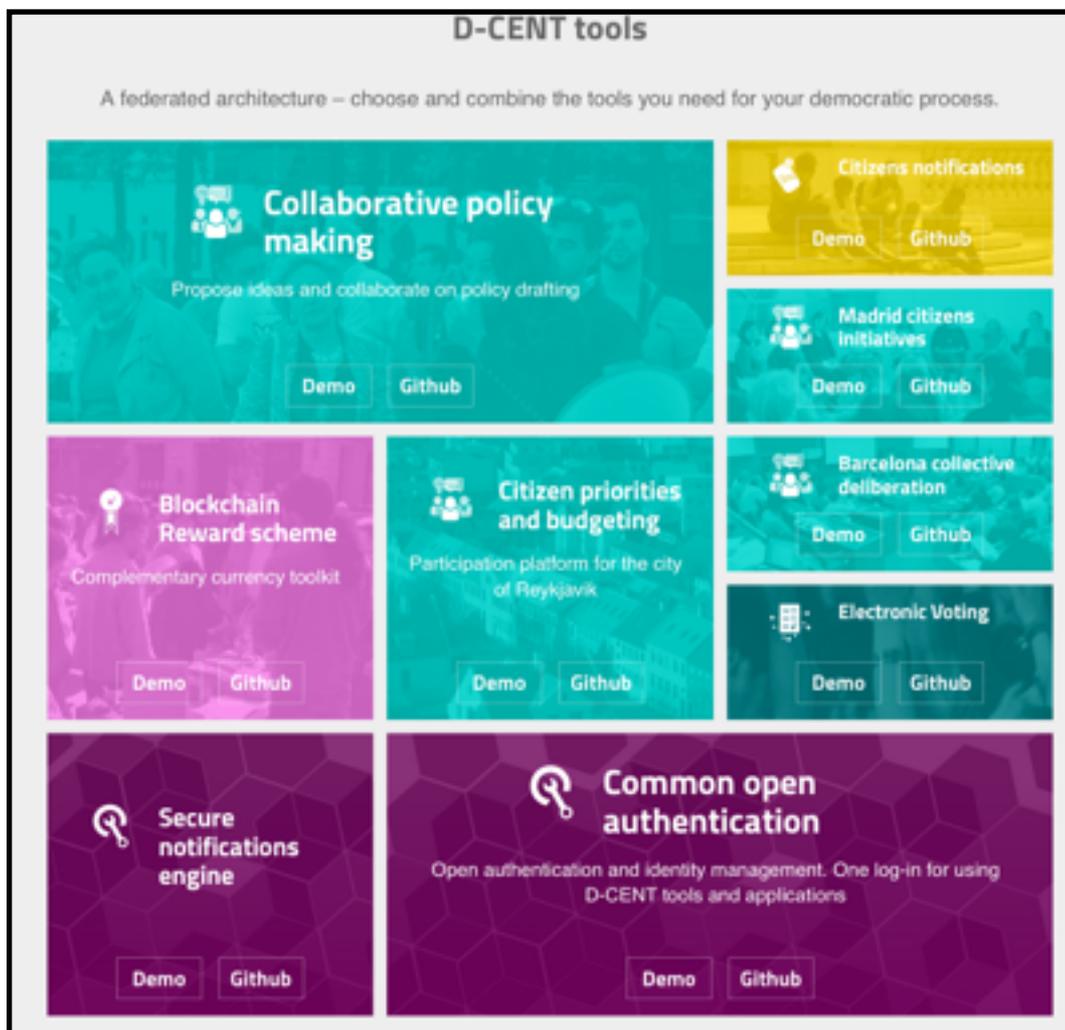


Figure 19: an overview of the ensemble of tools that D-CENT project offers for citizens empowerment through direct democracy and social economy (Source: <http://tools.dcentproject.eu> last accessed 27 April 2017).

Alongside tools for collective policymaking, electronic voting, secure authentication and notifications engines, the DCENT platform offers tools for e-participatory budgeting and the development of distributed ledgers for the use of crypto-currencies to reward participant in a decentralised manner, i.e. experimentation with the Freecoin Social Wallet.

The Freecoin Social Wallet has been co-designed with users as a series of minimum but viable products to deploy Blockchain Reward Schemes. These distributed ledgers applications are tailor-made for each DCENT pilot:

“1. Iceland: a blockchain enabled municipal crypto-currency inspired by the case studies from Libra Circuit, the SoNantes (France), and coupled with use-cases like the HullCoin (United Kingdom). Iceland is offering the best suitable social environment for a Lean UX development of the currency software toolkit in D-CENT. We aim to facilitate the usage of cryptographic blockchain technologies by co-designing a reward system for political participation integrated in Betri Reykjavik in collaboration with the Municipality of Reykjavik.

2. Spain: the Eurocat complementary currency has already been launched in Barcelona on April 2014. We conducted an in-depth research on the status of the project, acknowledging that Eurocat needs a digital decentralization strategy to secure its resiliency and the reliability of its digital commons. We intend to envision and facilitate the evolution of its existing technical architecture to foster stewardship of shared data among participants. The aim is to decentralize the storage and distribute the responsibility of service hosting and data custody.

3. Finland and Italy (Milan): a decentralised social remuneration system that can reward the contributions that members of Helsinki Urban-Cooperative Farm perform to the common interest of the cooperative. This model will be also piloted in Milan, at Macao, an HUB for cultural workers of the city.

During the design process, the focus has been put on the technical and design elements that shape Digital Social Currency as a way to legitimise the bottom-up e-democratic process by means of auditable cryptographic distributed ledgers, respectively: decentralized storage, ubiquitous wallets and ad-hoc social remuneration systems. Our focus is on complementary currency design in the hope that the distributed allocation of credit created among engaged members supports a kind of reputation management that manifests in terms of tolerance of risk.” (Sachy *et.al*, 2015: 4)

The design effort in the DCENT project is characterised by narratives around complementary currencies, decentralised crypto-currencies and distributed ledgers, payment system software development together with the biopolitical value of the Common applied to the re-appropriation of the power of money by the Multitude:

“our current situation is propitious not because of the global crisis of democracy, the permanent state of exception, and the interminable global war, but rather because the constituent power of the multitude has matured to such an extent that it is becoming able, through its networks of communication and cooperation, through its production of the common, to sustain an alternative democratic society on its own.” (Hardt and Negri 2004: 357)

All these elements lead to an understanding that seriously undermines the current narrative of austerity and centralisation aiming for an increase in efficiency, while favouring new innovations in currency and payment system design, ironically funded by the very institutions such innovations should make obsolete.

In the PIE News project, the Commonfare platform can be thought of as a way of complementing conventional welfare state measures with an innovative approach that harnesses the collaborative power of digital technologies. The goal is to improve the living conditions of the population at risk of poverty through the reinforcement of their collective awareness on how to deal with their daily problems. From this point of view, the PIE News project is an attempt to promote collective awareness for bottom-up participatory social and economic innovations. As Hardt and Negri put it:

“The productive realm of communication, finally, makes it abundantly clear that innovation always necessarily takes place in common. Such instances of innovation in networks might be thought of as an orchestra with no conductor—an orchestra that through constant communication determines its own beat and would be thrown off and silenced only by the imposition of a conductor’s central authority. We have to rid ourselves of the notion that innovation relies on the genius of an individual. We produce and innovate together only in networks. If there is an act of genius, it is the genius of the multitude.” (Hardt and Negri 2004: 338)

Accordingly, the PIE News project is thought of as to employ user-driven design, research and innovation approaches, merging online reputation systems with digital currencies, to develop the collaborative definition of Commonfare practices.

The PIE News project is intended to curb PIE conditions - poverty, lack of income and unemployment conditions - by adopting an innovative, public design approach: a pilot-driven design and implementation process that will lead to the creation of the Commonfare platform. This platform has the potential to be a game-changing set of tools for the new poor in Europe by allowing them to inform and to be informed about public measures combating poverty, to share good practices on how to cope with their situation, and to find support in networking activities able to bring value to their everyday life. Within the PIE News project, the overarching ambition is to pilot solutions that can substantiate Commonfare as a new economic model that leverages the network effects and the collaborative co-creation of digital tools to cope with difficulties in everyday life.

Poverty is indeed a huge social problem in the contemporary European Union. According to Eurostat (2014), there are over 120 million of people at risk of poverty or social exclusion, accounting for almost 26% of the European population. Despite the support provided by the Member States, around 17% of these people still remain at risk of poverty even after social transfers by the welfare state. Moreover, the percentage of the population in conditions of severe material deprivation grew from 9% in 2008, to 10% in 2013. The situation differs from country to country: new Member States show a very high and stable level of material deprivation (around 20%), while the Euro-area countries show lower but growing levels of material deprivation. In some countries, such as Italy, material deprivation has almost doubled from 2008 to 2012 reaching a peak of about 14%. This trend clearly shows that the conventional welfare measures adopted by the Member States are insufficient and there is a need for new tools to supplement existing measures.

The bridge between the DCENT and the PIE News projects is the Freecoin Social Wallet, whose history and features within the DCENT project can be described as follows:

“At a glance, Freecoin is the result of a fork of the Bitcoin toolchain. Freecoin does not aim to be a currency itself, but a backend *Suite* of interoperable tools to run free and open source blockchain systems. Freecoin's ultimate ambition is to reach GNU¹⁰ software quality standards in letting operate socially oriented types of currency systems that will be designed for pilot communities within DCENT. In brief, innovation in currency design cannot happen within monetary orthodoxy. Thus, they need grounding from a meta-level in-forming them. As a consequence, the focus has been put on the elements that shape Social Currency *per se* like trust, reputation, common interest, participation, fair material and symbolic exchanges, credit risk management, distribution, etc. - the very elements and dimensions of the conventional system that are going through an existential crisis at the time of writing. In turn, the experimentation on the Digital Social Currency Pilots in DCENT is ever more relevant in that pilot communities are already actively designing tools for collective decision making on economic matters, a collective black-swan network effect. Social control of credit (Spain), rewards for political participation (Iceland), decentralised self-remuneration (Finland) are the general trends that are informing the design of Freecoin.” (Roio and Sachy 2015: 7)

The origins of the Freecoin Social Wallet date back to 2011, when at Dyne.org Foundation, I happened to witness a fork (a departure from the main code-base of a software) of Bitcoin: Freecoin, the first fork of Bitcoin expressly designed to allow for a customisable genesis block.

The most direct way to present Freecoin is by looking at its description in the form of an elevator pitch:

¹⁰ The reader has to bear in mind that GNU (acronym for ‘Gnu is Not Unix’) simply means that the software is fully composed as free software, whose source code is open and whose distribution follows copyleft practices.



Figure 20: the Elevator Pitch for the Freecoin Social Wallet (Source: Roio and Sachy 2015: 4).

During the shift from the DCENT project to the PIE News project, we changed the name from 'Freecoin' to 'Freecoin Social Wallet'. This new label better represents the meaning and function of the underlying codebase as it is modular software in which it possible to encode constituent governance rules that can adapt to various crypto-currency and distributed ledgers back-ends, rather than limiting Freecoin to be a crypto-currency itself (Figure 21):

Welcome to Freecoin



Balance: 50



Figure 21: the user interface of the Freecoin Social Wallet
(Source: Dyne.org Foundation 2017).

In the next four sections, I will present the three elements that shaped the design of the Freecoin Social Wallet in the three pilots in the DCENT project, followed by the real-world test of the software codebase in the Italian pilot of the PIE News project.

5.3 Vignette No 1: Social Krónas

In this section I will present the first site, i.e. the first design element of the Freecoin Social Wallet. The first element of the Freecoin social wallet can be defined as bottom-up basic income creation through civic e-participation.

5.3.1 Context

In the Icelandic site, researched from 2013 to 2016, civic participation took place within e-participatory budgeting activities by citizens residing in the city of Reykjavik. Unfortunately, real world testing was not possible, for two main reasons. First, there was a lack of resources to complete the software implementation of the Freecoin Social Wallet in DCENT. Second, the country was affected by the Panama Papers political scandal during the final months of the DCENT project with the release of documents about “nearly 215,000 companies and 14,153 clients of the Panamanian law firm Mossack Fonseca” (*The New York Times* - April 5th 2016). This scandal impelled both pilot partners - who were members of the Icelandic Pirate Party - and the wider population – to focus on the perturbations coming from the conventional monetary system. Indeed, the scandal ushered in the need to organise early national elections as former Prime Minister “Sigmundur David Gunnlaugsson offered his resignation amid the controversy over his offshore holdings” (*ibid.*). These circumstances meant that the pilot partners were unable to prepare the ground for testing the Freecoin Social Wallet.

However, despite the impossibility of trialling an implementation of the Freecoin Social Wallet in this DCENT pilot, the design process itself was a highly productive piece of research. The Icelandic site can be thought of as a design process of constituent governance from the bottom-up in terms of a distributed reward mechanism for political engagement, within the prioritisation of best political proposals drafted by citizens for budget allocation.

Even before the DCENT project, a citizen earned rewards called ‘social credits’ from others who voted for that proposal during the yearly e-participatory budgeting event (organised by the City of Reykjavik since 2011). According to the website Participedia, whose main partners, among others, are University of Columbia and Harvard University, the history and organisation of the e-participatory budgeting yearly event in Reykjavik can be summarised as follows:

“Following the 2008 financial crisis that devastated the Icelandic economy, mistrust towards political officials was rampant throughout the entire country. However, with tragedy often comes opportunity. Leading up to the municipal elections of Reykjavik in 2010, Robert Bjarnason and Gunnar Grimsson launched the ‘Better Reykjavik’ website, which offered running candidates a space to crowdsource ideas in an effort to rebuild the relationship between elected officials and the citizenry. Following the 2010 election, the Better Reykjavik platform was used to stimulate civic engagement in the decision-making process by giving citizens the opportunity to upload ideas and vote (up or down) ideas that were appealing or unappealing. During the month of the election, approximately two-thousand ideas were uploaded by roughly forty percent of Reykjavik’s population. Expanding upon the success of the Better Reykjavik platform, e-participatory budgeting was launched in the form of the Better Neighborhoods website. Better Neighborhoods further involves citizens in the decision-making process by allowing participation in the allocation of funds for projects. The popularity of both the Better Reykjavik and Better Neighborhoods websites as well as the effectiveness in getting popular, citizen-devised projects to come to fruition, shows the success of the websites at improving citizen participation. Additionally, when citizens see if the fruits of their participatory labour (i.e. citizen-driven projects) coming into existence, trust in the political system starts to re-emerge. E-democracy and e-participatory budgeting, in this case, have been successful at overcoming a typical problem in democracy: declining voter turnout, especially among the youth. In sum, the Better Reykjavik and Better Neighborhoods platforms have begun to successfully tackle the problem of rampant political mistrust by bringing citizens into the political realm.” (<http://participedia.net/en/cases/electronic-participatory-budgeting-iceland> accessed on 9th February 2017)

During the e-participatory budgeting event, citizens are asked to propose and vote on ideas proposed by other citizens that can better the common good of the city, from repairing cycling lanes to building new parks. Moreover, the initiators of the event and DCENT pilot partners in Iceland, Robert Bjarnason and Gunnar Grimsson, created an online platform named Your Priorities (<https://www.yrpri.org/>) to run the event. Even before the DCENT project began, this citizens’ e-participation application already contained a reputation system that distributed ‘social credits’ to users to reward their participation. In the next subsection, I will describe the characteristics of the Social Krónas system.

5.3.2 Social Krónas - a complementary crypto-currency and meritocratic basic income provision system in Reykjavik

The pro-active and crowd-sourced decision-making process for the betterment of the social good takes place during the annual e-participatory budgeting event, run on the Your Priorities platform and financed by the municipality. According to the organisers:

- “10-15 top priorities are being processed by Reykjavik City Council and voted upon every month.
- Over 70,000 people have participated out of a population of 120,000 since the site opened.
- 16,000 registered users have submitted over 5,800 ideas and 12,000 points for and against.
- Over 1000 ideas have been formally reviewed, and hundreds accepted since 2011.
- Participatory budgeting since 2011 with over 18m EUR allocated directly by citizens.” (<http://www.citizens.is/portfolio/better-reykjavik-connects-citizens-and-administration-all-year-round/> accessed on 3rd March 2017)

The process was designed to track citizens’ proposals for the use of part of the municipal budget provided by the Reykjavik City Council. The proposals are voted for by other citizens. The best ideas (i.e. those acquiring the most votes) increase the reputation of those that proposed them. Reputation was accounted for in social credits stored on Your Priorities personal user accounts. In the conversations that I conducted with Icelandic pilot partners Robert Bjarnason and Gunnar Grimsson within the DCENT project, it became clear that those social credits could be spent in the local economy by converting them into Social Krónas, a complementary crypto-currency for the socio-economy of Reykjavik. More radically, we agreed that Social Kró-

nas could be cashed in exchange for Icelandic Krónas (the national currency) as a form of meritocratic basic form of income provisioned by the Reykjavik City Council. In other words, Social Krónas were designed to be either circulated on the platform to acquire services from other users or cashed in exchange of Icelandic Krónas thanks to a special fund, i.e. an escrow account provided by Reykjavik City Council alongside the resources allocated for the e-participatory budgeting annual rounds of public investment.

In the context of this thesis, I argue that this constituent governance practice is a concrete example of the monetary *dispositif*, which I proposed in chapter three to substantiate Money for the Common Wealth of the Multitude. The rationale was based on a very simple principle that I defined during the conversations with the DCENT Icelandic pilot partners as we met around Europe during the project: a citizen who's idea is voted for by other citizens for bettering the common good of the city should be rewarded with a complementary crypto-currency that can be converted into national currency by the municipality as a form of basic income for rewarding the time and effort spent to formulate the citizen's idea. As I put it in a DCENT project deliverable drafted for the European Commission:

"Your Priorities eDemocracy software already provides a reputation system that dispenses social capital in the form of 'social credits' to users proposing ideas that are then prioritized by the rest of the community: 165 of them have been formally reviewed and accepted by the City Council since 2011. However, at present these credits cannot be spent in the socio-economy of Reykjavik, let alone converted into Icelandic Krónas: rewards are assigned, but they do not translate into economic value. Hence, in order to foster citizen engagement with real rewards, DCENT is co-designing blockchain-enabled tools that can transparently manage the creation, storage and circulation flow of Your Priorities social credits, i.e. Social Krónas within the city economy. (Sachy *et al.*, 2015: 43-44)"

Therefore, alongside the possibility to use Social Krónas as a complementary crypto-currency among the users on the Your Priority platform, Social Krónas stored in a Freecoin Social Wallet on smartphones of participants could also be exchanged for Icelandic Krónas on the premises of Reykjavik City Council. This would allow citizens to spend Icelandic Krónas in the local economy as a form of basic income acquired from the bottom-up - albeit dis-

tributed from the top-down - through political participation for the betterment of the common good. In other words, Social Krónas distributed at the beginning of the e-participatory event to all citizens that would like to vote for the best ideas, would be a crypto-currency with two facets: (i) a voting token from the perspective of those who vote for ideas; (ii) a complementary crypto-currency for those whose ideas are voted for. As transactions would be registered on a distributed ledger, Reykjavik City Council could easily verify whether a citizen asking for redemption of Social Krónas was one that genuinely received the crypto-currency from another's citizen crypto-wallet or if that citizen was simply trying to cash in the Social Krónas received at the beginning of the event from the crypto-wallet of Reykjavik City Council (Figure 22).



Figure 22: the DCENT project - Icelandic Pilot Overview (credits: Marco Sacy 2015)

The region served would not only be the City of Reykjavik, but it would comprise also the greater Reykjavik Metropolitan Area. The standard of value for the Social Krónas would have a ratio of 10:1 with the national currency, the Icelandic Króna. The management of the system was intended to be spread among the Betri Reykjavik and Your Priorities platforms for e-participation in concert with Reykjavik City Council. The same would apply for the cost recovery for the operation of the system through a small annual levy from users and the municipality in order to maintain the servers that run the e-participatory event.

In summary, alongside the possibility to use Social Krónas as a complementary currency, the main purpose of the system was to transform political reputation into a complementary currency to be cashed out in national currency as a form of basic income. This could have been the first time where rewards for bettering the social good could be cashed in for national currency and spent in exchange of real goods and services. If adopted, this system could be game-changing in the real world as a form of collective organisation for the allocation of the budget at the city level. This, I argue, is a form of exodus of the Multitude from the rule of capital as citizens would have had the possibility to generate income out of their participatory efforts in creating biopolitical value for their citizens at the city as a whole. In brief, this was one of the most advanced experiments in concretely rewarding citizens' engagement as a service to the community with the possibility to enjoy, in return, a form of basic income from the public. In effect, the city would be technically paying a small fee to pro-active citizens for making a good idea work for the city while avoiding subsuming the value created by citizens' ideas in exchange for mere reputation points.

5.3.3 Relevance of Social Krónas for the Freecoin Social Wallet test in the fourth site

The first site that I presented in the two subsections above is, in my opinion, the most challenging of the four that I will discuss in this thesis. Indeed, the enthusiasm of Icelandic DCENT project partners coupled with my inability to conduct field interviews lead to the design of this pilot in the DCENT project being conducted in a theoretical but highly imaginative fashion. This creative theoretical work turned out to be very productive in the real world as I will show below, in relation to the test of the Freecoin Social Wallet in the fourth site. The main components that composed the first element that I could test in the fourth site, i.e. bottom-up creation of basic income through civic participation for the betterment of the common good of a community, can be summarised as follows. Firstly, the conversion of social credits representing reputation gained by contributing with ideas to the e-participatory budgeting annual event into the complementary crypto-currency Social Krónas. Secondly, the possibility of tracking Social Krónas on a distributed ledger, giving the system structural transparency. Thirdly, the conversion of Social Krónas into Icelandic Krónas as an innovative and meritocratic way to organise basic income provisioning.

These three elements, which form the core of the Social Krónas scheme co-designed with DCENT pilot partners from Iceland, shaped the co-design process with of precarious artists' collective at Macao in Milan. Indeed, they shaped the design of the bottom-up and meritocratic basic income provisioning scheme that has been concretely tested between the end of 2016 and the first quarter of 2017 in the PIE News project as a real world application of the theory on Money for the Common Wealth of the Multitude in the fourth site. In a nutshell, the strength of the Icelandic site lies in the proposal for radical social innovation while the main weakness was my inability to meet the site community and limit such game-changing proposal to a theoretical exercise. Nevertheless, it has been possible to apply in concrete such radical and inno-

vative ideas in the fourth site. In the next section, I will present the second site of this thesis, the DCENT project Spanish pilot Eurocat, which offers additional elements for the design of the Freecoin Social Wallet to be tested in the fourth site.

5.4 Vignette No 2: Eurocat

5.4.1 Context

The second design element that contributed to the test of the Freecoin Social Wallet in the fourth pilot site emerged from the Eurocat pilot based in Catalunya, Spain. It can be summarised as bottom-up social control of credit by and for the users of a complementary currency system. As for the previous case in Iceland, in Spain I documented a system that lay on the spectrum of bottom-up constituent governance theorised by Hardt and Negri. This second pilot, conducted within the DCENT project, was researched and designed in Spain, where I worked with the managers and organisers of the Eurocat, a regional complementary currency for Catalunya (<http://eurocat.cat/ca/>). In effect, among the various experiences of Spanish communities examined in the DCENT project, Eurocat emerged as a freshly-designed, collectively self-managed system for the management of trust and the subsequent control of credit within a specific community. The organisation promoting the Eurocat complementary, i.e. subaltern currency for this Spanish region is the Eurocat Management Committee, whose members I interviewed during fieldwork for the DCENT project in February 2014.

The Micro-Endorsement and Mutual Credit System proposed by the Eurocat Management Committee is - as one of its member, Alberto put it during my interviews in February 2014 - “both a method of allocating credit and a method of guaranteeing against credit default”. Indeed, the idea was born among the promoters as a way to re-draft the social contract around money by reformulating the way in which credit is allocated by the members of an economy to themselves, i.e. the social control of credit.

As Miguel, another member of the Eurocat Management Committee put it when I interviewed him in Barcelona, while researching communities for the DCENT project:

“With Eurocat, the main guidelines according to which credit will be allocated are going to respond to the social needs of the population. We have ideas about how to do it: since credit creates money, credit is a public issue as it creates the social contract around money for a community, so there is the need to build this design process as a public and participatory process.”

In practice, users can allocate credit denominated in the complementary crypto-currency eurocats to each other in order to have credit for buying what they need from each other, and for producing what they wish to sell to each other while keeping an overdraft threshold. As Miguel put it : “So what is produced can be sold to others that can buy and this is not possible when you have a credit crunch.”

Thus, the proposal by the Eurocat Management Committee rested on the commitment to engage in decentralised credit risk management for the social control of credit within a Small and Medium Size enterprise community of peers who decide on credit allocation among themselves. This possibility was a way to overcome the structural deficiency of the conventional money system that was currently incapable of fulfilling its very basic role of intermediary for credit access and circulation in the regional economy of Catalunya.

As Joana, a small business owner, put it during an interview that I run for the DCENT project in Barcelona:

“Eurocat is the answer to the credit crunch... It is a mutual credit system. So you can have the monetary mass proportional to the amount of goods and services that can be bought. In brief, Eurocat is social control of credit, because you get eurocats to produce something that the community wants, this is the social contract for the social control of credit. The community decides what the money is used for.”

Eurocat has been designed to offer businesses a common economic circuit where they could endorse each other and, by doing so, allocate an amount of eurocats to conduct business among themselves. In this way, Eurocat was intended to enable users to collectively self-manage the money supply of the

complementary crypto-currency system. This type of bottom-up initiative has the potential to solve the economic problems of small businesses finding themselves in difficult financial situations, such as a woman owning a small restaurant near the premises of the Eurocat Management Committee. As Alberto put it:

“I talked with a woman who owns a small restaurant just a few blocks from where we are now for your interview and she confirmed my intuition: people want to be heard. She told me that the taxes are too high, that they work longer hours for less income, that it is hard to access credit so they have to keep the heating switched off although we are in February and it is cold also in Barcelona.”

Although the Eurocat system could not be tested during the span of the DCENT project, I will argue that the interviews that I collected are an important dataset which gives a clear justification for the need of user-managed currency systems. Such interviews resulted in the group persona produced to have an overview of Eurocat and presented in Figure 23:

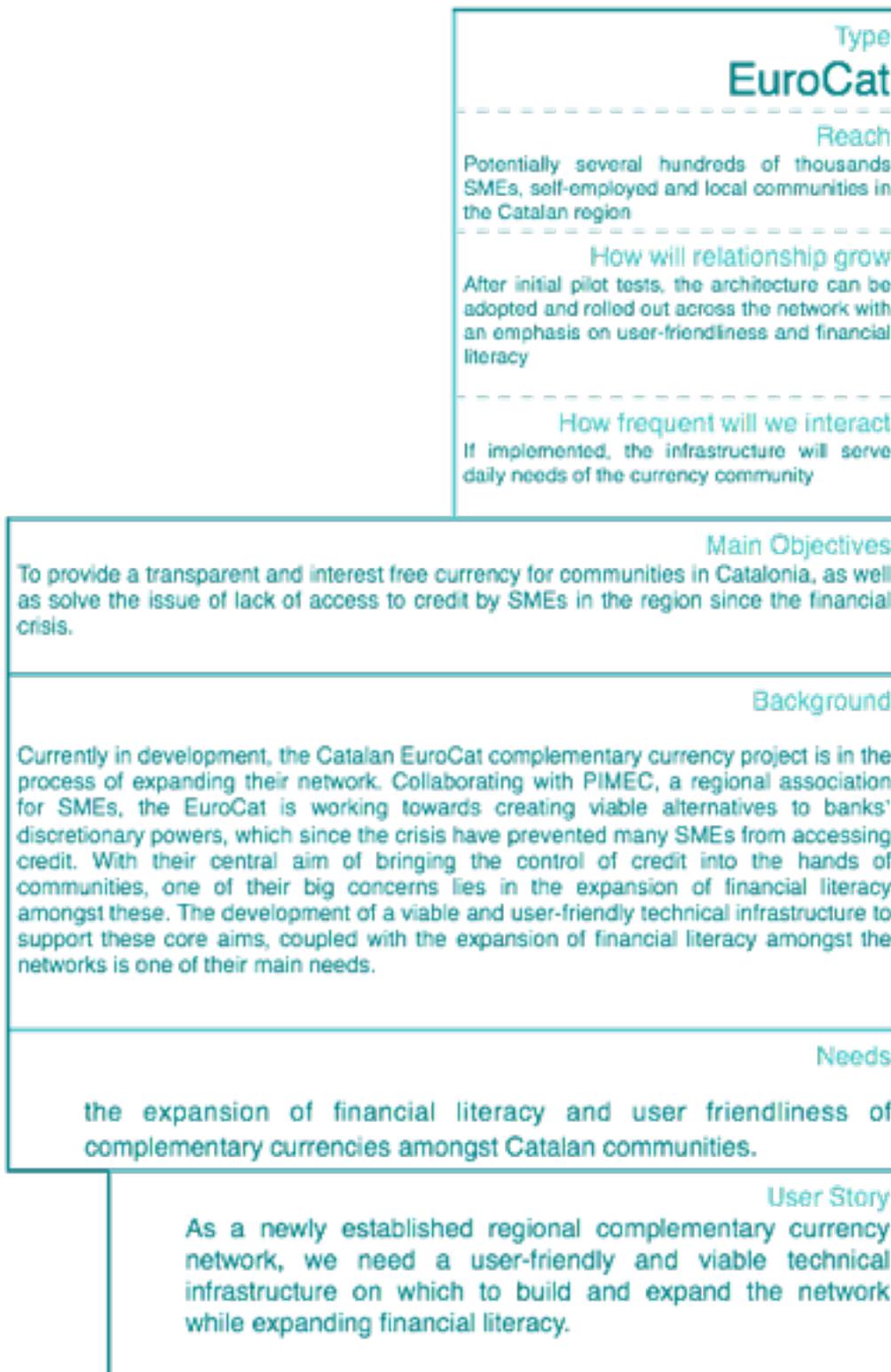


Figure 23: Group-persona for Eurocrat. Source: Sachy *et al.*, 2015.

In effect, testimonies such the one above document the need to provide alternative lines of credit to economic agents when they suffer the absence of help from the conventional monetary and banking systems in times of economic downturns, confirming arguments in the literature on complementary and subaltern currencies (Lietaer 2001; North 2010b). Furthermore, a project like Eurocat illustrates how the tenets promoted by Hardt and Negri can find expression in the monetary domain in order to promote the exodus of the Multitude from monetary biopower. As they put it: “Producing in common presented the possibility of the production of the common, which is itself a condition of the creation of the multitude” (Hardt and Negri 2004: 338). In the next subsection I will provide more detail on the Eurocat proposal and argue that it could be a game-changing system that could put money creation and allocation at the service of the Multitude.

5.4.2 Eurocat - a Micro-Endorsement and Mutual Credit System for a regional currency in Catalunya

At the design level, Eurocat is a two-layer system addressing the needs of several hundred thousand Small and Medium-sized Enterprises operating in Catalunya. A eurocat (EUC) relates to a correspondent pair of micro-endorsements (END). One END is one Unit of Trust (UT) given and received, i.e. one company can access a line of credit in EUC to the extent to which that company has been endorsed by - and is endorsing - other companies. Therefore, Eurocat is a micro-endorsement system in the sense that enterprises are allowed to endorse each other with small amounts of Units of Trust in order to spread trust - i.e. tolerate risk - among themselves. This could help in turn to keep total systemic risk low. Moreover, the Unit of Trust is a unit of account circulating as a complementary crypto-currency that signals the potential to create a means of exchange denominated in EUC. When a

company gives Units of Trust to another company, it is providing an endorsement to that company. At the same time, EUC is a complementary currency, i.e. a means of payment for measuring mutual credit between members and the standard of value. This is the reason why the system is called Micro-endorsement and Mutual Credit at the same time.

Below, I set out convertibility and 'functions of money' aspects (in italics) of the Eurocat system.

To endorse is to give 1 Unit of Trust while to be endorsed is to receive 1 Unit of Trust. For each Unit of Trust given and received, it is generated a pair of endorsements (END):

Layer 1 - Micro-endorsement System: 2 UTs correspond to 1END : 1EUC = 1 : 1

(END: Unit of Account; EUC: Standard of Value)

Layer 2 - Mutual Credit System: 1EUC : 1EUR = 1 : 1

(EUC: Unit of Account/Means of Payment; EUR: Standard of Value/Store of Value)

In this two-layer system, the unit of account (UT) relates to a standard of value END/EUC in Layer 1 and the latter (EUC) becomes the new unit of account in Layer 2. In this way, it is possible to link the trust accorded to credit somebody with the corresponding amount of currency that can be spent. In brief, the intention was to back the Eurocat currency (EUC) with trust itself (UT). The difference with the conventional system (EUR) is that in Eurocat, credit is backed by the trust that users accord to each other, rather than the trust in a central authority such as a bank - albeit organisers pegged the eurocat to the Euro as prospective users were more familiar with the latter as a standard of value. In order to run the system, the Eurocat Management Committee planned to raise the necessary amount of Euros through an annual membership fee and, if needed, an annual levy paid for by the users.

Moreover, the parameter that benchmarks whether a company is either functional or dysfunctional to the system is called 'Proof Of Business' (Business POW): the proof that a company is operating above the threshold of its 'Minimum Activity'. Indeed, according to Eurocat documentation,

"Minimum Activity is a systemic rule that refers to the number of exchange cycles that each member completes in one financial year. The Minimum Activity is the minimum annual spending and minimum sales that a company has to undertake in one year, and it will be a function of the Trust Capital (TC) and the Velocity expected for the type of credit the company has. For instance, for M1 accounts' Velocity expected is 2, so the minimum activity for the company will be 2xTC. In other words, a company with a Trust Capital of 50.000 EUC should sell and purchase for a minimum value of 100.000 EUC per year. Non-functional members are the ones below 2TC purchases or sales (whichever is lesser)." (Eurocat Management Committee - personal email communication 15/04/2015).

Finally, at the governance level, I summarise the mechanism that the organisers promoted as *social control of credit for decentralised monetary policymaking* as follows. Participants could allocate trust among themselves; and the community as a whole could decide the level and the ways to spread risk - in view of securing a common interest, maintaining the social good, i.e. the integrity and reliability, in other words the resilience of the currency system itself as a manifest instance of Money for the Common Wealth of the Multitude.

Thus Eurocat is a two-layer system: one layer for circulating trust in the form of micro-endorsements represented by a complementary crypto-currency (END), linked to another layer for the circulation of a complementary currency, the Eurocat (EUC). Therefore, the design of the Eurocat system comprised a complementary crypto-currency representing micro-endorsements (END) among Small and Medium Enterprises in Catalunya to inform the related complementary currency supply, the 'eurocat' (EUC). As Joana put it during my interview in Barcelona in 2014:

"With Bitcoin, putting money in circulation is about mining and there is nothing social in it. If you mine it first you abide to another social contract than credit as we mean it in Eurocat, which is based on community decisions made by humans not on an algorithm which impels technocratic issues to deal with. Eurocats are backed by trust not electricity as for Bitcoin."

However, the opinion changed when I explained that the Freecoin Social Wallet was not intended to be another crypto-currency wasting electricity, but a way to exploit the technology at the basis of Bitcoin as a possible way to serve communities in addressing their societal challenges. The Freecoin Social Wallet was meant to offer backend software for the decentralised management of the social currency, i.e. Units of Trust that become endorsements when they are exchanged among peers, as the distributed ledger technology offers a tamper-proof way to exchange value information among a set of peers in a decentralised fashion (as I explained in section 3.4 above). In other words, within the multilayered system which Eurocat was meant to be, crypto-currency technology would be implemented only in the first layer, i.e. the micro-endorsement part of the system (Layer 1: UT to EUC) and not for the conversion of the complementary currency (EUC to EUR).

Indeed, centralised complementary currency management systems like Cyclos (<https://project.cyclos.org/>) or Drupal (<https://www.drupal.org/>) and Integral-CES (<https://www.integralces.net/>) can already handle the needs of the Eurocat mutual credit system (Layer 2) in a centralised architecture. Such centralised complementary currency management systems “can manage a mutual credit ‘currency’ created by clearing positive and negative balances between members when they trade; backed by a promise to supply local goods and services; all transaction centrally recorded; active brokering of trades; web-based software system - both a trade ‘bank’ and a marketplace” (Kennedy *et al.*, 2012: 113). Thus, Eurocat organisers agreed to create an *ad hoc* complementary crypto-currency to manage micro-endorsements while they preferred to manage the eurocat complementary currency in a centralised fashion.

The importance of exploiting the potential of distributed ledgers became paramount to Eurocat promoters when they understood that it could solve the problem of withdrawing Units of Trust without central intervention by

the Eurocat Management Committee. Indeed, there was the problem to decrease the supply of micro-endorsements to a user that did not keep his/her word, for instance as a result of either dishonest or insolvent behaviour. In other words, since crypto-currencies transactions are irreversible by design, if a complementary crypto-currency represents a micro-endorsement, a user can send ENDS to another one, but when there is bad behaviour from the receiver, how can the sender re-acquire the ENDS and micro-endorse somebody else?

Although it was a necessary design feature for Eurocat, withdrawing micro-endorsement became a problem for me as a distributed ledger is tamper-proof, because it is a database wherein one can write a piece of information that cannot be modified unless the person that can access such information wishes to do so. For instance, if one transacts a crypto-currency to another person, it is only the receiver who can decide to reverse the transaction. Put it differently, there are no intermediaries such as banks in the crypto-currency world, i.e. there are no charge backs. This architectural feature renders crypto-currency transactions both authentic and secure in a distributed network such as Bitcoin in that they solve the problem of double spending (one can copy as many digital songs - for example mp3 - as one wishes to, but one can spend a crypto-coin only once).

The solution to this problem agreed upon with software developers at Dyne.org Foundation was to implement what is called in crypto-currency circles - and cryptography more at large - 'multi-signature transactions', defined as follows for Bitcoin, the reference implementation:

"Whenever a company or individual stores large amounts of bitcoin, they should consider using a multi-signature bitcoin address. Multi-signature addresses secure funds by requiring more than one signature to make a payment. The signing keys should be stored in a number of different locations and under the control of different people. In a corporate environment, for example, the keys should be generated independently and held by several company executives, to ensure no single person can compromise the funds." (Antonopolous 2014: 236)

In the Eurocat case, we proposed the following strategy: instead of becoming the central authority as for the complementary currency layer EUC, at the micro-endorsement level (END layer), the Eurocat Management Committee becomes the auditor that regulates relations with users who want to withdraw trust from other users, either for insolvency or for a change in trading strategy of a user's trust allocation, *viz.* credit risk management strategy. In crypto-currencies, multi-signature transactions enable two or more parties to agree upon the rules to execute a transaction – in this case, the possibility to recall micro-endorsements from a user wallet, for instance at the end of a quarter in a financial year.

In the specific case of Eurocat, the design choice made to implement distributed ledgers technology through the Freecoin Social Wallet fell onto the cryptographic protocol named FXC Secret Sharing protocol, where 'FXC' stands for Freecoin Social Wallet (Roio and Sachy 2015). According to documentation from the DCENT project, which I co-authored, "Freecoin's approach to protect the access to blockchain operation is that of splitting the wallet key in 3 parts distributed among participants, the minting organization and an auditor" (Roio and Sachy 2015: 30). In the case of Eurocat the 'participant' is a member of a company participating in the Eurocat Micro-endorsement and Mutual Credit system, the 'minting organisation' is the crypto-currency of choice, for the sake of argument Faircoin and the 'auditor' is the Eurocat Management Committee (see Figure 24):

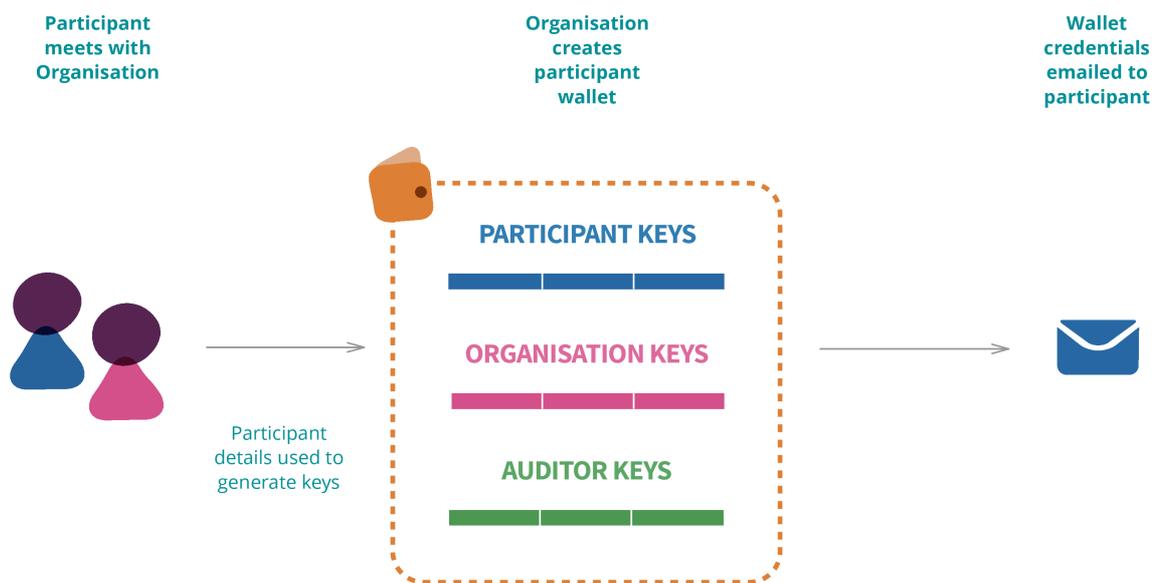


Figure 24: wallet creation procedure using the multi-signature FXC Secret Sharing Protocol (Source: Roio and Sachy 2015: 13. Graph Credits: Chris Cheshire 2015).

If a participant wishes to withdraw Units of Trust from the crypto-wallet of another one, the participant needs to ask the auditor for the parts of the key to unlock the crypto-wallet to retrieve its Units of Trust. Once the parts of the key which unlocks the wallet of the participant (1,2,3) and that of the auditor (7,8,9) are joined, the multi signature transaction is activated and the Units of Trust are withdrawn from the crypto-wallet of the other participant (Figure 25):

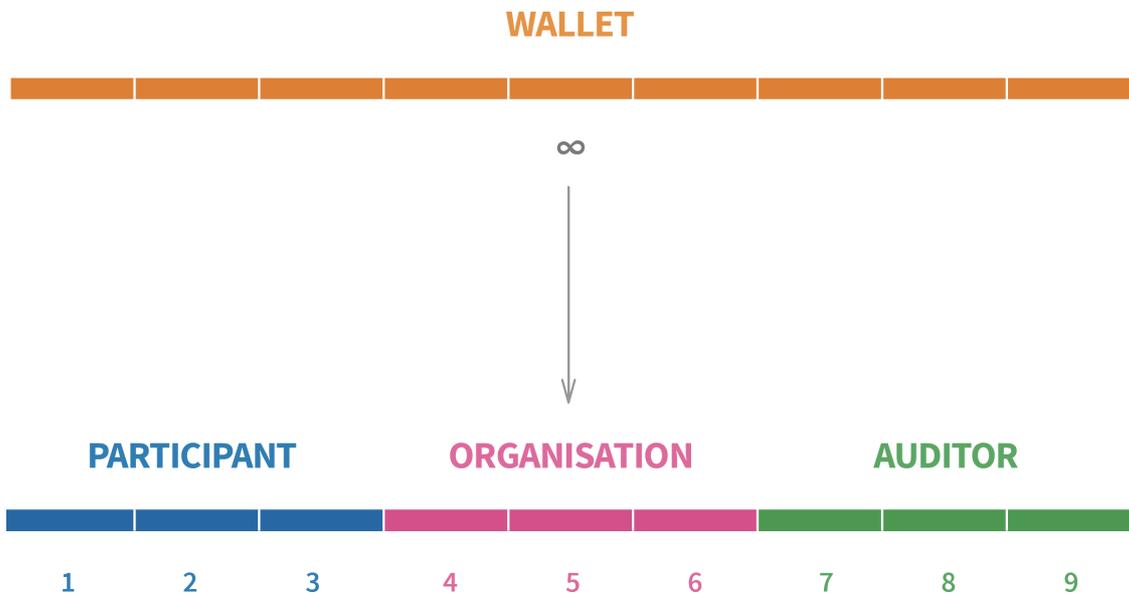


Figure 25: the basic scheme of the FXC Secret Sharing Protocol (Source: Roio and Sachy 2015: 30. Graph Credits: Chris Cheshire 2015).

This cryptographic stratagem is useful also if a participant loses his/her password to access the Units of Trust in his/her wallet (Figure 26).

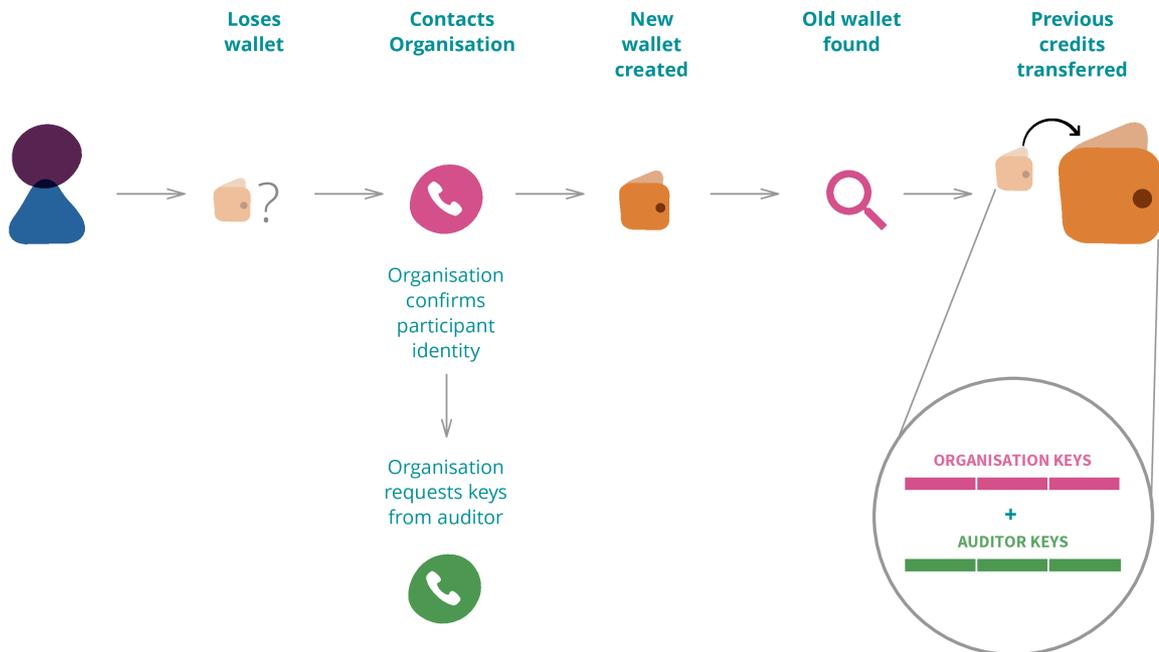


Figure 26: retrieving a participant's lost wallet on the distributed ledger by the auditor and the minting organisation applying the FXC Secret Sharing protocol (Source: Roio and Sachy 2015: 14. Graph Credits: Chris Cheshire 2015).

In this case, it is sufficient to recall the wallet of the participant by joining the parts of the keys owned by the auditor and the minting organisation.

5.4.3 Relevance of Eurocat for the test of the Freecoin Social Wallet in the fourth site

It is important to underline one aspect of the Eurocat system which is relevant for the adoption of the FXC Secret Sharing protocol in the fourth site. Although the main weakness of the second site had been that it was not possible to run a test of Eurocat within the span of the DCENT project, the software to run the FXC Secret Sharing protocol with the Freecoin Social Wallet already functioned correctly at the time of DCENT, as it had been tested by simulating human interactions on machines. As a result, the main strength of the third site was the theoretical and design cryptographic solution to the need for social control of credit, which has been shared and concretely tested within the context of the precarious artists' collective in Milan as such need could be satisfied as soon as the PIE News project began. In the next section, I will discuss the third site, i.e. the third pilot of the DCENT project: the *Multapaakku* - a Decentralised Self-remuneration system for Community-Supported Agriculture. This will be the ethnographic documentation of the third and final design effort that will result in the real world test of Money for the Common Wealth of the Multitude that I will present in the fourth site below.

5.5 Vignette No 3: Multapaakku

5.5.1 Context

In this section, I will present the third site of the ethnographic work that I conducted in the DCENT project, i.e. the third design element of the Freecoin Social Wallet, whose testing will be described in the fourth site below. As for the previous two sites, in this third one I will present the co-design process in which I took part, i.e. conversations with managers and interviews with prospective users. In this site, more than in the previous two, co-design research had been very valuable to prepare the ground for the real world test that I will document in the fourth and final site. Indeed, the test at Macao originates mostly from the Finnish pilot in the DCENT project in that Macao has been selected as an interesting use case emerging from the research on the Finnish pilot. Both sites share a common need to satisfy users and managers willingness to experiment on self-remuneration by and for participants in their respective complementary, *viz.* subaltern currency schemes.

As I mentioned in section 3.1, Finland is at the forefront in experimenting with welfare innovations, with the top-down pilot on universal basic income by the independent social security institution Kela. However, during my work in the DCENT project I had the opportunity to further research and design in terms of bottom-up innovation in the same domain, by co-designing with users a solution to remunerate community work, while decentralising the process at the managerial level in the context of local food production.

Community-Supported Agriculture (hereafter, CSA) is an alternative, locally based economic model of agriculture and food distribution. A CSA initiative refers to a particular network or association of individuals who have pledged to support one or more local farms, with growers and consumers sharing the risks and benefits of organic food production. At the onset of the growing

season, CSA members or subscribers pay for a share of the anticipated harvest; once harvesting begins, they periodically receive shares of produce. Some CSAs provide for contributions of labour in lieu of a portion of subscription costs (DeMuth, 1993).

In the context of the DCENT project, the CSA initiative was conducted by Helsinki Urban Co-operative Farm since 2011. The latter is a cooperative run by its own members, who decided to initiate the project in order to satisfy a common need: uncomfortable within the constraints and absence of transparency of big agribusiness, the community wanted to be sure that one could eat vegetables whose origin and growth process were under the control of the end user. The initiative organised by Helsinki Urban Co-operative Farm originated with the idea that each participant had assigned an area of a farm on the outskirts of Helsinki with a professional grower supervising it. In actuality, participants could volunteer to work in the fields anytime they wished during the season, albeit there was the agreement to perform 10 hours of work per year by each member of the cooperative. Overall, 200 households invested an annual 450 Euros fee in advance and the harvest from the field was distributed amongst participants weekly during the harvest season in four points of sale scattered around the city, one of which was the Helsinki Public Library.

After five years of growing food and increasing the number of participants taking part in Helsinki Urban Co-operative Farm, complexity and both transaction types and numbers were becoming issues that needed addressing. On the one hand, some members did not deliver the basic quota of 10 hours of work per year. On the other, there were members who put far more than 10 hours per year into the betterment of the Helsinki Urban Co-operative Farm. Some members worked extensively in the fields, others executed administrative and management paperwork and even more dedicated time

to serving the community during distribution days, while advertising upcoming events organized by Helsinki Urban Co-operative Farm.

All these contributions were accounted for as volunteering work, which members began to have rewarded in the local time-bank currency unit, the Tovi, issued by Helsinki Timebank. As a result, the managers at Helsinki Urban Co-operative Farm were experiencing an increase in volume of contributions that members supplied for the maintenance and/or betterment of the common good, i.e. the cooperative itself. During discussions that I engaged in with DCENT pilot partners - who were also managers of Helsinki Urban Co-operative Farm - more than monetizing volunteer work, it emerged that there was a need to find a decentralized way to track contributions and reward volunteers autonomously from the time banking structure. In particular, there was a need to reward volunteers' work in a self-governance setting. That is, the collective needed a decentralized system of self-remuneration for and by the members that would liberate managers from constant manual tracking of work performed by members of Helsinki Urban Co-operative Farm. In a nutshell, in the Finnish site, experimentation related to the study of trust management dynamics within a community that allowed its participants to self-remunerate for community work that they performed.

5.5.2 Multapaakku - a Decentralised Self-remuneration system for Community-Supported Agriculture in Helsinki

In this subsection, I will detail how the Multapaakku decentralised self-remuneration system was co-designed as a result of my discussions with DCENT pilot partners and some users that I was able to interview. We co-designed a decentralised self-remuneration scheme suitable for processing contributions to the cooperative in real time by the members of Helsinki Urban Co-operative Farm themselves, who perform them while tracking free-riders. By having a distributed public ledger for the registration of hours of contribution in the various areas of occupation (almost 20) represented by a complementary crypto-currency, volunteers could choose what to spend their time on. Moreover, by filling a common escrow crypto-wallet called Money Totem with crypto-coins called 'multapaakku' - 'pieces of mud' in Finnish - members of Helsinki Urban Co-operative Farm would be enabled to self-remunerate their contributions without the intervention of managers. Therefore, the plan was to endow each member to store on her/his smartphone a copy of the total amount of complementary crypto-currency of the network together with a copy of the distributed ledger. Every time a member would self-remunerate herself/himself by requesting multapaakku from the Money Totem to fill her/his personal crypto-wallet, s/he - and all members - would see an adjustment of the balance on the common escrow crypto-wallet containing the crypto-coins.

Thus, the design effort for the Multapaakku system can be understood as a concrete application in the real world of the concept of bottom-up constituent governance by and for the Multitude, which I drew from Hardt and Negri. Indeed, every participant to the system had the power to acquire money from a common account, rather than receiving it from a central top-down authority. In relation to this, when in March 2014 I interviewed a member of Helsinki Urban Co-operative Farm named Pirjo, she expressed the overarch-

ing principle that the idea of the Multapaakku decentralised self-remunerating system was grounded in: “we want a system where users and managers are co-owners and we can deliberate collectively on the money we use in a transparent online way.” Indeed, the main benefit that both members and managers envisioned by decentralising the reward scheme to pay for work performed within the cooperative was to optimise the management of the cooperative. In turn, this optimisation was intended to create a solid business model in view of an increasing membership in Helsinki Urban Co-operative Farm and, if successful, to disseminate it to other similar contexts at the national level.

The main outcome of the initiative was to initiate a fair and meritocratic process of social and economic growth for Helsinki Urban Co-operative Farm. As Timo, another interviewee and member of the cooperative speaking with me in March 2014 when I visited Helsinki, described the constituent governance *ethos* of the initiative: “I really like the political process that a local currency entails... the local economy will thrive, if the identity of the people can be more and more linked to where they live.” Timo was one of the 500 people participating to the CSA initiative, who were grouped in 200 households. Each household owned a share in Helsinki Urban Co-operative Farm. The core mechanisms of the Multapaakku self-remuneration system for Helsinki Urban Co-operative Farm can be summarised as follows. If a member abides by the cooperative subscription rules, by performing a minimum of 10 hours/year of cooperative work (on fields, administration, commercial activities, etc.), and wants to contribute more to the economic sustainability of Helsinki Urban Co-operative Farm, s/he can apply to create a Helsinki Urban Co-operative Farm member crypto-wallet reachable on the web from a smartphone or computer. After a working session, members can self-remunerate their own working hours by interacting with a Freecoin Totem installation (Figure 27):

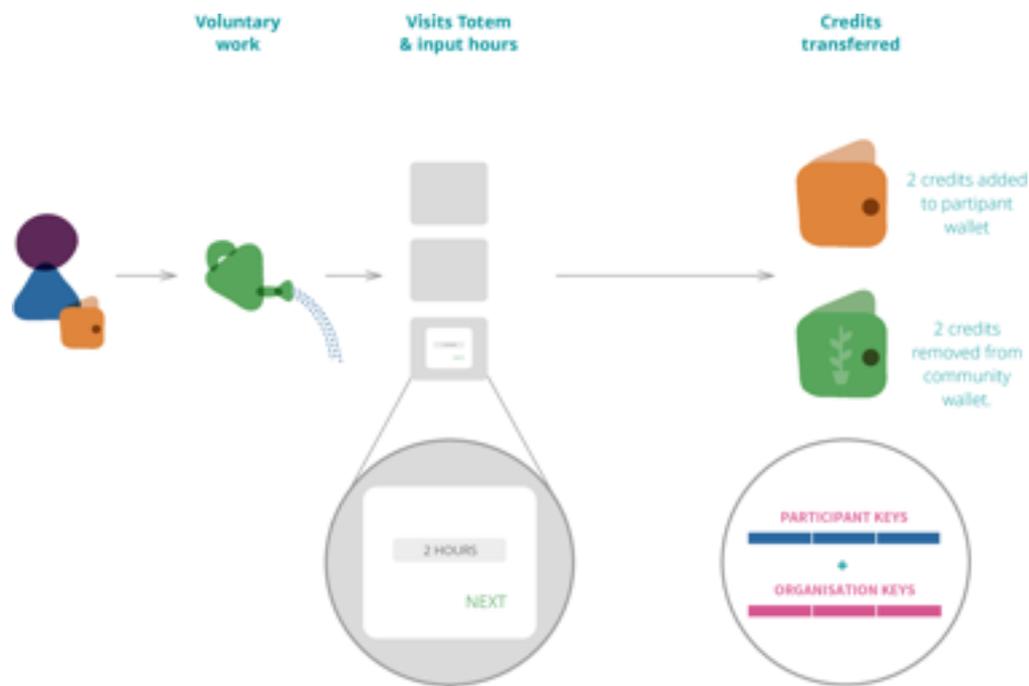


Figure 27: Scheme of Freecoin Transaction for the Finnish Pilot (Graph Credits: Chris Cheshire, 2015).

If tested and adopted, this process would have dis-intermediated administrative tasks from managers while simultaneously allowing tests of trust and distrust relationships between participants. It is worth noting that every participant would have a backup copy of the escrow, *viz.* community crypto-wallet, which is therefore not intended as a mere central point from which remuneration could be acquired. In contrast, the escrow, *viz.* community crypto-wallet, wherein all crypto-coins had to be stored, was intended to be the common pot of money from which members could have taken their reward for the work that they performed. The transaction would be processed with a tailor-made version of the FXC Sharing Secret protocol, whereby it would be multi-signed by a member together with a bot¹¹ inside the Money Totem. Finally, Helsinki Urban Co-operative Farm board planned to appoint a person in charge of the membership address book to monitor the operations of the crypto-currency multapaakku broadcast on the Multapaakku distributed ledger.

¹¹ 'Bot': an autonomous program on a network - especially the Internet - which can interact with systems or users, especially one designed to behave like a player in some video games (Oxford English Dictionary).

5.5.3 Relevance of Multapaakku for the test of the Freecoin Social Wallet in the fourth site

A decentralised self-remuneration system such as the complementary cryptocurrency and distributed ledger Multapaakku could be game-changing for society at large, as workers in general could self-remunerate themselves, in national currency, thanks to the transparency and decentralisation that cryptocurrencies transacted on distributed ledgers offer. Indeed, in a company, employees could self-manage payroll dynamics by decentralising accounts payable tasks which are normally executed by professional accountants. The latter would not lose their jobs, but the nature of their work would change from filling pay slips to checking the distributed ledger and, should it occur, to punish free-riding by recalling amounts that employees could be tempted to steal through self-remuneration thanks to mechanisms such as multi-signature.

In less technical terms, a decentralised self-remuneration system would also be an expression of the re-appropriation of the power of money by the Multitude, in that users would be in charge of the distribution of their salaries, something that has, to my knowledge never happened in all of history. This decentralised self-remuneration system was particularly relevant in the site that I will present in the next section. This relevance emerges from three needs. Although the system could not be tested for lack of resources to complete the Freecoin Social Wallet in the span of the DCENT project coupled with the inability of pilot partners to organise site's community, both Finnish and Italian cases started from the need to relieve managers of the respective communities from the burden of manually tracking members' contributions on centralised spreadsheets. Secondly, in both cases there was a need to decentralise reward distributions for work performed by members who abided by the rules of engagement within the respective communities. Finally, in both cases there was a desire to experiment in bottom-up distribution of the

power to access money by and for the Multitude, i.e. to enable members to self-remunerate. This last aspect is the most compelling one in the context of monetary innovation and can be considered the main strength of the third site in that it can shed light on the behaviour of humans when they are allowed to take charge of the remuneration of their work in a context whereby everybody can see what everybody else is doing. This was possible to conceive according to the architectural features of tamper-proof crypto-currencies and distributed ledgers.

In the next section, I will present the context, description of system and the results of the real-world test of the Freecoin Social Wallet at Macao, Milan, whereby the design effort made in the previous three cases will eventually see a concrete application of the theory on Money for the Common Wealth of the Multitude.

5.6 Vignette No 4: Commoncoin

5.6.1 Context

The last site that I will discuss is to be thought of as the real-world implementation and prototype testing of the design elements coming from the research efforts in the DCENT project applied in the context of the PIE News project. In this section, I will present the concept of a Commonfare system for the Italian pilot - Commoncoin - co-designed to serve the needs of a collective of precarious artists based in an occupied space in Milan called Macao. According to the terminology that I borrowed from Hardt and Negri, presented in the literature review in chapter two, one can conceive of Macao as an informal organisation, a spontaneous collective experience of exodus of the Multitude from the subsumption of biopolitical value into capital. In 2011, Macao emerged in response to precarious working conditions of cultural workers in the arts and entertainment industries in Milan.

Initially, the collective was born as a concrete and proactive critique of the contradictions that exist in the city of Milan, where a high concentration of financial resources was sitting next to an underfunded artist community. By developing the notion of radical active citizenship, the collective of precarious artists decided to occupy for a period the Torre Galfa and then Palazzo Citterio (a seventeenth century building abandoned since the 1970s). Finally, since 2012, Macao has settled in a more permanent - albeit occupied - premise in the city's former meat stock exchange in a neighbourhood of Eastern Milan (Figure x):



Figure 28: the front side of the occupied building hosting the precarious artists collective Macao (Source: Macao 2017)

As Giovanni, one of the circa 80 members of the Macao collective, put it during the series of interviews that I conducted in November 2016 as a researcher for the Commonfare platform within the PIE News project:

“once we found a stable place to occupy, the one we are in now for the interview, we understood that the first thing to do was to get to know each other and why we were getting active with the occupation at Macao. So we made an internal inquiry, from which it strongly emerged a multifaceted set of conditions experienced by participants, chiefly folks in precarious conditions with a minority of people with a stable job. The spectrum went from people living in hard precarious conditions to others that were economically satisfied, but wished to be more socially engaged. However, all stated that apart from the economic side, they had the wish to be able to decide on the quality and remuneration of their jobs.”

In practice, the space is run informally by the people involved. It hosts co-working spaces, events, exhibitions and workshops and is looking into expanding the network across other spaces in the city, which align with similar values by sharing resources, equipment and skill-sets.

5.6.2 Commoncoin: a multi-signature self-remuneration complementary crypto-currency and basic income provision system in Milan

Commoncoin is a complementary crypto-currency for self-remuneration and a basic income provisioning system that measures members' political engagement within Macao as a concrete biopolitical experience of both value production and re-appropriation by and for the Multitude. As such, it represents an experimental attempt to create a real-world example of commonfare as a bottom-up welfare best practice. As Paolo stated in another interview that I conducted at Macao in November 2016:

"Commoncoin is an attempt to defend ourselves from attacks on these bottom-up types of economic circuits by the financialization of the economy at large, which hinders scalability of alternatives as it goes against the exodus from the Market. Then, if I look at transition town experiences and the like, the real rupture arrived with Bitcoin that, at least at the beginning, was really an alternative system. Also Bitcoin has limits in that the network fell back into mainstream dynamics."

In effect, Bitcoin, the first crypto-currency ever invented, which I described in section 3.4 above, is a technology that needs to be applied with critical thinking, if it is to promote the exodus of the Multitude.

Accordingly, on the one hand, a complementary crypto-currency - commoncoin - is issued to reward labour contributions in a decentralised fashion. On the other hand, the Commoncoin system becomes a source of basic income in Euros as members can cash out commoncoins in exchange for Euros (convertibility ratio is 1: 1). The revenue in Euros is generated through public events organised at Macao on a monthly basis: theatre shows, exhibitions, music concerts, Yoga classes and so on. At the beginning of each calendar month, there is an air-drop distribution of commoncoins to the various groups that form the Macao collective, a sort of quantitative easing for the people from the bottom-up. If a member works at Macao to support daily operations (named 'continuous functions') and is paid for it with commoncoins either by Macao itself (as an employer of last resort in the Neo-Chartal-

ist sense) or from the groups that need labour to run their group activities (also named 'autonomous functions'), s/he can accumulate commoncoins which can be cashed out to earn basic income in Euros.

In terms of autonomous functions, commoncoins are used by groups to buy calendar slots to organise events and/or raise labour around a project. The rationale for the pricing of calendar slots is based on the idea that certain slots can generate more revenue in Euros for Macao than others. For example, events organised on Friday nights (such as a music concert) require more commoncoins to reserve the calendar slot than events organised on Tuesday mornings (such as Yoga classes), as the former are expected to yield more revenue than the latter. In turn, the revenue in Euros is split as follows: 40% is deposited in Macao's common account - 'cassa comune' - while the particular collective group organising the event keeps the remaining 60% and shares it autonomously among its members.

In order to access basic income in Euros from the 40% reserved in the common account, each member has to accumulate a certain amount of commoncoins - the 'basic income threshold' - not only by performing work to run the space daily (continuous functions) and by working in group projects that generate revenue in Euros (autonomous functions), but also by participating in weekly assemblies, wherein political and economic strategies to secure Macao's common good are discussed. Therefore, and as I stated in the introduction to this chapter, this collective process of biopolitical production is meant to give concrete expression to both the narrative of the Multitude and the Common (Hardt and Negri 2004 and 2009) and those on complementary (Lietaer 2001 and 2010) and subaltern currencies (North 2010b) coupled with the new innovations represented by crypto-currencies and distributed ledgers technologies (Nakamoto 2008; Sachy 2013; Sachy *et al.*, 2015; Roio and Sachy 2015; and König and Duran 2016).

Organisers at Macao conceived of Commoncoin as an internal complementary crypto-currency and basic income provisioning system in Euros for financing and remunerating biopolitical production, while discouraging hoarding and speculative practices. In turn, this process is politically controlled by the members that participate in it in a collective fashion. As Antonio, one member of Macao put it:

“we conceived the idea of Commoncoin, which was validated during the two-day seminar we organized in Macao in June 2014. At this event, the narrative of the re-appropriation of the power of money evolved in that we thought to apply the self-governance structure that we conceived in the previous two years to manage Macao, now applied to manage Commoncoin. We wondered: why don't we go beyond bartering services, as money can allow for more initiatives to develop? Basic income and welfare more generally were the main ideas. However, what happened concretely was that, although networking was very successful, we had to acknowledge that our implementation capabilities were very limited: we could not serve ourselves properly let alone other collectives. The latter thus told us that they liked the idea, but until there was something usable, they would not make further efforts in that direction. So we started the path of tool development, firstly within DCENT as a use case and now as a pilot in PIE News.”

In fact, I personally took part as a speaker at the seminar at Macao in June 2014, where I presented Freecoin Social Wallet and advocated its adoption by the community at Macao as a use case within the DCENT project. (The papers presented at the seminar have been collected in the publication *Moneta del Comune* (Fumagalli and Braga 2015). The critical approach I advocated above has been endorsed by the organisers of the Commoncoin complementary, *viz.* subaltern crypto-currency and basic income provisioning system by and for the members of Macao. Commoncoin is the grouping of the design elements produced within the pilots in DCENT (and described above) as the members of this precarious artists collective self-manage innovative digital tools to achieve the twofold end of decentralised self-remuneration (Multa-paakku design element) and access to basic income provision (Social Krónas design element) with the use of multi-signature features (Eurocat design element).

The tools used to run the system are Faircoin as a backend complementary, *i.e.* subaltern crypto-currency and the Freecoin Social Wallet. In particular,

after the air-drop at the beginning of the month, the calendar slots are booked with the FXC Secret Sharing protocol in a collective fashion, as at least three members of each group running an autonomous function need to sign the transaction to transfer coins to Macao's common crypto-wallet to book the calendar slot, just as was designed to serve the needs of the Spanish pilot in DCENT. Further, by adapting the Finnish design element to their context, Macao members self-remunerate themselves with commoncoins in a decentralised fashion - albeit the crypto-coins that circulate in the backend are faircoins. Recurring to Faircoin has been necessary as Macao does not have the infrastructure to run a freshly made crypto-currency by themselves.

Faircoin was chosen as the crypto-currency and distributed ledger backend because it is explicitly designed for cooperative movements and collectives, as the consensus mechanism to validate transactions is based on the Proof-of-Cooperation that I described in section 3.4 above. Moreover, members participating in weekly assemblies can cash out commoncoin in exchange for basic income in Euros at the end of each month, in this case adapting the Icelandic pilot design elements to their needs. Finally, at the beginning of the following month, the air-drop is repeated as commoncoins are recycled as organisers send commoncoins from Macao's common crypto-wallet to the various groups to book calendar slots for that month or to pay workers executing continuous functions.

5.6.3 Commoncoin: Test Description and Results

Commoncoin is designed to take care of the relation between biopolitical value produced by the singularities active at Macao and the social relations necessary to produce such value as for the tenets of the biopolitical theory of value. In this final subsection dedicated to the fourth site, I will draw on the literature review presented in preceding chapters to explain in more detail how the results of the tests run by Macao members implementing the Commoncoin system in the real world are concrete examples of biopolitical value production through the Common. Indeed, as I argued for in chapter two, drawing on Hardt and Negri (2004 and 2009), the Common is both a condition of possibility and result of biopolitical production, in a dynamic whereby social relations produce value and the latter becomes the basis for new social relations.

At the economic and monetary levels, this self-reinforcing process needs then to be organised with the implementation of a set of tools, in this case Faircoin and Freecoin Social Wallet, that can help answer the following question: how can the processes that define different redistributive models be automated with digital technologies, starting from a platform made to share biopolitical value production by and for the Multitude? The answer by Michele, one of the managers of Commoncoin that I interviewed in November 2016 is as follows:

“Commoncoin does this, for instance, through a process of discussion during the weekly activists’ Assembly at Macao by giving birth, through trial and error, to a first test, a first model that answered to some issues: focus especially on production and therefore compensation of labour; and on the sharing of the means of production, rather than focusing on the internal market, i.e. the place where you sell products. Another index that determined the Commoncoin model allowed us to have an economic model that discourages hoarding of reserves while encouraging behaviours that enable one to reach the threshold to get the basic income in Euros.”

Although it is an informal organization, if one assesses Macao as an enterprise, I suggest that the Macao experience is the first in which a crypto-currency is intentionally implemented to substantiate Money for the Common Wealth of the Multitude. Indeed, all biopolitical production created inside Macao is possible by virtue of the Common that they share and that is monetised in commoncoins.

All the transactions used to be tracked manually by a few managers on a spreadsheet using Google-docs; Faircoin together with Freecoin Social Wallet have been designed and prototyped to decentralise management while assuring transparency and traceability. As Manuela put it in the interview that I conducted with her while visiting Macao:

“We are striving to design and implement an automatised dynamic whereby the more one is active for the construction of the common, which is Macao, the more one can use the space and the resources to achieve one's goals and increase the common good at Macao. And since Macao has income in Euros coming from the public who consumes the productions made by the various artistic projects developed within the autonomous functions, Macao decided in the assembly the amount of reserves in Euros, which is not spent to pay the labour of continuous functions, but are paid for in commoncoins. The reserves go in a common pot that is then re-distributed to those who contributed more to the growth of the common value of Macao by working in continuous functions and taking part to assemblies in the form of basic income in Euros.”

A first test using Faricoin crypto-currency and Freecoin Social Wallet as a backend and front end for commoncoin, respectively, ran just after I finished the round of interviews in mid November until 31st of December 2016. Two other rounds ran in February and March 2017.

The samples in Table 1 below represent parts of spreadsheets which detail some of the continuous functions (those that are needed to run Macao on a daily basis). I selected ‘secretary’, ‘maintenance’, ‘communication-press office’, and ‘accounting’, with related Macao members (first column on the left). In the second column there are the details of the continuous functions such as ‘answering to emails’, ‘maintenance of walls and columns’ of the building, ‘doors’ and ‘electricity circuits’. In the third column there is the

amount of commoncoins that each Macao member gained for the labour s/he offered by working in such continuous functions:

ACCOUNTING		1000		
Livio	monitoraggio eventi	500		500
Braga	gestione cassa macao	500		500
Diego	raccolta wallet, calcolo funzione bi	0		
SEGRETERIA		1000		TOT PERSONA
[tutti rispondono mail]				
Livia	gestione cozi (come in+prog) + mail cinema	166		432
Alessandro L.	progetto commonfood, teatro, cinema, organiz comunicazione	166		432
Manuela	coordinare info da segreteria agli altri gruppi, cibo (pizza, pane), cafe let	166		488
MANUTENZIONE		2500		
restauro colonne, porta, gruppo elettrogeno				
Fede		156		
Piero Luigi	acqua	156		322
Tullio	acqua	156		322
COMUNICAZIONE/UFFICIO STAMPA		1500		
Fede	giornalisti	150		
Cami	giornalisti	150		150
Manu C	interviste	0		0

Table 1: examples of Commoncoin continuous functions (Source: Macao 2017).

In Table 2 below one can see the ‘name’ (first column), ‘wallet’ address (second column), commoncoins gained from organisation of ‘events’ (third column) and the participation to the weekly ‘Assembly’ (fourth, fifth, sixth and seventh columns) rewarded with 40 commoncoins. In the wallet column, one should notice that each Faircoin address remanding to a Freecoin Social Wallet instance has the letter ‘f’ as the initial alphanumeric element in order to identify the address to the Faircoin backend, while Macao users experience them as commoncoins in their daily communication. Starting from August 2017, participants will also interact with the Freecoin Social Wallet from a frontend, i.e. user interface perspective as PIE News designers and software developers, the author included, access the funds to develop the graphic user interface of Commoncoin:

NOME	WALLET	EVENTI	ASSEMBLEA 1	ASSEMBLEA 2	ASSEMBLEA 3	ASSEMBLEA 4
Accio	fESe3cw43NMZLYXZRazRHTgZSWizLhax1m	0	40			
albertone	fxbfwm2rULAVyASJG2ph6ghnh7c3vd5rqR	240				
Alessandrino	fLsJZMMcGEaP7rzAhGJuHrz4oack3gchx1	470		40	40	
ALESSANDRO L.	fRL6Mn2SZJkqXJfFe1beJP7LSzuzmy9pN	35	40			
ana s	fMVTDRUevuAMS8t7XxqRD1QGmu2HKgBdqR	0				
andrea g	fJgFFh58kvW2mKGNvVqz2dc5U686cnTNx	195	40			
Andrea P. (ama?)	fXm3epAMQNHgDecqkGxtzk1e3rhEwzmPB	120				
Anna Luisa Di Lauro	fXWicBeUeXpkexYRMiUssgfn85xbrQVzUA	285	40	40		
anselmo l	fKMZmm54E4SszSUC51bD6PZTvtqMV6xGs5J	0				
arcangelo	fH7TF3MPfSx5dpvoXgkkWSTP6DBBqN6BAH	25				
ariberto	fT92g2oG4H1XFTEJ67YtvTBFU2m1oq9A7g	250	40			
arthur t	fRRHvC2VRNRReCkmXbiGdZrdeemybjccAxo	0				
Asmir L.	fN8brdvWwbEhJe3fFUdxUg9xMJvwMFzYNw	345				
Augusta	fHaExwBTbWE5jBAyRdxAVyQFcgam6PwK5p	570		40	40	40
birsa	fFPmbZsE5WdnWshHydYmANe5UWpbwpNZMg	205				
Boggio Ferraris	fd9Sw6pDffRi9FKVTVkrJhdKFP3ehXNSV	0				
Braun	fWrxV8W9LGfA73ouBxoTzhtLLKGWofUZje9	270				
camilla p.	fYMDiB1fSMLdXgxAFaCThm3eZDG1cmbayE	0	40			
carlo	fRa2XGxmXazDPsVGNUPixu9HNFtLW9wRwM	20				
Corrado G.	fXiunb7LFP6pqZECsZRRGUfy7PQL39u4t	0				
cossu	fM2YSApo1nRP8QRw6QRF146Nr8YusbBjkD	0	40			
Cristal	fRXJzKVLgrdaL1SbQch6C5h78SjrvAVKj	410				

Table 2: example of Macao members, how many commocoins they gained by working to organise events, i.e. autonomous functions (Source: Macao 2017).

Finally, Table 3 shows the number of Macao members - in red - that accessed basic income in the months of December 2016 (23 members), February 2017 (25 members) and March 2017 (29 members). Although at Macao they are starting to use standard deviation to determine the threshold to access basic income, for the sake of my argument, the important point to notice is that the threshold ('Soglia' - third row) to access basic income changes in relation to the workers' fund allocated for basic income provision, which comes from the amount of Euros that Macao acquires each month as 40% of the revenue generated by the events organised as autonomous functions: 10,000 EUR for December 2016, 7355 EUR for February 2017 and 10,022 EUR for March 2017. The descending income per-capita has been 435 EUR for December 2016, 294 EUR for February 2017 and 346 EUR for March 2017. These sums are then divided by the number of participants in the weekly assembly. The result is the amount of basic income - 'Reddito procapite' - in Euros that each participant is endowed with:

TOT cc	24147		20884		26467
Deviazione standard	312.091049		223.5502063		291.0596225
Soglia	500		359.2080871		467.6845169
Aventi diritto al reddito	23		25		29
Fondo lavoratori totale	10000		7355		10022
Reddito procapite	435		294		346

Table 3: basic income figures related to the prototyping tests run at Macao on December 2016, February and March 2017 (Source: Macao 2017).

In conclusion, out of the 80 active Macao members acquiring commoncoins by working in either continuous or autonomous functions, and sometimes both, there are between 20 to 30 members, roughly, who are also active in the assembly and, therefore, receive a basic income in Euros at the end of each month. The ‘Soglia’, i.e. the ‘basic income threshold’ changes as a result of assembly deliberation, because members and organisers are still looking for the optimal quantity of commoncoins necessary to access basic income. However, since December 2016, the number of participants in the weekly assembly, i.e. the number of basic income recipients - ‘Aventi diritto al reddito’ - has increased. Furthermore, the total workers’ fund - ‘Fondo lavoratori totale’ - varies according to the revenue in Euros that Macao generates each month, which determines the amount of basic income that Macao members receive per capita.

The potential future of Commoncoin is well expressed by Raffaella, a precarious artist member of Macao who I interviewed in November 2016 as she put when I asked her to think about Commoncoin in five years from November 2016:

“In five years from now, I see Commoncoin being used only if we can keep alive a discussion on how to improve it. Maybe we find out that nobody wants to clean the place, that some continuous functions get suffocated, that the income in Euros is not maybe enough to justify the migration to commoncoins to pay labour performed inside Macao, and the like. Secondly, at the metropolitan and national levels, we have been asked to build a similar model for the former occupied spaces in Naples that are now assigned by the municipality; the same happened for the biggest theatre festival in Italy, at Santarcangelo di Romagna. And still in Milan, we have been asked to research how to make more nodes that interlink with the Commoncoin model. So in 5 years from now, we could see a rhizomatic scaling process, whereby every node has its own autonomy and features (from car sharing to local agricultural production) to automate the process of value sharing in an ad hoc fashion, while creat-

ing a network where the commoncoin crypto-currency can be spent across nodes. In brief, the crypto-currency that I use in my node can be spent in other nodes/interfaces of like minded peers. Last, the potential to interface this local production with international networks and infrastructures. At that point you could interlink all these experiences to develop a commonly owned and self-managed decentralised and cooperative banking infrastructure at the international level and from the bottom up. This is exodus from capital.”

As I argued in the literature review above, capital is not keen to let the Multitude enact the exodus from its yoke. Therefore, the underlying assumption for the creation of a complementary crypto-currency such as commoncoin emerges from the need to enable the Multitude to fight against monetary biopower in the process of exodus by weaponising money itself. In reality, this may happen through bottom-up initiatives that apply critical thinking to crypto-currency design for the common good of the Multitude.

The Macao experience makes a set of themes emerge. First, the fact that the co-design of a system such as Commoncoin by and for the users who self-remunerate is game-changing. Indeed, users themselves not only choose the features of the subaltern currency that they want to adopt, but they also decide in assemblies how such currency relates with the conventional one, i.e. the Euro in the form of basic income provision with a mix of labour and political participation. It may appear a marginal development in currency and payment systems design as the experience at Macao regards some 80 people. However, I suggest that this sort of approach at a larger scale could be game-changing in terms of how nation states deal with welfare provisioning and monetary policy more generally, as the Swiss Vollgeld initiative and the Bristol Pound cases that I presented in chapter three, for instance, document at the national and municipal levels.

Secondly, by virtue of the innovation represented by crypto-currencies and distributed ledgers developed for the bottom-up production of the Common Wealth of the Multitude, systems such Commoncoin could work at larger scales, especially at municipal level as a user-managed monetary shield from the crises coming from the domain of the conventional monetary system, i.e.

monetary biopower. As I highlighted by discussing, for instance, the history of complementary currencies by drawing chiefly from North, in times of crisis people resort to an alternative to the national currency. In turn, if implemented as crypto-currencies on distributed ledgers, Commoncoin-like systems could be operated at a fraction of the cost of both current public welfare provisions in that disintermediation and transaction costs near to zero would make them more attractive for institutionalisation.

5.7 Conclusions

In this chapter I introduced the two projects in which I have been - and am - involved, i.e. the DCENT project and the PIE News project. In the context of this thesis both projects' pilots are examples of constituent governance practices for the exodus of the Multitude from the subsumption of biopolitical value that communities produce in terms of re-appropriation and innovation of the power of money. In other words, this chapter related to the inquiry around the real world application of the theoretical framework presented in the literature review chapters two and three above. As Hardt and Negri put it:

“Our task, then, is to investigate the organizational framework of antagonistic subjectivities that arise from below, based on the *in-dignation* expressed by subjects in the face of the unfreedoms and injustices of power, the severe forms of control and hierarchy, and the cruel forms of exploitation and expropriation in the disordered world of global governance. (Hardt and Negri 2009: 235, italics in the original)

This chapter is, in effect, an attempt at investigating such organisational frameworks of antagonistic subjectivities that arise from below to constitute new governance structures, especially in the Spanish and Italian sites, where austerity hit hardest in the aftermath of the 2008 financial crisis.

Indeed, bottom-up and meritocratic basic income provisioning together with complementary crypto-currency and multi-signature transactions protocols are instances of the concrete encircling of monetary biopower by the Multitude. They are examples of the application of some of the components of the monetary *dispositif*: basic income, complementary currencies and crypto-currencies and distributed ledgers co-designed and self-managed by users. In other words, the sites presented in this chapter can be understood as concrete efforts to create Money for the Common Wealth of the Multitude, i.e. to design and implement currency and payment systems self-managed by users.

I then presented the four sites, or vignettes, which I composed by adopting the methodology that I presented in chapter four. The first vignette regarded the Icelandic pilot in DCENT, where I described the complementary cryptocurrency and bottom-up meritocratic basic income provision system Social Krónas. The latter was designed in light of the conversations I engaged in with pilot partners organising the e-participatory budgeting event in the city of Reykjavik. Secondly, I presented the Spanish pilot in DCENT, whereby I introduced the design elements for the Eurocat Micro-endorsement and Mutual Credit system for the SME sector in Catalunya. In particular, I presented the FXC Secret Sharing protocol for multi-signature transactions as a component for the decentralised collective risk management complementary cryptocurrency layer of the system that informed the supply of the eurocat complementary currency, i.e. the second layer. Third, I presented the decentralised self-remuneration system Multapaakku, co-designed with and for managers and users within the Finnish pilot in the DCENT project as a bottom-up innovation for the self-management of Helsinki Urban-Cooperative Farm.

As I documented above, in the fourth site Macao, there was a need to enable participants to self-remunerate themselves for the work done within their occupied premises. Alongside the issues around e-participatory and meritocratic basic income creation (Iceland) and the design solution for a multi-signature transaction protocol at the service of collective, i.e. social control of credit (Spain), self-remuneration in Finland was the third and final element that informed Macao's test of the Freecoin Social Wallet designed in the DCENT project and - I suggest - successfully implemented in the PIE News project. That is, the three design elements built within the research effort in the DCENT project have come together in the design and implementation for the Commoncoin system in the Italian pilot of the PIE News project in Milan. Ba-

sic income provision from the bottom-up, multi-signature *via* secret sharing and decentralised self-remuneration composed the design features of Commoncoin. The successful test at Macao gave concrete - albeit germinal - expression to the theory on Money for the Common Wealth of the Multitude that I described in chapter two and three above. In the next chapter, I will analyse commonalities and differences among the four sites.

6 A Comparative Analysis among the Four Sites

In this chapter, I will present a comparative analysis of the four sites. The goal is to ascertain to what extent it is possible to argue for a change in the nature of monetary biopower based on the experiences documented in the four sites presented above. The fact that the notion of Money for the Common Wealth of the Multitude is multifaceted is shown by the co-design efforts (Freecoin Social Wallet pilots in the DCENT project) and implementation (Freecoin Social Wallet pilot in the PIE News project) during the present research. However, the rich diversity among the sites presented above is nevertheless the manifestation of a unique design striving for the definition and representation of a more democratic approach to money, the urgency of which I stressed in chapters two and three as a generative and constructive response to the critique put forward in chapter one.

Although sites' communities were both politically and technologically engaged in the design and implementation processes of the technological solutions to address their site-specific societal challenges, many difficulties bound the application of the monetary *dispositif* more to the domain of potentiality than to the one of actuality. For instance, the lack of resources on the field to organise pilots by sites' communities, often working on a voluntary basis. Secondly, the lack of resources within the budget and human resources, i.e. skilled software developers in the DCENT project, which did not allow for a fast enough completion of the Freecoin Social Wallet software implementation. Third, the very structural and procedural nature of EU-funded projects, with the necessity for accountability of project consortia to the European Commission through the production of projects' deliverables with researchers constrained to invest most person-months behind computer screens describing their work and not in the field to build long term sustainability for tools adoption.

Notwithstanding these problems, the dynamics of my experience in both Eu-funded projects proved to be fruitful in that what had been theorised and designed in the first three sites belonging to the DCENT project could then be also concretely prototyped in the fourth site in the PIE News project. Indeed, the three design elements that I presented in the vignettes narrating sites one (Iceland), two (Spain) and three (Finland), informed design and implementation in site four (Italy). Following the methodology presented in chapter four, and aware of the fact that the four sites are not conclusive, but rather tentative examples of the real world experimentation of the monetary *dispositif*, I will now ascertain to what extent the interpretation of both common aspects and radical differences among the sites represent reliable inductive pieces of evidence of the existence in the real world of instances of Money for the Common Wealth of the Multitude.

Thus, in section 6.1, I will compare the sites in order to present the commonalities that they share. I will argue that these are the need for socio-economic emancipation; its achievement through new constituent governance practices in the monetary domain; and the enthusiasm to experiment with state-of-the-art digital solutions. By contrast, in section 6.2, I will assess the differences among the four sites. Alongside objective differences, I will analyse the differences in both the money creation and allocation processes and in the level of technological complexity among the four systems designed and implemented in the four sites. I will conclude this chapter in section 6.3 by offering reflections on the strengths and weaknesses of the methodological approach (PAR and critical mute-sited ethnography), which I adopted in an attempt to illustrate the theoretical framework presented in chapters two and three and tested in the four sites.

6.1 Common Aspects among the Three Sites

6.1.1 *Shared Sense of the Role of Money as a Catalyst for Socio-economic Emancipation*

The first commonality among the four sites is the acknowledgement of the role of money as a catalyst for socio-economic emancipation. Indeed, each case began as an effort to proactively and constructively respond to the economic and structural shortcomings of conventional bank-debt at interest and the private corporate practices it funds to extract biopolitical value from the common sphere.

In Iceland the Social Krónas were thought of as a provocative response to the financial and political scandals initiated in the nation in the wake of the Panama Papers. In this site, the design of the system included all the components of the monetary *dispositif*, since the use of a complementary crypto-currency to allow the public sector to offer citizens a basic income can be understood as an evolution of Neo-Chartalist money (Wray 1998).

Secondly, in the Spanish site, organisers of Eurocat conceived the system as way to react to the credit crunch affecting the regional SMEs sector in Catalunya in the aftermath of the 2008 economic crisis by applying the two bottom-up components of the *dispositif*, i.e. complementary crypto-currencies for the social control of credit. In the third site, Multapaakku originated as a way to increase the consumption of local food production and boost the efficiency of its distribution to facilitate exodus from processed food provided by big corporations in Finland. Also, in this case, the community wanted to apply the two bottom-up components of the *dispositif*.

Finally, Macao's Commoncoin was - and is - intended to support concretely the struggles for a more culturally diverse environment in the highly financialised city of Milan by experimenting with three components of the *dispositif*: basic income provision in a Commonfare system, complementary - *viz.* subaltern - currencies and crypto-currencies and distributed ledgers technology. These proactive and constructive monetary experiments are, in my view, examples of mobilisation of the common in creative and positive ways. As Hardt and Negri put it: "the mobilisation of the common demonstrates, finally, that the movements that form part of this global cycle of struggles are not merely protest movements (although this is the face that appears most clearly in the media) but also positive and creative" (Hardt and Negri 2004: 218).

In the vignettes that I presented in the previous chapter, complementary crypto-currency users and managers have all - antagonistically or not - exerted a common pressure on the *status quo* in the form of centrifugal forces, the former to make ends meet and the latter sometimes for more idealistic purposes. Both users and managers tended to decentralise the power of money, dis-intermediate transactions from banking middlemen, make financial accounting structurally transparent and distribute the responsibility for guaranteeing network neutrality and security. All these elements increased the bottom up pressure toward top-down socio-economic institutions in favour of the re-appropriation of the means of production of money itself, thus substantiating the notion of Money for the Common Wealth of the Multitude.

This notion manifested in each site as the failure of conventional money to perform as the dominant view that monetary economics prescribes, because of contraction of the business cycle (Spain), absence of tangible rewards for the engagement in e-participatory budgeting (Iceland), the need to remunerate non-commercial work (Finland) and the willingness to generate basic income and manage the allocation of resources (Italy). However, bottom-up or-

organisational hurdles hindered the concrete expression of the systems designed for the first three sites. This precluded the actualisation of the potential for emancipation argued for by the theoretical framework that I discussed in the literature review. Therefore, Money for the Common Wealth of the Multitude manifested in each site as different expressions of the monetary *dispositif* expanding, in an emancipatory way, I argue, the representational horizon in the monetary domain - albeit without the desired inferential strength.

6.1.2 Money for the Common Wealth of the Multitude as a Bottom-up Practice of Monetary Constituent Governance

A second common theme which emerged from the vignettes is the common effort shared by the sites' communities to design and implement monetary constituent governance practices from the bottom-up, as they strove for socio-economic emancipation. Indeed, in each of the four sites, users have been involved in a common experimentation in participatory currency design for the production of biopolitical value. From these practice-oriented inductive experiments, there is room to carefully argue that Money for the Common Wealth of the Multitude emerged, although only embryonically, as an attempt to link democratic decision-making with crypto-currency creation and basic income distribution as an expression of the common in the monetary domain. In Iceland, this was meant to happen by connecting political e-participation with a meritocratic form of basic income provisioning in the civic economy; in Spain, mutual credit was intended to be a function of micro-endorsements in a business-to-business environment; in Finland, self-remuneration was conceived as a direct component of community building in the

context of a community-supported agriculture initiative; and at Macao issuance of and remuneration by a complementary crypto-currency coupled with political participation to weekly assemblies regulated the tangible provision to basic income in Euro banknotes.

Accordingly, one may argue that massive involvement in a bottom-up democratic dynamic is a fundamental aspect that describes a world where access to money is indeed designed and experienced to serve the Multitude. However, this struggle towards a more just system clashed with another common element, connected to the bottom-up organisational structure promoted by and within the communities animating the four sites. Apart from the members of the Eurocat Management Committee, I refer to the lack of monetary literacy, i.e. the widespread knowledge in within sites' communities about the problems that the current dominating form of money creates and the solutions one can appeal to in order to address the shortcomings that I drew out in section 1.3. The lack of democratic control of money is a function of such lack of widespread monetary literacy and it is indeed indicative that the first referendum in the new millennium around monetary issues, as I documented in section 3.1, was held in Switzerland, where the familiarity with monetary, banking and financial matters is stereotypical in Western society. Therefore, not only the lack of organisational and financial resources, but also educational limits of sites' communities around the issue of money, precluded the full real world implementation of the system designed, especially with regards to the first three sites.

Notwithstanding such undeniable and factual limitations, I believe that the process of monetary literacy embedded in the PAR process engaged in by the sites' communities resulted - albeit at an incipient level - in the participatory design and implementation of new monetary constituent governance practices. This was possible by spreading the biopower of money among the

members of the communities themselves, especially with the use of multi-signature features for multi-actor transactions in a tamper-proof, transparent and auditable environment. Accordingly, in the context of this thesis both projects' pilots can be understood as bottom-up examples of emerging constituent governance practices for the exodus of the Multitude from the subsumption of biopolitical value that the sites' communities produced, through a re-appropriation of the power of money.

In other words, within this multisite ethnographic research, communities cultivated, in various forms, direct democracy to allow them to manage their money systems from the bottom-up. These experiments can be thought of, in fact, as examples in which constituent governance strategies are applied for the self-management of the operations of complementary crypto-currencies by and for the users, including as means to distribute a basic income, as was the case in Iceland and Italy.

Moreover, in the context of the prototyping of the Freecoin Social Wallet in the DCENT and the PIE News projects' pilots, decentralised participatory constituent governance practices can be seen as promising fields of inquiry, if one is to find answers around the possibility of creating and self-managing money in a collective process by and for the users of money systems. A first example of collective self-governance practice to operate currency systems is the proposal to link Reykjavik's yearly e-participatory budgeting event with reputation management as a function of complementary crypto-currency allocation for basic income provisioning purposes. The very concept to link the betterment of the common good of a community to a monetary reward from public authorities is indeed a provocation to stir public debate around the issue of money power and its importance for the emancipation of society at large.

In turn, the Micro-endorsement and Mutual Credit system Eurocat in Spain can be seen as the expression of the need for a social form of control of credit. In this case, the system was designed to endow participants with the power to trust each other and, by doing so, to affect the total money supply in the Eurocat complementary currency system. The regional SMEs community in Catalunya were meant to decide the level of and the ways to spread credit risk in view of securing a common interest, i.e. to maintain the integrity, reliability and resilience of the economic and social system itself in the region. For instance, users could collectively inform the agenda of the Eurocat Management Committee regarding the upper limit / highest risk of the Minimum Activity parameter (or velocity target for each credit line) benchmarking the Micro-endorsement system.

Thirdly, in Finland the self-remuneration reward system Multapaakku co-designed with members and managers of Helsinki Urban Cooperative Farm was as simple as it was important to reframe the way in which money can be collectively managed while respecting the individual freedom of economic interaction belonging to each member of the cooperative. The Multapaakku self-remuneration system for this small-scale urban farming operation was designed, therefore, as a way to test decentralised and bottom-up self-management practices within a community where all members simultaneously own all the common resource stored in the Money Totem and were enabled to tap into it in a peer-to-peer, transparent environment. Accordingly, Multapaakku was meant to enable users to own and share the total money supply in real time and in a decentralised and dis-intermediated fashion while keeping authenticity and transparency by adopting distributed ledger technologies. Only trust or distrust dynamics that could hinder the correct functioning of the system and the governance procedures were designed to be directly encoded in the software architecture.

Fourth, Macao's Commoncoin, which should be seen as the collection of various features designed for the previous three sites, is an experience documenting the possibility of implementing monetary constituent governance practices from the bottom up to improve the life of precarious workers. By adopting a complementary crypto-currency to manage the operation of the artists' collective in Milan, the approximately 80 members of Macao designed and implemented Commoncoin as way to reward the bottom-up participation for the amelioration of the very community that they form with a basic income in Euros. Hence, although they were constrained by significant limits, all four sites shared a common willingness to experiment in the constitution of money systems that helped address their respective problems in a participatory and bottom-up fashion and, by doing so, increasing their overall level of monetary literacy to strengthen their constituent governance practices.

6.1.3 Common Willingness to Experiment in Software for Monetary Innovation

A final common theme that I identified among the four sites is their willingness to experiment with new technologies designed and implemented for the re-appropriation of the power of money. In concrete such theme manifested as the proactive desire of sites' communities in all four sites to substantiate the first and second common themes about monetary constituent governance in view of socio-economic emancipation in the monetary domain *via* experimentation with state-of-the-art technology. In these respects, I argue that the four sites can be understood as exercises to substantiate the common need for decentralised and participatory monetary policy-making. However, in the context of this thesis, they have to be considered nothing more than exercises in collective monetary policy, rather than fully successful ways to address site-specific societal challenges. Indeed, attempts to engage in such activity

should not be confused, or worst naively masked, as successful achievements by ignoring the towering hurdles that such practices inherently impel. Nevertheless, with the experimentations of the Freecoin Social Wallet, the innovation of digital complementary crypto-currencies and decentralised payment systems begins to acquire a more conscious character from a user-managed point of view with the aim to contribute a concrete narrative for the exodus of the Multitude.

In effect, it is today possible to design bottom-up and decentralised monetary governance structures within the software features of the code informing a digital monetary ontology at the service of the Common and the Multitude, which builds it. Accordingly, in the three pilots of the DCENT project and the Italian one within the PIE News project, the technological effort has been one looking for a tradeoff between the need to go beyond the state-of-the-art in distributed ledgers design and implementation and the need to keep specifications, user and hardware requirements as undemanding as possible.

In all sites, I have been in touch with projects' pilot partners, community members and managers who were passionate about their respective initiatives while counting on scarce resources to run and maintain them. As I stated in the previous chapter, such a lack of resources, i.e. a lack of human resources in the field and both financial and human ones within the budget of the DCENT project, was the main reason for the impossibility of implementing concrete tests of the solutions designed for the three pilots in Iceland, Spain and Finland. It was only because Macao was a use case in the DCENT project since 2014 and then a pilot in the PIE News project from 2016 onwards that it was possible for a real world test to take place between the end of 2016 and the first quarter of 2017. In order to address the scarcity of resources, from a technological standpoint, in all sites the decision was to borrow existing crypto-currency tools in order to make prototype development

as lean as possible while facilitating adoption by users. The fact that the Freecoin Social Wallet was designed and implemented as free and open-source software minimised onsite financial requirements for the adoption of existing digital tools, also free and open source. In general, none of the systems either designed or implemented in the four sites adopted a complementary crypto-currency created *ex novo*.

Although the most popular, the first generation of distributed ledgers such as Bitcoin was not a viable option to select, given its volatility and high cost of purchase. For the pilots in the DCENT project, researchers selected a second generation distributed ledger. The difference among first and second generation distributed ledgers lies in the fact that the former are exclusively software to run crypto-currencies while the latter enable the creation and management of different classes of digital assets, not just crypto-currencies. Thus, for the design of the Social Krónas, Eurocat and Multapaakku systems, the choice fell on a second generation distributed ledger called NXT (www.nxt.org):

“NXT has recently implemented a feature that is very interesting for us, called "Monetary System", facilitating the creation of new currencies circulated via the NXT blockchain and even allowing the tweaking of their characteristics following some generic guidelines. [...] At the time of writing this document, NXT has reached a critical mass of users but it hasn't yet made any significant breakthrough in popularity. While we expect this to happen, we also expect the technology to face some challenges for an algorithmic attack surface that hasn't yet received all the attention that was dedicated already by researchers on first generation code-bases. Nevertheless we see NXT cryptographic blockchain technology as a viable platform to build our design cycle in DCENT especially when dealing with community based complementary currencies.” (Roio and Sachy 2015: 20)

NXT offered the ideal environment for the pilots in DCENT as it enabled the creation of the three crypto-currencies needed, i.e. Social Krónas, Eurocat, and Multaapakku, to be broadcast on the NXT distributed ledger. Although the pilot partners were not able to organise communities for the test within the span of the project, this solution lowered the financial requirements for

DCENT's pilot communities while attempting to fit in with their willingness to experiment in the creation of monetary constituent governance practices. As mentioned in section 5.6, for Macao the choice fell on Faircoin2 because the precarious artists' collective in Milan was already familiar with such crypto-currency intentionally designed to lower hardware requirements by virtue of the Proof-of-Cooperation mechanism. As I described in section 3.4, this consensus mechanism enables the validation of transactions with the use of the Schnorr signature feature, and so equips the system with strong cryptologic security while at the same time avoiding the necessity of spending increasing amounts of electricity for broadcasting transactions in a secure environment, as for Bitcoin. Indeed, with Faircoin2, it is possible to run the crypto-currency for Macao safely by connecting to the Faircoin2 network with either an old computer or a piece of hardware called Raspberry Pi, which costs around 30 Euros.

As explained, a real world test has not been possible in the DCENT project because of a lack of resources both in the field and for completing the prototype of the Freecoin Social Wallet. The description of the choice for NXT is thus only an example of the significant efforts for optimisation, i.e. the hurdles that it was partly possible to overcome that characterised the design dynamic in the DCENT project. However, the enthusiasm of pilot communities for software innovation in currency and payment system design was a common aspect across all sites. The fact that a real world test has been possible at Macao is, in my view, a sign that such enthusiasm had to be coupled with tenacity by both researchers such as myself and, especially, pilot communities such as the collective of precarious artists in Milan, who had to wait more than three years before actually testing Commoncoin. Finally, as the prototype of the Freecoin Social Wallet is now ready, by virtue of the financial resources coming from the PIE News project, the DCENT pilot communities

can also use it to operate their crypto-complementary currency systems, if they choose to do so.

In a nutshell, although their full expression had not been possible because of organisational, financial and educational limitations, the need for socio-economic emancipation in the monetary domain, to be realised through bottom-up constituent governance practices and the use of state-of-the-art technological solutions are, however, the common elements that emerged in all four sites as I was researching concrete manifestations of Money for the Common Wealth of the Multitude in both the North and South of Europe. In the next section, I will present the differences that I identified between the sites.

6.2 Differences among the Four Sites

6.2.1 Objective Differences

In this and the next subsections, I will analyse the differences that emerged from a comparative analysis of the four sites. A first class of differences is grouped under the label 'objective differences': historical and geographical contexts; demographics and scale; local needs and communities' civic engagement to meet those needs are all elements that objectively showed the differences among each site. Indeed, both historical and geographical contexts were extremely different in each site and are a first variable that can help taking into account the huge diversity - and the different limitations which contributed to a partial application of the monetary *dispositif* - characterising the four sites. Secondly, from a demographic and scale point of view, all four sites differ. In Iceland, the Social Krónas system has been designed to serve the circa 120 thousand people inhabiting Reykjavik metropolitan area,

who were coming from all walks of life. In Spain, the community related to a more specific demographic sample, i.e. the few hundreds of thousands members for a system designed to scale in the whole regional SMEs sector in Catalunya. Further, in Finland the Multapaakku system was designed to serve some 500 people forming circa 200 households taking part in the local community-supported agriculture project promoted at the neighbourhood level by Helsinki Urban-cooperative Farm. Finally, in Milan the population of the fourth site at Macao is composed by a very peculiar demographic sample, i.e. the some 80 members of a collective of precarious artists with both Italian and foreign members participating in activities inside an illegally occupied building.

A third objective difference regarded the varying degree of civic engagement, i.e. “engagement with political and social issues, an engagement expressed in a variety of ways that do not always adhere to traditional perceptions of parliamentary politics.” (Uldam and Vestergaard 2015: 2) Indeed, the intensity of participation that sites’ communities manifested in meeting local needs, which they themselves highlighted, varied sensibly. In my view, these different levels of civic engagement specific to each site derived from the first two objective differences. In effect, in Iceland, proposers of the Social Krónas complementary crypto-currency and meritocratic basic income provision system, rewarding e-participation in the annual participatory event, were members of the Pirate Party (<https://piratar.is/en/>). Accordingly, and compared to the other three sites, Social Krónas can be defined as an initiative with a medium-to-high degree of civic engagement expressed as political activism, which shaped the definition of the system itself.

In Spain, the Eurocat system was designed to be a-political, in order to involve members of the regional SMEs community who belonged to the full spectrum of political orientations. Because this system was designed to serve

the regional business community in Catalunya, organisers preferred to keep politics out of the picture as much as possible. However, during the conversations that I held with members of the Eurocat Management Committee, they seemed to be conscious of the fact that to design a system for the social control of credit from the bottom-up had an inherent political charge. The latter was not necessarily coming from radical leftist groups, traditionally committed to antagonistic practices of insurrection as in Hardt and Negri's narrative on the exodus of the Multitude. Nevertheless, Catalunya is a very peculiar region, where radically opposed groups can share the same political goals, with both leftist and right-wing actors advocating the independence of the region from the central government in Madrid. If compared to the other three sites, and by virtue of the fact that many members of the Eurocat Management Committee are not Catalan, the level of civic engagement with a political charge for Eurocat is, in my opinion, medium to low.

While comparing the four sites, I recognised that the least politically charged one was the Finnish site. In this case, the self-remuneration system *Multa-paakku* was a need that emerged among a group that traditionally belonged to a socialist mindset, typical in the tradition of all Scandinavian countries. However, if one restricted the scope of analysis to Finland in general, within the group animating Helsinki Urban-cooperative Farm civic engagement was high, because the initiative was promoted in order to do without industrially-processed food. Nevertheless, civic engagement was not as high as in Iceland, Spain or Italy, as Finland had not presented either an influential political party which was anti-establishment (like the Icelandic Pirate Party), or a secessionist movement (like those active in Catalunya), or even an openly radical leftist, i.e. antagonistic approach as for Macao.

Accordingly, the last site that I presented in the previous chapter, the Commoncoin system, can be thought of as the one with the highest degree of civic

engagement by the community that it was implemented for. In fact, the collective of precarious artists at the occupied building named Macao is openly antagonistic and revolutionary - albeit its activities are not insurrectional in a military sense. Also the name of the system, i.e. Commoncoin, highlights the extremely radical leftist approach that the members of the collective decided to adopt as they were inspired explicitly by the work of Hardt and Negri, selecting this name for a complementary crypto-currency intended as a vehicle to reward political participation and as a mechanism to allow access to basic income provision from the bottom-up.

Hence, in conclusion for this subsection, I argue that such historical, geographic, demographic, scale and political differences are to be taken into account in order to justify and value the inductive and non-linear way in which tentative real world applications of Money for the Common Wealth of the Multitude emerged in this thesis. Indeed, they represent different expressions, at various degrees of civic engagement, of the application of the monetary *dispositif* as research exercises to envision how to encircle capital in the process of exodus at the dawn of the distributed ledger revolution. In summary, as it is meant to be both an expression of and a catalyst for the further development of the Common as I defined it in this thesis by drawing from Hardt and Negri, there is no 'ideal' form of Money for the Common Wealth of the Multitude, because it has to be implemented in each site to meet very specific needs, just as I described in the previous chapter. In the next subsection, I will analyse a first set of subjective differences among the sites, i.e. how the four systems differ around the theme of money creation and allocation in the four communities under analysis.

6.2.2 Different Money Creation and Allocation Processes

In this section I will analyse the rich variety in the money creation and allocation processes offered by the systems designed and implemented in the four sites. This second theme emerged as I examined the differences regarding the very domain of this thesis. If one analyses the currency creation mechanisms in the four pilots in the DCENT and the PIE News projects, money creation is specific for each situation. Communities in each site had in common an effort to attempt to design and implement new constituent governance practices in the monetary domain to go beyond the structural shortcomings inherent in the paradigm of conventional money, i.e. positive interest-bearing bank debt - albeit with forms of re-appropriation of the latter. However, and within the immanent limitations to apply in actuality the monetary *dispositif*, in each site differences emerged in the way and level of sophistication of the money creation and allocation processes. In Iceland, complementary crypto-currency creation was designed to be a function of reputation gained for proposals voted within the context of e-participatory budgeting. Indeed, as a complementary crypto-currency, Social Krónas were conceived as a way to monetise social credits, the points gained by citizens voted for by other peers on the Your Priority platform and cash social krónas in exchange for meritocratic basic income in Icelandic Krónas.

Social krónas were designed to be 'pre-mined' on the NXT blockchain using the 'Money System' feature. 'Pre-mined' is a term coined within the distributed ledgers community in order to denote the creation *ex nihilo* of a fixed amount of crypto-currency. In the Icelandic site, social krónas corresponded to social credits allocated at the end of the annual e-participatory budgeting event to 'virtuous' users, i.e. those voted for by others for their ideas to collectively maintain the common good in the city of Reykjavik. Further, ten social credits transformed into social krónas were meant to correspond to one

Icelandic Króna, if a user chose to cash in the complementary crypto-currency into national currency as a form of basic income provision. In this sense, it is possible to argue for an evolution of Neo-Chartalist money: from a money system by and for the public to a new one by and for the Multitude. The theoretical evolution resides in the fact that, although technically Icelandic Krónas are created according to the mechanics of the private banking system, the public sector would nevertheless allocate them according to a meritocratic process rewarding best civic ideas, rather than as public investment as suggested by the tenets advocated by Wray (1998).

In Spain, Eurocat promoters envisioned a system whereby users themselves were supposed to be in charge of money creation, in that the complementary currency eurocat (EUC) was designed as a function of micro-endorsements shared among members of the Commercial Credit Circuit for the SMEs sector in Catalunya. In this case, decentralisation of money creation was meant to be a constitutive element of the Eurocat Micro-endorsement and Mutual Credit system. Moreover, the allocation of Trust Units generating endorsements (END) was not supposed to be a random number, but a percentage of total turnover of each company. For instance, if a company had a turnover of 100 thousand Euros, organisers at Eurocat Management Committee proposed that 35% would have formed the trust capital, i.e. such a company would have enjoyed the possibility of endorsing companies and being endorsed by other companies, but within the ceiling of 35 thousand Trust Units. The latter were also designed to be pre-mined on the NXT blockchain as for the Social Krónas case. This was meant to avoid inflation in the eurocat layer of the system while giving companies higher possibilities to remain solvent and, at the same time, collectively spread risk in a safe fashion.

In Finland, access to pre-mined multapakkus on the NXT blockchain was designed to be regulated by the relation of self-remuneration from the 'pot of money' belonging to the community of users and stored on a common cryp-

to-wallet, i.e. the Money Totem. In other words, the self-governed allocation of multapaakku was regulated by the following rule: for each hour of work, a member of Helsinki Urban-cooperative Farm could self-remunerate herself with 10 multapaakku. Finally, the supply of commoncoins at Macao came from an amount of 23 thousand faircoins stored in the Macao Wallet and received by Macao as gift from the Faircoin2 creators, who themselves pre-mined several million of them. This number - 23 thousand faircoins - corresponded to the value in Euros, which organisers of Commoncoin calculated as necessary to pay for both continuous and autonomous functions together with the reward of 40 commoncoins per member, who participated in weekly assemblies each calendar month. Further, basic income in Euros was given in the form of cash to those who both worked enough in autonomous and/or continuous functions *and* took part to at least two weekly assemblies in a month in order to reach the basic income threshold.

In summary, money creation and allocation is different in the four sites. That is, the rules to create money were site-specific and unique in each case. Concretely, as a way to overcome the hindrance of a lack of both onsite and DCENT project's resources, money creation mechanics were designed to take place on the NXT blockchain in the first three sites. In fact, the rationale to create Social Krónas was designed to be dependent on reputation while allocation of basic income was conceived on the basis of a meritocratic process. Secondly, in the Eurocat system, the criterion to be endowed with Trust Units for the creation of eurocats was intended to be a function of 35% of total turnover for each company, which received an amount of Trust Units to then create eurocats for the social control of credit in the Eurocat regional currency system for Catalan SMEs. Third, Multapaakku was a system designed to be a currency simply pre-mined and stored in the Money Totem of Helsinki Urban-cooperative Farm and allocated as self-remuneration as a concrete example of how simple it is to create money, i.e. "so simple that the mind is repelled" (Galbraith 1975: 29). Finally, more than created, common-

coins were a gift to the community of the fourth site, which deliberated at weekly assemblies the rules to allocate them internally to members in order to access a basic income in Euros.

All these differences about money creation and allocation in each site can be understood as examples of how it is possible - and today also easier than in the past - to re-draft the agreement, i.e. the writing systems which money represents, in the transition from forms of money written with ink on paper to new ones encoded in binary language. In other words, they can be seen as expressions of the rich diversity of forms that Money for the Common Wealth of the Multitude may take, not only at the design level, but also at the implementation level. In the next subsection, I will discuss the second, and last, set of site-specific differences relating to the technological complexity of the digital writing systems representing money, i.e. the different technological degrees of complexity presented by the solutions designed for the first three sites and implemented as functioning software in the fourth site.

6.2.3 Different Complexity in Technological Design

Although the pilot communities in both the DCENT and the PIE News projects expressed enthusiasm in experimenting with state-of-the-art digital solutions in the monetary domain comprising two components of the monetary *dispositif*, i.e. complementary crypto-currencies and distributed ledgers, significant differences emerged in terms of technological complexity regarding the solutions designed for the first three sites and implemented in the fourth site. Indeed, both the design of crypto-currencies and their relations to the mechanisms for money creation and allocation conditioned the level of complexity of the technology that communities in the first three sites were

supposed to become familiar with. Although resorting to NXT allowed for more room to manoeuvre in terms of solutions design, the complexity to then interconnect such second generation distributed ledger with site-specific digital infrastructures revealed as demanding as formulating the monetary *dispositif* in the first place.

In other words, not only the negotiation between theory and practical application but also the one among different technological architectures and site-specific communities' needs, showed me how burdensome it can be to test in practice with state-of-the-art technology the very theoretical framework of the elements of the monetary *dispositif* presented in chapter three. In Iceland, the design process became complex in that Icelandic pilot partners, especially Robert Bjarnason and Gunnar Grímsson, were able to conceive detailed technological solutions, because they are both senior software developers with decades of experience in the field. Accordingly, the apparently easy task to convert social credits into social krónas turned out to become quite complex when the latter had to communicate with the digital infrastructures of the local socio-economy and the banking backend of Reykjavik City Council.

For instance, in this two-layer system whereby a complementary crypto-currency could be exchanged for national currency, a user wishing to buy either a public transport or a cultural event ticket in social krónas had to be enabled to spend the complementary crypto-currency at the points of sale of these systems, which were not designed to accommodate this need. Furthermore, complexity increased in the case in which an owner of social krónas wanted to cash them in in exchange for Icelandic Krónas, as Reykjavik City Council had to prepare the banking infrastructure for the exchange of the two currencies. In brief, in the first case there was the need to integrate the backend of the local bus company smartphone application, or the one of Reykjavik International Film Festival. In the second case, the integration needed was with

the Social Krónas open source system and proprietary banking software applications operated by Reykjavik City Council. This situation, alongside a lack of resources to complete the Freecoin Social Wallet codebase, did not allow expected results to be achieved, *pace* the Panama Papers scandal, within the scope of the DCENT project.

In Spain, the difficulty in design reached its peak for two interconnected reasons: first, the Freecoin Social Wallet for Eurocat was an implementation designed to have sufficient intelligence to process the complexity of this multi-layered system even beyond the directly connected features related to distributed ledgers. Indeed, and in part similarly to the Icelandic site, the Freecoin Social Wallet has been designed in order to be interfaced with the backend software that normally operates in the conventional banking industry. Accordingly, the Freecoin Social Wallet has been designed and developed with a stratagem, i.e. multi-signature wallets managed with the FXC Secret Sharing protocol, which is in fact a way, to allow trust withdrawals (and so complementary currency - eurocat - withdrawal) from a determined Trust Unit crypto-wallet.

As a result, for Eurocat, designers and developers from the DCENT project dedicated most of their efforts to this, as it was the most challenging piece of software to design in that the FXC Secret Sharing protocol is a complex cryptologic solution for multi-signature transactions of crypto-currencies. This solution for regulating the circulation of micro-endorsements was meant to condition the currency creation mechanism of the eurocat complementary currency. The latter would then be managed on a centralised database (Cyclos, Drupal, IntegralCES, see section 5.4.3 above) managed by Eurocat Management Committee. This centralised database would have then been put in communication with the backend of a banking institution's centralised databases in order to regulate the cash-out dynamics of SMEs willing to cash eu-

rocats in exchange for Euros on the SEPA architecture as for what concerns the European Union. Therefore, the Eurocat two layers system was the most complex to design (Figure 29):

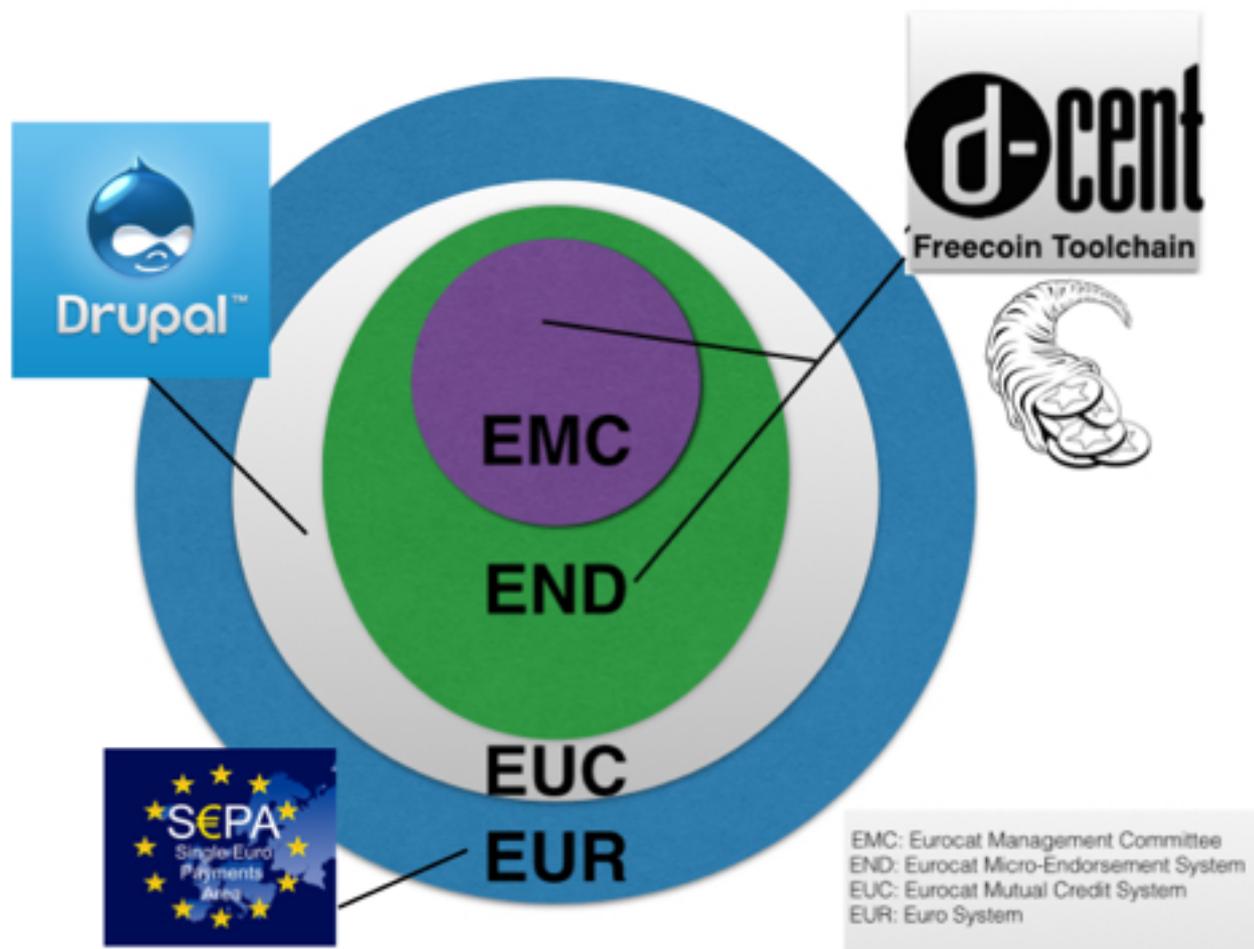


Figure 29: the two layers of the Eurocat system, that is endorsements (END), complementary currency (EUC) and national currency (EUR) (Source: Marco Sachy 2017).

Although I express myself using the conditional tense, it is worth noting that all these design efforts remained with the Eurocat Management Committee, which was and is free to continue its effort for implementation of the system for the SMEs sector in Catalunya. The same applies for the less complex cases in the Northern sites.

In Finland, the simple possibility to access the World Wide Web was the only pre-condition to satisfy in order to be enabled to use the Freecoin Social Wal-

let, either from a smartphone or a computer. Indeed, the Freecoin Social Wallet can simply be accessed from a browser and, therefore, there is no need to download an application from either the web or places such as iTunes (for iPhone users) and Google Play (for Android users). This choice was common for each site's community and it was agreed upon in both DCENT and PIE News consortia in order to enjoy the freedom of access that the web offers while avoiding corporate gatekeepers. A user logging in on the service could then self-remunerate herself with the amount of *multapaakku* crypto-coins corresponding to worked hours, while every participant would keep a copy of the community wallet stored in the Money Totem.

Finally, for Commoncoin at Macao, technological complexity spans from one end of the spectrum to the other. On the one hand, the source of basic income provision is Euros in the form of cash, i.e. one of the most widespread modern technologies for giving money as a writing system a "memorial support" (Sini 2005). On the other, in the Italian site, implementation resulted from technological choices that advanced the state-of-the-art in crypto-currency and distributed ledgers technology in both design and implementation. First, participants to the test of the Freecoin Social Wallet prototype just needed an internet connection and a valid email address in order to access the wallet on the web after activation *via* email confirmation and avoid to the nuisance to even download a smartphone application to initiate transactions. Secondly, the collective dynamics for the allocation of commoncoins to book calendar slots within the context of autonomous functions required the introduction of a multi-signature feature, i.e. the FXC Secret Sharing protocol, in order to allow groups at Macao to transact their complementary crypto-currency as a result of collective deliberation. Hence, the Italian site was in my view the richest in terms of technological complexity, in that the solution implemented in this fourth site drew fully from the highest variety of avail-

able options, from paper cash to multi-signature modules for the transfer of a complementary crypto-currency.

In conclusion to this section, alongside objective differences the four sites offered a highly significant qualitative diversity to the issue of money creation and allocation. Moreover, the difference among architectural platforms either designed or implemented in the four sites is mainly due to their different purposes and structural frameworks coupled with the exponential growth of technological innovation that currency and payment systems experienced throughout modern history. In fact, from the birth of modern paper bank-debt money in seventeenth century England to the digital revolution in digital payment systems initiated with Bitcoin, to the design of Freecoin in 2015 and its implementation as Freecoin Social Wallet in 2017, the type of difference analysed in this subsection shows how money as a writing system is experiencing a semiotic, *viz.* an ontological shift: from being written analogically by central top-down authorities to being encoded digitally from the bottom-up by decentralised communities of peers. In the next section, I will draw the conclusions for this chapter.

6.3 Conclusions

In this chapter I analysed both commonalities and differences emerging from the vignettes, which I presented in the last chapter as a way to describe the four sites. By narrating them as case studies, rather than as traditional pieces of ethnography, I nevertheless obtained a rich comparative analysis resulting from the methodological choice of PAR and CMSE approaches to researching the design and implementation of the Freecoin Social Wallet for the pilot communities in the DCENT and the PIE News projects. Both commonalities and differences that emerged in the comparative analysis in this chapter, in my opinion, strengthen the detail in which Money for the Common Wealth of the Multitude manifested in the four sites as generative expressions of the monetary *dispositif* for the exodus from the rule of capital. However, as I stated in the introduction to this chapter, both site-specific and project-specific problems indicate that more than fully successful stories on the real world application of the theory on Money for the Common Wealth of the Multitude, it is more correct to argue that the sites compared in the present analysis document the existence of many hurdles still to be overcome. Thus, while the exodus of the Multitude had been theorised in the trilogy manifesto by Hardt and Negri, in the monetary domain it is necessary to admit and highlight that the process of exodus, although presenting a huge potential, is nevertheless at its germinal stage. Hence it is necessary to avoid triumphalist tones as I self-reflect on fieldwork that I performed in the four sites.

Regarding the common themes that I identified in this comparative analysis, commonalities among the four sites manifested as elements suggesting how it is possible to design and implement monetary cures to the monetary blindspot described by drawing from Lietaer, Arnsperger *et al.* (2012) in section 1.1.2 above. Such cure had been documented in monetary terms with the notion of either subaltern currencies (North 2010a; 2010b; 2007; 2006; and 1999) or complementary (Lietaer 2010; 2009; 2001) in section 3.3. What is nov-

el at the light of the research conducted in the four sites is that socio-economic emancipation, bottom-up democratisation of the power of money in new forms of constituent governance practices by user who designed and self-managed crypto-currency systems are, in my view, generative attempts to cure the monetary blindspot. As they promote the adoption of complementary and subaltern currencies, such constituent governance practices were designed and in one case also successfully implemented, as ways to counteract the negative dynamics promoted by single-currency thinking.

Secondly, by commoning both design and implementation of decentralised crypto-currencies, the shared willingness among the four sites to find new ways to experience money democratically from the bottom-up can be understood as a sign that it is today possible to begin to imagine an exodus from monetary biopower by going beyond either capitalist or socialist traditions with proactive proposals for new forms of constituent governance. Moreover, the common themes emerging from the comparative analysis of the four sites could be understood as initiatives in novel constituent governance practices that have the potential to undermine the third component of the monetary blindspot, i.e. the institutionalised *status quo*. For instance, in Iceland, this was done by the proposal to re-appropriate the power to allocate national currency in a meritocratic context of e-participation for the betterment of the common good of the city of Reykjavik. These new forms of constituent governance expressed themselves with a common aspect relating to each site, i.e. enthusiasm for experimentation in the technological, state-of-the-art participatory design choices for the Freecoin Social Wallet. This design process, fuelled with enthusiasm both by sites communities and myself, pointed to a potential for a quantum leap when the community at Macao in the Italian site could finally test the Freecoin Social Wallet.

In terms of both objective and site-specific differences, it is important to note that they also confirmed, rather than contradicted, the evidence of a genera-

tive as well as embryonic manifestation of Money of Commonwealth of the Multitude within the four sites. Indeed, in all sites, different historical and geographical contexts, different demographics and scale of the sites, and different level of civic engagement for meeting local needs, suggested how it is possible to apply the monetary *dispositif* to go beyond the traditional opposition between capitalism and socialism to cure the second and third components of the monetary blindspot. Moreover, both differences in the money creation and allocation processes and in the level of technological complexity for each site demonstrate the variety of possibilities to cure the single-currency thinking aspect of the monetary blindspot. Thus, the differences between the sites actually highlighted the richness in diversity, that various expressions of Money for the Common Wealth of the Multitude may take.

However, during my research I found myself many times retracting from the instinctive temptation to simply impel from the four sites evidence of the manifestation of the components of the monetary *dispositif*. Indeed, I made a continuous effort to avoid the methodological problem of Multi-Sited Ethnography, i.e. 'normalisation' in Burawoy's sense: to induce evidence sustaining my theoretical framework from data collected in the sites together with my personal and political beliefs. Therefore, by recalling Burawoy's arguments on the problems of Multi-Sited Ethnography as I tested the theoretical framework of Money for the Common Wealth of the Multitude, I tried to avoid such 'normalization' of my own theoretical proposal. Through this continuous self-critical exercise in abstaining from promoting a kind of money system as hegemonic as the one it was purported to overcome, I aimed at minimising my biases in the participatory information of the sites and in the identification of both commonalities and differences related to them. On the contrary, I strove to self-reflect on the limitations of the theoretical framework that I proposed and the methodological approach to test it in way that enabled me to criticise society to the highest extent possible within the con-

straints of PAR fieldwork within the DCENT and PIE News projects, whereby I was native participant observer only in one site, i.e. the fourth one.

Hence, by virtue of such critical awareness to the problem of normalisation inherent to CMSE conducted through PAR, and conscious of the objective limitations, both commonalities and differences among the sites pointed, in my view, to the possibility that there is room to argue for compelling - albeit embryonic - evidence to support the argument about emerging manifestations of Money for the Common Wealth of the Multitude in the real world. In the next chapter I will draw the general conclusions of this thesis.

7 Conclusions - The Origins of Money for the Common Wealth of the Multitude

In this final chapter, I will attempt to offer a few critical conclusive remarks drawn from the theoretical framework that I proposed in the first four chapters and the participatory multi-sited research presented in chapter five and the analysis discussed in chapter six. Thus, the primary intention of this chapter is to advocate further efforts of inquiry on Money for the Commonwealth for the Multitude within the largest context of monetary reform. In general, I admit that I did not find conclusive proofs of the existence of Money for the Commonwealth for the Multitude in the world out there, which was my initial standpoint when I started this research journey. However, the germinal theoretical framework and the embryonic research findings that I presented above made me understand that this thesis is to better be thought of as a genealogical and practical work on the origins of Money for the Common Wealth of the Multitude. Indeed, the proposal of the monetary *dispositif* and the research conducted in the four sites is to be more correctly understood as a way to begin opening the curtains on a window of a possible future, i.e. to assess if and how the kind of innovations discussed in the fieldwork chapter are possible and whether and how they can be generalised. Nevertheless, there are objective hurdles to overcome at the practical level and as I stated in the introduction, my own activist biases, intellectual and practical limits oblige me to restate here that I could only tentatively put in practice the theoretical framework presented in chapters two and three.

As I argued in the introduction, even though I am convinced about the validity of the contributions offered with this thesis to theoretical and practical knowledge in the monetary domain, as a researcher I also recognise that both the semiotic genealogy of money and the monetary *dispositif* are to be understood as tentative theoretical exercises which need further refinement in or-

der to aspire to have a weight in academic and policy debates. However, as a committed political activist, I still advocate the urgency and necessity of their recognition by other academic peers, policymakers, currency and technological practitioners, and civically engaged citizens as the elements of the theoretical framework introduced above represent what I consider to be genuine elements to enrich a debate, whose further development can contribute to the exodus of the Multitude.

It was not therefore intention of or possibility through this thesis to operate in a few years a definite paradigm shift in the monetary domain as I theorised it in the literature review. By contrast, I admit that such shift could result only from the sum of different theoretical, policy, practical and technological advancements in the field by the individuals dedicating their time and efforts to the issue of the betterment of the monetary system in the digital era. As Hardt and Negri put it:

“The productive realm of communication, finally, makes it abundantly clear that innovation always necessarily takes place in common. Such instances of innovation in networks might be thought of as an orchestra with no conductor—an orchestra that through constant communication determines its own beat and would be thrown off and silenced only by the imposition of a conductor’s central authority. We have to rid ourselves of the notion that innovation relies on the genius of an individual. We produce and innovate together only in networks. If there is an act of genius, it is the genius of the multitude.” (Hardt and Negri 2004: 338)

Moreover, it is neither possible or realistic - and was not my intention as I stated in the introduction - to realise a strong paradigmatic change in academia within the scope of a PhD thesis. As for any paradigm shift, such an endeavour cannot be achieved by the genius of a single individual, especially the author who is a self-professed activist rather than a vocational academic.

In terms of my contribution to practical knowledge, I argue that in the research sites, the Common as defined by Hardt and Negri was a result of the interactions taking place in the design process of the first three sites piloted in the DCENT project while it became condition of possibility for the biopo-

litical production that ushered in the Commoncoin system in the fourth site as part of the Italian pilot in the PIE News project. Consequently, all four sites for which the Freecoin Social Wallet has been either designed or also implemented showed examples of money as a political weapon for the exodus of the Multitude. In fact, connecting money creation and allocation to political participation and basic income provision in cities such as Reykjavik and Milan, or to business activity in the Catalan regional economy, or even to the innovative dynamic of self-remuneration represent, in my view, different but effective ways of creating biopolitical value by implementing the monetary *dispositif* for the socio-economic emancipation of the Multitude.

That claimed, better proposals can manifest in the future as this thesis is a limited contribution to the larger debate on the issue of money, the problems that it creates in society and possible ways to begin to envision how to solve them. In effect, alongside my core specialisation in crypto-currencies and distributed ledger technology discussed in section 3.4, I proposed to address the monetary blindspot by drawing from the literature on basic income and connecting it to subaltern currencies, in sections 3.1 and 3.3, respectively. I then added further elements to a possible cure to the blindspot by offering an overview of Neo-Chartalist money in section 3.2. I was then pleased to acknowledge that nowadays similar debates on the interoperability among the different components of the monetary *dispositif* is theorised in terms of, for instance, state-issued parallel currencies also implemented as crypto-currencies. As North put it in the context of the Greek crisis in the Eurozone:

“In the context of the Greek crisis, they have proposed a number of temporary, special-purpose parallel currencies that could be redeemed in the future when, it is hoped, the economic climate was more benign. Andresen and Parenteau (2015) proposed the Tax Anticipation Note (TAN), an electronic parallel currency valued at parity with the euro, which the government would use to partly pay wages and pensions, and which in turn could be used by citizens for domestic purchases and to pay bills. [...] Before joining the SYRIZA government, Varoufakis (2014) had proposed the issuance of what he called a Future Tax Coin (FT-Coin) using similar algorithms to bitcoins, perhaps building on the government’s web-based tax payment infrastructure. [...] FT-Coins could be purchased by

private investors who wanted to offset future tax liabilities. Varoufakis argued that that these parallel currencies would not be a prelude to Grexit, but legal anti-austerity mechanisms within the wider framework of monetary union (Lambert, 2015).” (North 2016: 1443)

Although North highlights the fact there is a hegemonic preponderance of neoliberal ideology in the European Union, the germinal instances of Money for the Common Wealth of the Multitude presented in this thesis can be seen as further embryonic elements to nourish ongoing theoretical academic and practical techno-political debate at the monetary policy level around an alternative narrative to monetary biopower. If cultivated sufficiently in the future, the latter could mature in a new monetary paradigm, in that “once a greater variety of complementary, rather than competitive, moneys becomes commonplace, then alternatives to the euro may become more feasible.” (North 2016: 1450)

As I reflect on the application of what I consider as the practical contributions to knowledge presented in chapter five and analysed in chapter six, I need to point to the fact that the initial intellectual enthusiasm resulted in the proposal of the application of a monetary *dispositif* from the top-down and the bottom-up in order to operate the exodus of the Multitude from the subsumption into capital, the real world dynamics revealed to be remarkably challenging. Indeed, the definition of the monetary *dispositif* has been intellectually demanding but certainly not as challenging as the attempt for its design and implementation in the real world. Although I had the possibility to take part to two EU-funded projects to build Collective Awareness Platforms for Sustainability and Social Innovation, prototype implementation of the components of the *dispositif* turned out to be limited in scope, by virtue of insufficient human and financial resources coupled with a widespread lack of monetary literacy. In other words, especially by comparing my active fieldwork research to the somewhat exalting tones of Hardt and Negri’s political manifesto, the success of the outcomes that I achieved should be considered

as modest - albeit encouraging. From such initial enthusiasm, I had to recognise that reform in the monetary domain cannot be as instantaneous as the realisation of the injustices caused on the vast majority of the population by the mechanics of the conventional monetary system.

Alongside my limits, there are also objective limits such as the need to bridge various disciplines for allowing such paradigm shift to grow from the embryonic stage documented in the pages above to an institutionalised framework, whereby money systematically works for the majority of society and not a restricted elite. The bridging process includes - but is not limited to - a connection among unorthodox monetary theory and alternative practices in the field; heterodox forms of economics; a legal framework for the growth of the Common and towards the safeguarding of the rights of the Multitude; increased and more widespread education on monetary literacy in the majority of the population using money, especially the youth; and, most importantly, the maturation of the political will inside the mainstream political agenda.

Notwithstanding such personal and objective limits, I am confident to conclusively claim a strong - albeit improvable - degree of theoretical validity of the working definition of Money for the Commonwealth for the Multitude that I introduced above. Such definition has the potential to originate a genuine debate for new and, in my view, exciting possibilities in user-managed currency and payment system design that can be framed for the full advantage of the users, rather than to merely extract value from them. Accordingly, I suggest that the sites researched in this thesis could be considered as a possible beginning for the realisation of Money for the Common Wealth of the Multitude.

In particular, these possibilities relate to the emergence of money systems whose structure is demonstrably sustainable while fostering the suitable de-

velopment of the social body in a multi-currency environment. Indeed, to operate the exodus from the rule of capital is to shift to the rule of the Common, i.e. a complete reversal of assumptions that might have desirable repercussions with regards to the present critical economic crisis. Indeed, with such dialectical shift, the power of money can be redefined from being private, expensive, opaque, competitive, run for-profit and poor-performing to a monetary paradigm that is an expression of the principle of the Common, run at a cost basis, structurally transparent and promoting cooperation and inclusiveness while reducing transaction costs.

The status of Money for the Commonwealth for the Multitude within academic debate is practically null, if compared to the one on orthodox monetary economics. However, I attempted to persuade the reader about the reasonability and urgency for such a debate as highlighted by the critique coming from the biopolitical literature on the Common and addressed by the design and implementation of user-managed forms of basic income alongside complementary currencies and distributed ledgers. Accordingly, I argue that the fieldwork and analysis presented above are a stimulating research sample that invites to further the inquiry in this emerging field. In effect, at both theoretical and practical levels, this thesis showed that the monetary blindspot could be addressed effectively with new ways to implement money systems by creating performative writing systems in both natural and binary languages in order to take responsibility for the following exhortation, made almost a century ago, by former director of the Bank of England, Sir Josiah Stamp:

“Banking was conceived in iniquity and was born in sin. The Bankers own the Earth. Take it away from them, but leave them the power to create deposits, and with the flick of a pen they will create enough deposits to buy it back again. However, take it away from them, and all the fortunes like mine will disappear, and they ought to disappear, for this world would be a happier and better world to live in. But if you wish to remain slaves of the Bankers and

pay for the cost of your own slavery, let them continue to create deposits.” (Sir Josiah Stamp)¹²

Hence, this thesis showed that new constituent governance structures resulting from applications of the monetary *dispositif* are embryonically manifesting as I personally and actively witnessed their design and implementation in the four sites. They can be seen as germinal ways to substantiate Stamp’s exhortation in the 21st century. Thus, I conclude by suggesting, as both an activist and a researcher, that the refinement of the theoretical framework laid out in chapters two and three toward a monetary paradigm at the service of socio-economic emancipation has the potential to allow to more effectively root actual expressions of Money for the Common Wealth of the Multitude in the real world.

¹² Said to be from an informal talk at the University of Texas in the 1920s, but as yet unverified. (Adams 1958)

8 Bibliography

- Adams, Silas W., *The legalized crime of banking and a constitutional remedy*. Boston: Meador. 1958.
- Aldridge, Irene, *High Frequency Trading - a practical guide to algorithmic strategies and trading systems*. Hoboken: John Wiley & Sons, Inc. 2010.
- Amin, Ash, *Post-Fordism: A Reader*, Wiley-Blackwell, 1995.
- Anand, Paul, *Foundations of Rational Choice Under Risk*, Oxford: Oxford University Press. 1993.
- Andresen, T. and Parenteau, R., 'A program proposal for creating a complementary currency in Greece', *Real-World Economics Review*, no. 71, 2–10. 2015.
- Antonopoulos, Andreas, *Mastering Bitcoin: Unlocking Digital Cryptocurrencies*. Sebastopol, CA: O'Reilly Media, 2014.
- Arnspenger, Christian, *Full-Spectrum Economics: Towards an Inclusive and Emancipatory Social Science*, Routledge, 2010.
- Arnspenger, Christian, and Yanis Varoufakis. "What Is Neoclassical Economics?" *Post-Autistic Economics Review* Vol. 38, no. 1: 2-12. 2006.
- Atkinson, A. B., 'Public Economics in Action: The Basic Income/Flat Tax Proposal,' Oxford University Press. 1996.
- Austin, John L., *How to Do Things With Words*, Oxford University Press: Oxford, England, 1962.
- Berruto, Gaetano, and Monica Berretta, *Lezioni di sociolinguistica e linguistica applicata* (approximative English translation: Lecture of Sociolinguistics and applied linguistics), Napoli: Liguori. 1977.
- Bilgram, Hugo, and L. E. Levy, *The Cause of Business Depressions*, Philadelphia: J. B. Lippincott Company, 1914.
- Bollier, David, 'Reinventing Law for the Commons', A Strategy Memo for the Heinrich Böll Foundation September 1, 2015. (Accessed at <https://>

www.boell.de/sites/default/files/reinventing_law_for_the_commons_memo.pdf on 13 March 2016).

- Bulgarelli, Odoardo, *Il Denaro dalle Origini delle Origini* (approx. translation: Money from the Origins of its Origins), Rome: Spirali. 2001.
- Burawouy, Michael, Joseph A. Blum, Sheba George, Zsuzsa Gille, and Milie Tahyer, *Global Ethnography - Forces, Connections, and Imaginations in a Postmodern World*, University of California Press, 2000.
- Cahn, Edgar, *No More Throw Away People*, Washington, DC: Essential Books. 2004.
- Caprio, Gerard and Daniela Klingebiel, 'Bank Insolvencies: Cross-Country Experience', Policy Research Working Paper No. 1620 (Washington DC: World Bank, Policy and Research Department), 1996.
- Cecchetti, Stephen G., Madhusudan S. Mohanty and Fabrizio Zampolli, 'The Future of Public Debt: Prospects and Implications', BIS Working Paper #300, Basel: Bank for International Settlements, March 2010.
- Coleman, Simon, and Pauline von Hellermann, *Multi-Sited Ethnography: Problems and Possibilities in the Translocation of Research Methods*, Routledge, 2011.
- Creswell, J.W., *Research Design - qualitative, quantitative and mixed methods approaches*, Sage. 2007.
- Creswell, J.W. and Plano Clark, *Designing and conducting mixed methods research*, Thousand Oaks, CA: Sage, 2009.
- De Goede, Marieke, *Virtue, Fortune, and Faith: A Genealogy of Finance*, University of Minnesota Press, 2005.
- De Meulenaere, Stephen, 'Uang Kepeng: The Traditional Complementary Currency of the Balinese', Working Paper, Strohalm Foundation for Integrated Economics (Holland). 2004.
- DeMuth, Suzanne. "Defining Community Supported Agriculture". United States Department of Agriculture. (September 1993) (available at <https://>

pubs.nal.usda.gov/defining-community-supported-agriculture last accessed on 29 January 2016)

- Denzin, Norman K. and Lincoln, Yvonna S., eds. *The Sage Handbook of Qualitative Research*, 3rd ed., Thousand Oaks, CA: Sage. 2005.
- Dodd, Nigel, *The Sociology of Money: Economics, Reason & Contemporary Society*, Continuum Intl. Pub Group; 1st Edition edition, 1994.
- Douthwaite, Richard, *The Ecology of Money*, Schumacher Briefings (No 4). 1999.
- Dyer-Witherford, Nick, Commonism," *Turbulence* 1 (June 2007), 81–87; and *Cyber-Marx* (Urbana: University of Illinois Press, 1999).
- European Central Bank (authors Andrea Pinna and Wiebe Ruttenberg), 'Distributed ledger technologies in securities post-trading - Revolution or evolution?', ECB Occasional Paper 172, April 2016.
- Eurostat, *Europe 2020 indicators - poverty and social exclusion*. Retrieved http://ec.europa.eu/eurostat/statistics-explained/index.php/Europe_2020_indicators_-_poverty_and_social_exclusion. 2014 (Last access on 07.04.2015).
- Encyclopedia Britannica (online version - <http://bit.ly/LCoauX> accessed on 13th March 2014).
- Febrero, Eladio, 'Three Difficulties with Neo-Chartalism', *Journal of Post Keynesian Economics*, Vol. 31 - Issue 3 pp. 523-541. 2009.
- Federal Reserve of Chicago, *Modern Money Mechanics*, free booklet published by the Chicago branch of the FED. 1961.
- Ferguson, Niall, *The Cash Nexus: Money and Power in the Modern World, 1700-2000*, Allen Lane/Penguin Press, 2001.
- Fisher, Irving, *Stamp Scrip*, New York: Adelphi Company, 1933.
- Foucault, Michel. *Discipline and Punish: the Birth of the Prison*, New York: Random House. 1976.
- Frankel, J and A. Rose, "Currency Crashes in Emerging Markets: an Empirical Treatment", *Journal of International Economics*, vol. 4, pp. 351 - 366. 1996.

- Fumagalli, Andrea, 'Commonwealth, Commonfare and Money of the Common: the challenge to fight life subsumption', in M. Bak Jorgensen, O. García Agustín (eds), *Politics of Dissent*, Peter Lange, Frankfurt, pp. 157-179, 2015.
- Fumagalli, Andrea and Emanuele Braga (eds.), *La Moneta del Comune - la sfida dell'istituzione finanziaria del comune* (Money of the Common - the challenge of a financial institution of the common). Derive e Approdi: Milano. 2015.
- Fumagalli, Andrea and Stefano Lucarelli, 'Finance, Austerity and Commonfare', *Theory, Culture & Society*, Vol 1-15, Sage, 2015.
- Fumagalli, Andrea and Stefano Lucarelli, 'Basic Income and Productivity in Cognitive Capitalism', *Review of Social Economy*, Vol. 66, - Issue 1: Living Standards and Social Well-Being, pp 71-92, 2008.
- Fumagalli, Andrea and Stefano Lucarelli, 'A model of Cognitive Capitalism: a preliminary analysis', *European Journal of Economic and Social Systems*, vol. 20, n. 1. 2007.
- Galbraith, John K., *Money: whence it came where it went*. 2nd. ed., London: Penguin Books. 1975/[1995].
- Gapper, John, 'Master of risk who did God's work for Goldman Sachs but won it little love', *Financial Times*, 23 Dec 2009. (Retrieved September 25, 2014).
- Gesell, Silvio, *The Natural Economic Order*, San Antonio, TX: The Free Economy Publishing Co., 1934 (Translated from the sixth German edition). Originally published in 1913.
- Gillespie, N. and Hurley, R., 'Trust and the global financial crisis', in Bachmann, R. and Zaheer, A. (Eds), *Handbook of Advances in Trust Research*, Edward Elgar, Cheltenham, pp. 177-203. 2013.
- Glover, Paul, *Hometown Money: How to Enrich Your Community with Local Currency*. 2nd Edition. Greenplanners: Ithaca, NY. 1995.

- Gramm, Marshall. "The Free Silver Movement in America: A Reinterpretation," *Journal of Economic History*, Dec 2004, Vol. 64 Issue 4, pp 1108–1129.
- Greco, Thomas, *The End of Money and the Future of Civilization*, Floris Books, 2009.
- Greco, Thomas H., *New Money for Healthy Communities*, Electronic ed. (https://ratical.org/many_worlds/cc/NMfHC/NMfHC.html retrieved on 13 June 2014). 1994.
- Graeber, David, *Debt - The First 5,000 Years*, Melville House; Upd Exp edition ,2014.
- Grierson, Philip, *The Origins of Money*, London: Athlone Press. 1977.
- Hardt, Michael and Antonio, Negri. *Empire*. Harvard University Press. 2000.
- Hardt, Michael and Antonio, Negri. *Multitude*. Harvard University Press. 2004.
- Hardt, Michael and Antonio, Negri. *Commonwealth*. Harvard University Press. 2009.
- Hausmann, Daniel, *The Separate and Inexact Science of Economics*, Cambridge: Cambridge University Press, 1992.
- Henderson, Hazel, *The Politics of the Solar Age: Alternative to Economics*, New York: Doubleday, 1981.
- Hess, C., and Ostrom, E. 'Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource.' *Law and Contemporary Problems*,66, 111-146. 2003.
- Hobbes, Thomas. Warrender, Howard, ed. *De cive*. The English version entitled, in the first edition, *Philosophical rudiments concerning government and society*. Oxford: Clarendon Press. 1642/[1983].
- Hume, David, *Political Discourses*, Indianapolis, IN: Liberty Fund, Inc 1742/[1987].

- Hutchinson, Frances, Mary Mellor and Wendy Olsen, *The Politics of Money - Towards Sustainability and Economic Democracy*, Pluto Press: London. 2002.
- Huws, Ursula, 'How can a universal basic minimum income be made compatible with socialist principles and avoid inadvertently furthering a neoliberal agenda?', article appeared on New Thinking for the British Economy, 2016a (available at <http://www.opendemocracy.net/neweconomics/the-key-criticisms-of-basic-income-and-how-to-overcome-them/> Accessed on 7th January 2017).
- Huws, Ursula, Howard Reed and Stewart Lansley 'Universal Basic Income: An idea whose time has come?', *Compass*, 2016b.
- Ingham, Geoffrey, "Babylonian madness': on the historical and sociological origins of money', in Smithin, John (ed.), *What is Money?*, Routledge International Studies in Money and Banking - London: Routledge. 2000.
- Jackson, Andrew and Ben Dyson, *Modernizing Money: why our monetary system is broken and how it can be fixed*. Positive Money: London. 2013.
- Jevons, William S., *Money and the Mechanism of Exchange*, London: Macmillan. 1875.
- Kaminsky, Graziela M. and Carmen M. Reinhart, "The Twin Crisis: The Causes of Banking and Balance of Payment Problems", *American Economic Review*, Vol. 89, no. 3, pp. 473 - 500. 1999.
- Kemmis, Stephen, 'Critical Theory and Participatory Action Research', in (Peter Reason and Hilary Bradbury (eds.) in *The SAGE Handbook of Action Research Participative Inquiry and Practice*, Sage, 2008.
- Kennedy, Margrit, Bernard Lietaer and John Rogers, *People's Money - the promise of regional currencies*. Triarchy Press, 2012.
- Kennedy,, *Interest and Inflation Free Money: Creating an Exchange Medium that Works for Everybody and Protects the Earth*. Okemos: Sava International, 1995.

- Keynes, John Maynard, *A Treatise on Money*, in *The Collected Papers of John Maynard Keynes* Vol. V. London : MacMillan St. Martin's Press. 1930/ [1971].
- Keynes, John Maynard 'National Self-Sufficiency,' *The Yale Review*, Vol. 22, no. 4, pp. 755-769. June 1933.
- Khun, Thomas, *The Structure of Scientific Revolutions*, University of Chicago Press, 1970.
- Kindleberger, Charles P., *Manias, Panics, and Crashes - A History of Financial Crises*, Hoboken: John Wiley and Sons. 1978 (5th ed., 2005).
- King, Sir. Mervyn, Speech made in New York on 25 October 2010. Source: <http://www.qfinance.com/finance-and-business-quotes/banking> (Accessed on 21st January 2013).
- Klein, Naomi, *No Logo: Taking Aim at the Brand Bullies*. Knopf Canada and Picador. 1999. Knapp, Georg F., *The Starter Theory of Money*, New York: Augustus M. Kelley. 1924 [1973].
- König, Thomas and Enric Duran, FairCoin V2 White Paper (Draft), Document version 1.1, June 2016. (available at <https://chain.fair-coin.org/download/FairCoin2-white-paper-V1.1.pdf> accessed on July 1st 2016).
- Kregel, Jan, "Remarks" prepared for The Federal Council of Economists and the Regional Council of Economists of Rio de Janeiro meeting of the 13th Brazilian Congress of Economists and the 7th Congress of the Association of Economists from Latin-American and the Caribbean, 15th September 1999, <http://cas.umkc.edu/econ/economics/faculty/Kregel/Econ%20512/Winter2002/Readings/Triffin.pdf>. Visited on Apr 25th 2015.
- Kuhn, Thomas, - *The Structure of Scientific Revolutions*, new ed., Chicago: Chicago University Press, 1970.
- Laevan Luc and Fabian Valencia, "Resolution of Banking Crises: the Good, the Bad, and the Ugly", IMF Working Paper 10/146 (Washington: International Monetary Fund), p. 4, 2010.

- Lambert, H., 'Exclusive: Yanis Varoufakis opens up about his five-month battle to save Greece', *New Statesman*, 13 July 2015 (available at <http://www.newstatesman.com/world-affairs/2015/07/yanis-varoufakis-full-transcript-our-battle-save-greece> last accessed on 25th January 2017)
- Lapavistas, Costas, *Social foundations of Markets, Money and Credit*, London: Routledge. 2003.
- Lietaer, Bernard, Christian Arnsperger, Sally Groener and Stefan Brunnhuber, *Money and Sustainability - the missing link*, Triarchy Press. 2012.
- Lietaer, Bernard, Robert E. Ulanowicz, Sally J.Goerner and Nadia McLaren. "Is Our Monetary Structure a Systemic Cause for Financial Instability? Evidence and Remedies from Nature", in *Journal of Future Studies*, Special Issue on the Financial Crisis, April 2010.
- Lietaer, Bernard, Robert E. Ulanowicz, and Sally J.Goerner, 'Options for Managing a Systemic Bank Crisis.' *Sapiens*, 2 (1). Available online at <http://sapiens.revues.org/index747.html> 2009.
- Lietaer, Bernard, *The Future of Money*, London-NY: Randomhouse. 2001.
- Lietaer, Bernard, *Mysterium Geld: Emotionale Bedeutung und Wirkungsweise eines Tabus* (The Mystery of Money - Beyond Greed and Scarcity), Munich: Riemann Verlag, 2000.
- Lilley, Simon, Geoffrey Lightfoot and Paulo Amaral, *Representing Organization - Knowledge, Management, and the Information Age*, Oxford University Press. 2004.
- Lo, Andrew W., Monica Billio, Mila Getmansky, and Lorian Pelizzon, 'Measuring Systemic Risk in the Finance and Insurance Sectors', MIT Sloan School Working Paper 4774-10, March 2010.
- Longhurst, Noel and Gill Seyfang, 'Harnessing Grassroots Innovations: Complementary Currencies and Sustainability', paper presented at the 1st International Conference on Community and Complementary Currencies, Lyon, 2011.

- Lotringer, Sylvestre and Christian Marazzi (eds.), 'Post-Political Politics', in *Autonomia*, Semiotext(e), 2007.
- Lucarelli, Stefano and Lucio Gobbi, "Local clearing unions as stabilizers of local economic systems: a stock flow consistent perspective", *Cambridge Journal of Economics*, vol. 40, issue 5, pp. 1397-1420, 2016.
- Marazzi, Christian, "Capitalismo digitale e modello antropogenetico di produzione," (Digital Capitalism and the anthropogenetic production model), in *Reinventare il lavoro*, Jean-Louis Laville ed. Roma: Sapere, pp. 107-126. 2000.
- Marcus, George E., 'Ethnography in / of the World System: the Emergence of Multi-Sited Ethnography', *Annual Review of Anthropology*, Vol. 24 (1995), pp. 95-117.
- Marcuse, Herbert, *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Beacon Press, 1964.
- Marx, Karl, *Capital*, Vol. I, London: Penguin/NLR. 1867 / [1976].
- McNiff, Jean, *Action Research: Principles and Practices*, Routledge, 2002.
- Menger, Karl G., *Principles of Economics*, New York: New York University Press. 1871 / [1981].
- Menger, Karl G., 'On the Origin of Money', *Economic Journal*, 2, 239–255. 1892.
- Moore, Tyler and Nicholas Christin, 'Beware the Middleman: Empirical Analysis of Bitcoin-Exchange Risk', In: Sadeghi AR. (eds) *Financial Cryptography and Data Security*. Lecture Notes in Computer Science, vol 7859. Springer, Berlin, Heidelberg. 2013.
- Moten, Fred, and Stefano Harney, "Debt and Study", *E-flux Journal*, available at <http://www.e-flux.com/journal/debt-and-study/> (accessed on 13 March 2013), 2010.
- Nakamoto, S. "Bitcoin: A Peer-to-Peer Electronic Cash System". 2008.

- Negri, Antonio, *Dall'operaio massa all'operaio sociale. Intervista sull'operaismo* (From the mass worker to the social worker. Interview on operaism, Ombre Corte, 1979/[2007]).
- New Economics Foundation (NEF), *People Powered Money - designing, developing and delivering community currencies*, London. 2015.
- New Economics Foundation (NEF), *Where does Money come from? A guide to the UK monetary and banking system*, London, 2012.
- Nienaber, Ann-Marie, Marcel Hofeditz Rosalind H. Searle, 'Do we bank on regulation or reputation? A meta-analysis and meta-regression of organizational trust in the financial services sector', *International Journal of Bank Marketing*, Vol. 32 Issue 5 pp. 367 - 407. 2014. Permanent link to this document: <http://dx.doi.org/10.1108/IJBM-12-2013-0146>.
- North, Peter, 'Money reform and the Eurozone crisis: panacea, utopia or grassroots alternative?', *Cambridge Journal of Economics*, Vol. 40, 1439–1453, 2016.
- North, Peter J., *Local Money - How to Make It Happen in Your Community*, Transition Books, an imprint of Green Books. 2010a.
- North, Peter J., 'The Longevity of Alternative Economic Practices: Lessons from Alternative Currency Networks', in Duncan Fuller (Andrew E.G. Jonas, ed.), *Interrogating Alterity Alternative Economic and Political Spaces*, Routledge. 2010b.
- North, Peter J. *Money and Liberation: The Micropolitics of Alternative Currency Movements*. Minneapolis: University of Minnesota Press. 2007.
- North, Peter J., *Alternative Currency Movements as a Challenge to Globalisation? A case study of Manchester 's local currency networks*. Aldershot: Ashgate. 2006.
- North, Peter J. 'Explorations in Heterotopia: LETS and the micropolitics of money and livelihood.' *Environment and Planning D: Society and Space*, vol. 17(1), 69-86. 1999.

- Ostrom, Elinor, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, 1990.
- Parguez, A., 'A monetary theory of public finance', *International Journal of Political Economy*, 32 (3), Fall, pp. 80-97. 2002.
- Parker, Martin, *Against Management*, Polity Press, 2002.
- Pasquinelli, Matteo (ed.) *Gli algoritmi del capitale. Accelerazionismo, macchine della conoscenza e autonomia del comune* (approx. translation: the Algorithms of Capital. Accelerationism, knowledge machines and autonomy of the common. Verona: Ombrecorte, 2014.) Pennycook, Alastair, "The Concept of Method, Interested Knowledge, and the Politics of Language Teaching", *TESOL Quarterly*, Vol. 23, No. 4, pp. 589-618. Dec., 1989.
- Piketty, Thomas, *Capital in the Twenty-First Century*, Harvard University Press, 2013.
- Quigley, Carrol, *Tragedy and Hope - A History of the World in Our Time*. The MacMillan Company, New York. 1966.
- Roio, Denis and Marco Sacy, *D5.5 Implementation of digital social currency infrastructure*, DCENT Project Deliverable submitted to the European Commission on September 2015. (available at <https://dcentproject.eu/wp-content/uploads/2015/10/D5.5-Implementation-of-digital-social-currency-infrastructure-.pdf> last accessed 28 May 2017)
- Roio, Denis, 'Bitcoin, the end of the Taboo on Money' (Draft), Planetary Collegium, Plymouth, 2013.
- Rothbard Murray N., *The Mystery of Banking*, Auburn: the Ludwig von Mises Institute. 2008.
- Rutherford, Donald. *Economics - The Key Concepts*, New York - London: Routledge. 2007.
- Sacy, Marco, Denis Roio, Stefano Lucarelli, Bernard Lietaer, Francesca Bria, *D4.4 Design of Social Digital Currency*, DCENT Project Deliverable submitted to the European Commission on June 2015. (available at

https://dcentproject.eu/wp-content/uploads/2015/10/design_of_social_digital_currency_publication.pdf last accessed 28 May 2017).

- Sacy, Marco, 'The New Frontier in Payment Systems: Virtual Currency Schemes, the C3 Uruguay case and the Potential Impact on SSE' (Draft), United Nations Institute for Social Development, May 2013. (Available at <http://bit.ly/1sV2meR> last accessed 28th September 2016).
- Schnorr, C.P. J., 'Efficient signature generation by smart cards', *Journal of Cryptology*. Volume 4, Issue 3, pp 161–174. January 1991.
- Schumpeter, Alois, *History of Economic Analysis*, Allen & Unwin. 1954.
- Seyfang, Gill, *The New Economics of Sustainable Consumption - Seeds of Change*. Palgrave Macmillan (Energy, Climate and the Environment Series) Basingstoke, Hampshire. 2009.
- Simmel, Georg, *The Philosophy of Money*, Routledge, 1900/ [1978].
- Sini, Carlo, *Filosofia e Economia - O del viver bene* (approximative English translation: Philosophy and Economics - On the good life), Milano: CUEM. 2001.
- Smith, Adam, *The Wealth of Nations, Vol. I, II*, E. Cannan (ed.), London: Methuen. 1776 / [1904].
- Stiglitz, Joseph E., 'Beyond Market Fundamentalism to a More Balance Economy', *Annals of Public and Cooperative Economics*, Wiley Online Library, 2009.
- Studer, Tobias, *WIR in unsere Volkswirtschaft* (English translation by Philip H. Beard: WIR and the Swiss National Economy), published by the WIR Bank, Basel. 1998.
- Swantz, Marja Liisa, 'Participatory Action Research as Practice', in (Peter Reason and Hilary Bradbury (eds.), *The SAGE Handbook of Action Research Participative Inquiry and Practice*, Sage, 2008.
- The Cambridge 27, 'Opening Up Economics', *Post-Autistic Economics Newsletter* : issue no. 7, July, article 1, 2001 (accessed at <http://www.paecon.net/PAEtexts/Cambridge27.htm> on 28 April 2017).

- The New York Times, 'Iceland's Prime Minister Steps Down Amid Panama Papers Scandal', April 5th 2016, accessed on 13th May 2017 (available at https://www.nytimes.com/2016/04/06/world/europe/panama-papers-iceland.html?_r=0).
- Uldam, Julie and Anne Vestergaard, 'Introduction: Social Media and Civic Engagement', in Julie Uldman and Anne Vestergaard (eds.) *Civic Engagement and Social Media Political Participation Beyond Protest*, Palgrave Macmillan, 2015.
- Ulanowicz, Robert E., *The Third Window - Natural Life Beyond Newton and Darwin*, Templeton Foundation Press. 2009.
- Van Parijs, Philippe, 'Why Surfers Should be Fed: The Liberal Case for an Unconditional Basic Income', *Philosophy & Public Affairs*. Vol. 20, No. 2, pp. 101-131. Spring, 1991.
- Van Parijs, Philippe, 'Basic Income: A Simple and Powerful Idea for the Twenty-First Century.' *Politics and Society*. Vol 32, Issue 1, 2004.
- Varoufakis, Y. . 'BITCOIN: A flawed currency blueprint with a potentially useful application for the Eurozone', 2014 (available at <http://yanisvaroufakis.eu/2014/02/15/bitcoin-a-flawed-currency-blueprint-with-a-potentially-useful-application-for-the-eurozone/> last accessed 17th March 2016).
- Varoufakis, Yanis, *Economic Indeterminacy: A personal encounter with the economists' peculiar nemesis*, Routledge, 2013.
- Vitali S., Glattfelder J.B., Battiston S., 'The Network of Global Corporate Control.' *PLoS ONE* 6(10): e25995. doi:10.1371/journal.pone.0025995 (2011).
- Weatherford, Jack McIver, *The History of Money from Sandstone to Cyberspace*. New York: Crown Publishers. 1997.
- Withers, Hartley, *The Meaning of Money*, E.P. Dutton & company, 1909.
- Wray, L. Randall, *Understanding Modern Money: the Key to Full Employment and Price Stability*, Cheltenham: Edward Elgar. 1998.

- Zelizer, Vivian, 'The Social Meaning of Money: "Social Moneys"', *The American Journal of Sociology*, Vol. 95, No. 2, pp. 342-377. 1989.