The Evolution of Money

David Orrell and Roman Chlupatý
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Without money, we would not have the civilization we have today. We need money to organize economic activity even on relatively basic levels, to say nothing of the complex globalized market-society of our era. This volume deals with money both in its historical emergence and current transformations. The two authors seem to be a fortunate blend. David Orrell is a mathematician who has done much in the past ten years to popularize economics while doing substantial work on various forecasting systems, and Roman Chlupatý is an economist/journalist. They have collaborated before, most notably on *The Twilight of the Economic Man* with the famous Czech economist Tomáš Sedláček.

On the whole, the book succeeds in what it sets out to do – the reader is informed on the past, present and a possible future of money. The first five chapters deal with the history of money through five stages that the authors identify, while the latter five chapters explore the current state of currencies and the possible cybercurrency futures.

The first key point of the book is the criticism of the creation myth of money, an "eerie continuity" (p. 14) from Aristotle via Smith and Jevons to modern economic textbooks in describing the creation of money as a spontaneous process of barter simplification, which naturally flows from the need to trade more efficiently. Orrell and Chlupatý side with authors who argue that money could not have emerged from barter as economies which were based purely on barter never existed historically. They point to a "richer, messier, and more complex" (p. 15) history of money. They trace the Sumerian economy as the best documented ancient money system, and describe it as a complex debt network with actual silver shekels, only existing in temple vaults, the shekel itself serving primarily as an accountancy unit. This system even had monetized debt (with tradable cuneiform tablets signifying debt) but could only have worked with the state backing, and certainly not through spontaneous emergence. The authors call this type of state controlled accounting money Money 1.0. Its first successor (Money 2.0) occurred in Lydia with the minting of first coins. The idea of coins spread rapidly to Greece and eventually provided the economic basis of the Roman Empire, and the reason for this was the easy transportability of coins, while their intrinsic value made them useful in other countries and not just within the state (which was the down side of Money 1.0). However, the authors ascribe the rise of Money 2.0 not to trade with other countries, but to the need for warfare and taxation, both being made more fluid with intrinsic-value transportable money. Money 3.0 was the late medieval-European bill of exchange (which once more did not require a transfer of tangible coins in order to transfer value) – which meant that the medieval suspicion of wealth hoarding and money in general was accompanied by what was essentially a precursor of modern finance (p. 71). The discovery and exploitation of the New World brought great quantities of precious metals to Europe and the rejuvenated coin-based economies would eventually become the gold standard (Money 4.0). Finally, the currency post-1971, which is no longer backed by gold, but freely fluctuates and is copiously created by central and commercial banks, is a return to virtual money in a world of computers and credit cards (Money 5.0). The switch of money to this last phase also created a "giant multidecade global credit bubble which the crisis only partly deflated" (p. 114).

Another key point is essentially philosophical and deals with what money actually is. Money at its core embodies a duality between political authority as an abstract idea (symbolized by the authors as "heads") and the numerical value of money as embodied reality (symbolized as "tails") (p. 38). The authors ultimately derive a theory of quantum money, which is a carrier of authority (virtual credit/debt) and value (material wealth) at the same time. The first is most clearly manifested in virtual money systems of Sumer, late medieval Europe, and our modern monetary system. The second manifests itself in tangible, intrinsic value money of ancient Greece and Rome, and the gold standard system until 1971. Like quantum particles, money has two contradictory aspects which it necessarily binds together, and these historic episodes are periods of one of the aspects gaining dominance over the other. The authors interpret our modern system as virtual money retaining "trappings and pretensions" of the old gold standard (p. 114). They use the ancient Greek duality systems to show that the physical aspect could be equated with the female principle and the virtual pertains to the male principle. This allows them to playfully depict Money 5.0 as the male principle posing as the female principle – or "money in drag" (p. 114).

The authors also argue that the role money plays in the economy is systematically ignored in textbooks and growth prediction models. It is often essentially assumed away in the neoclassical mainstream. The review of economic history is brief, but their point is well made. If the modern mainstream of economic science ignores money, it is no wonder the modern world became vulnerable to financial crises.

Finally, Orrell and Chlupatý wonder about what the future role of money could be. In not being tied to gold, governments could easily circumvent central banks and issue money directly, while the very large part of private money multiplying via commercial banks could be recentralized in a 100% reserve banking framework (p. 179-181). Money would then come under direct democratic control. They predict that future will bring "a range of overlapping currencies on a local, national, regional and global scale" (p. 236). These various alternative currencies will heavily hinge on the virtual online economy involving various reward schemes for online and mobile purchases.

There is one particular point which may seem trifling elsewhere, but must be criticized from a Croatian viewpoint. Luca Pacioli is credited as the "creator of double-entry bookkeeping" (p. 8) in passing. Firstly, double-entry bookkeeping must have appeared in practice (as indeed recognized by the authors somewhat later in the book) far sooner than it was first described in a treatise, and secondly (and more problematically from the Croatian perspective) the famous text by Pacioli seems to have been predated by several decades by Benedikt Kotruljević from Dubrovnik in *Della mercatura e del mercante perfetto*.[1]

Money makes the world go round, as the saying goes. As over-mentioned as money is, its origins and its modern role remain under-explained. Orrell and Chlupatý add to many and growing voices attempting to remedy this situation.[2] In particular, their historic arguments do not seem to move too far beyond those that can already be found in the vastly successful *Debt: The First 5000 Years* by David Graeber. However, even as they should be read in the context of Graeber's book, they do add an analysis of their own and refine the argument. They also successfully criticize prevalent and implicit theories of money, attempt to offer a fresh and synthesizing quantum theory of money, and apply it to the recent Bitcoin emergence.

For its various implications, this volume *should* perhaps primarily be read by neoclassical economists, but will certainly find a far wider readership. The authors are eclectic and combine history with economics, and when they set out to define money in chapter 2, they argue with the passion of a philosopher, using the Pythagorean duality

[1] See Phillips, T. (2003). The Romance of Double-Entry Bookkeeping. *American Mathematical Society*; Yamey, B. S. (1994). Benedetto Cotrugli on Bookkeeping (1458). *Accounting, Business & Financial History*, *4*(1), 43-50.

[2] See Graeber, D. (2014). Debt-updated and expanded: the first 5,000 years. Melville House; Ivanković, Ž. (2016). Pravna povijest novca: Greshamov zakon ili – nema stabilnog novca. *Politička misao*, *53*(2), 64-84; Desan, C. (2014). Making money: coin, currency, and the coming of capitalism. Oxford University Press, USA; Dodd, N. (2016). The social life of money. Princeton University Press; Bjerg, O. (2016). How is bitcoin money?. *Theory, Culture & Society*, *33*(1), 53-72.

system as a starting point. In fact, this book does not require any prior knowledge in economics to be understood. It is chock-full of various interesting money-related historical titbits, and should be read by people with an interest in where money comes from, what role it plays in the modern global economy and what it may look like in our future.

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