

Title: Quality Peer-to-Peer Money – NESS to the Rescue?

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#### Abstract:

As current events remind us, the search for quality money (stable, universal, fungible, secure, convenient and fair) is an on-going game. Previous thinkers have proposed “ideal money” [1], tied to a basket of commodities, or world monetary union [2], as solutions to problems associated with currency wars and the Triffin paradox [3]. But these kinds of solutions require benevolent and strong central authorities that can impose measures on state actors. This appears neither feasible nor democratically desirable. At the same time lack of trust in state level monetary discipline can undermine popular faith in available systems of money.

One alternative involves the denationalisation of money [4]. As originally envisaged this does not require state-level centralisation but rather relies on the market to self-regulate. However, unregulated market forces often lead to monopoly and the abuse of that power. Worse, such monopolies would not be under direct democratic control.

More recently a new approach has emerged. Fully decentralised, transparent and open source systems based on peer-to-peer (P2P) technology are being experimentally deployed (e.g. Bitcoin [5, 5b]). Such systems have no central authorities at all and hence no profit motive beyond the users of the currencies. Their open source nature means that anyone can inspect the entire workings of the system and hence trust is derived from the correctness of the process and the community of users as a whole. Faith is not required.

However, such systems, as all systems, are not infallible and can fail or be hacked by clever cheaters. Hence we can expect to see the emergence of a new kind of Gresham’s law [6], even without central authorities.

We will argue that all P2P currencies will ultimately fail (as all systems do) but that via a sufficient ecology of variants and easy movement of value between them, via open source exchanges, it could be possible to build quality money on top of an unstable and constantly evolving P2P ecology – thus speeding-up the game. This is analogous to the way that reliable communication on the Internet is built on top of unreliable lower-level infrastructure or how high frequency trading algorithms work on top of multiple unstable instruments.

We will present recent agent-based models from Non-Equilibrium Social Science (NESS), inspired by evolutionary game theory (and group selection) that could

provide the theoretical basis for the design of such a system. Specifically, even agents following simple (boundedly rational) selfish behaviour can form a dynamic ecology that promotes high levels of quality. We will also consider how to model the idea of “hackability” of a system and how this relates to emergent outcomes.

We will assess the viability of such a project, going forward, and how it might support the common good.

Footnotes:

[1] John F. Nash, “Ideal Money”, Southern Economic Journal, 2002, 69(1).  
<http://www.jstor.org/pss/1061553>

[2] H. G. Wells, “The New World Order”, 1940.  
<http://gutenberg.net.au/ebooks04/0400671h.html>

[3] People's Bank of China, "Reform the Int. Monetary System", March 2009.  
<http://is.gd/0OhCmS>

[4] F. A. Hayek, “The Denationalisation of Money: The Argument Refined”, 1990.  
<http://mises.org/books/denationalisation.pdf>

[5] The Economist, Jun 13<sup>th</sup> 2011.  
<http://www.economist.com/blogs/babbage/2011/06/virtual-currency>

[5b] Victor Grishchenko, “Bitcoin?”, May 12<sup>th</sup> 2011.  
<http://www.pds.ewi.tudelft.nl/~victor/bitcoin.html>

[6] Gresham's Law - [http://en.wikipedia.org/wiki/Gresham's\\_law](http://en.wikipedia.org/wiki/Gresham's_law)