# On a Post-Monetary Network Based Economy

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The love of money as a possession – as distinguished from the love of money as a means to the enjoyments and realities of life – will be recognized for what it is, a somewhat disgusting morbidity, one of those semi-criminal, semi-pathological propensities which one hands over with a shudder to the specialists in mental disease.

– John Maynard Keynes

## Allocation, Distribution

The economy as a whole deals with allocating work and distributing goods. Both operations are based on relations between economic agents, objects, and humans. Who gets something and who has a task to do, is a question of matching. As such we have to deal with a network-centered problem that could theoretically be solved by network-based algorithms. Most likely there is no general problem solving routine that addresses tasks in a generalizing, universalist way. We have to make do with local solutions, or with interest-specific routines, or with a variety of algorithms embedded in an eco-system of diversified economies.

Throughout history, issues of distribution and allocation have been solved through money. But also before the introduction of money, goods were distributed and tasks were allocated according to different practices. As David Graeber has recently shown, many standard accounts on the history of a pre-monetary economy were wrong.[[1]](#footnote-2) The narratives about the appearance of money were retrospectively arranged according to practices introduced by money itself. But the imagined societies based on barter exchange were never found. Also, the idea of private property was largely absent before money was introduced.

Like all other media, money is far from being a neutral tool. It shapes the way we perceive economic transactions. Rules that we take for granted today derived from the introduction of money, like the ideas of buying and selling, consistent valuation, or property. The history of economy can show that money was neither the beginning nor does it need to be the end.

Ideas about a post-monetary system do not necessarily need to look very utopian or far away. Already now, our situation is approaching a point at which very many services render money either obsolete or an avoidable obstacle. The monetary layer of our economy is being carried along, as it facilitates the extraction of profits and allows to tie sharing and other collaborative practices to the schemes of the old economy.

What would be the advantages of a post-monetary economy? Having much more data at its disposal, a post-monetary algorithm may distribute and allocate much more directly and efficiently than a money-based market mechanism. Additionally, there is one important feature of our monetary system, that would be difficult to implement, and that is the accumulation of vast sums of wealth and the inequalities of income. Technically it might still be possible to tweak a post-monetary system to keep redistributing wealth to the rich, but morally those practices would be regarded highly doubtful systemic bugs.

## Matching

The core routine of a money-free economy is the matching algorithm. Its main purpose is to make needs and capabilities meet. Matching is not to be confused with today’s market mechanisms. It is not about setting a price. Prices are needed when information about the participants of the transaction, their needs and capabilities, is lacking. Under these constraints, the exchange at an abstract level replaces a matching on the basis of needs. Money based markets operate on a high level of abstraction, and they involve very many institutions of production and services, that adapted to, mirror and create this level of abstraction.

On the contrary, without money and with abundant information, one could imagine a matching algorithm that addresses each economical agent and offers the opportunities and goods available. The domain of personal decisions, as far as they concern an economic relation to others, will then be accessed by the matching algorithm.

On the aggregate level, matching could aim for an optimal distribution. It is open to discussion what type of optimum counts as desirable, and if only one type of optimum has to cover the whole economy. One could also think of very many, even conflicting or competing solutions. Optimizing a network with complex links – bundles of desires and capabilities – may either aim at resource efficiency, or at an equilibrium of production and consumption within each agent, or at the overall benefit for a group or the society as a whole. Each solution comes with its own ethical settings. One could even go so far to say that each different economic procedure installs its suitable set of rules, frames it as morally correct behavior and codifies it as law.[[2]](#footnote-3)

In this sense early monetary systems established their respective laws referring to property, stealing and the assignment of goods to persons; rules that were not needed under pre-monetary conditions. Setting the rules was governed by the same institutional bodies that also implemented the calendar for agriculture and the storehouses for seeds. Some facets of them survived in the shell institution of religion up to our present times. But also today, law making and public morals are narrowly affiliated with economic practices.

The practical implication of an optimizing algorithm cannot be predicted. Emergent behavioral patterns tend to turn technical or governmental routines into a contingent playground. That in turn creates the need to implement etiquettes, guidelines, or sanctions. These dynamics count for economic processes no less than for all sorts of communication.

## Money as Medium

Within the current economy matching is handled by markets mediated through money. Each good is assigned an owner and a price. The price is said to reflect the relation of demand and supply in the markets, but the market itself is an idealized site of optimal allocation and efficient information.[[3]](#footnote-4) But after all, it forms the core procedure of a monetary system of distribution and allocation. Its matching function operates at aggregated quantifications provided by money, and that creates a situation far from any optimum. Products and services are rather given triple or more to people in possession of money, than to the ones who actually would need it. Manipulation of demand and supply contributes to the inefficiency of markets. However, more dangerous and damaging turned out the inherent drive – not towards equilibrium as the classical theory postulates – towards exaggeration and instability.[[4]](#footnote-5)

Usually, resistance against our current monetary regime starts with alternative currencies. But the overall scope of this approach remains entirely within models of monetary value and limits itself to the substitution of the issuers and institutions that regulate the rules and the circulation of money. Our economic thinking is so bonded with monetary exchange, that it requires quite a bit of imagination to shun the idea of the necessity of money altogether. To call into question the very idea of a general equivalent sounds like an implausible idea given the current conditions. How to measure value? How to construe a basis for exchange? Questions like these come to mind immediately, but they disregard the fact that the very idea of a unified value and an immediate exchange are linked to the monetary regime. As ethnographers have shown, economic relations can be built with the absence of both concepts. In other words: these concepts only appear with the ascent of money, and may not survive its end.

Early pre-monetary economies usually do not extend much over the clan, or the village, or a tribe. Their reach was severely hindered by the fact that the reach of transactions and memorized records was restricted to friends or friends of friends. Most objects did not circulate much beyond the local community within which all kinds of ‘IOUs’ had to be remembered.[[5]](#footnote-6) Seen from this perspective, the history of credit and money can be told as a story of record keeping, of databases, bookkeeping techniques and network complexity. For our purpose, it is sufficient to briefly sketch out the outlines of such a history.

Human memory has a limited capacity for keeping track of past transactions. Within a small village or a tribe, the collective memory of the members may be enough to record all mutual economic relations. But whenever the social entities become bigger, data traffic grows. Human memory does not scale very well when confronted with these challenges. The first writing systems, implemented by temples and other semi-economic institutions, were used to record huge numbers of past transactions. Religion may, in this respect, be understood as a belated moral justification of early bookkeeping practices and its laws and the roles assigned to the vigilantes of the pre-monetary exchange, its funding narratives and its cults of debt, forgiving, and indebtedness.

With early bookkeeping rose the extension of the economic empires. For the exchange with foreigners, and that means with agents outside of the range of local laws and records, new modes of transactions had to be invented. The main feature of this kind of exchange was to avoid extensive record keeping. After the transaction is done, both parties had to leave without mutual obligations. This erasing of memory was one of the main functions of money, which is commonly referred to as payment. For transactions money operates like a compression algorithm. The mapping of this ritual to minor transactions lead to our current daily social practice of monetary exchange. It made transactions amongst non-friends not only possible, but turned it into the economic standard.

Today, the compression function of money is no longer needed as the situation on the data side of economy has changed considerably. There is no longer a lack in technical memory and data capacities. Systems of distribution and allocation that once relied on friendship can be scaled to the global level with the help of digital data and networks. But there is no simple way back to pre-monetary practices, because a post-monetary system would face two additional requirements. It cannot be built from scratch, as we live in a functioning economic environment based on money. And second, it faces the challenge to be more efficient and to bring advantages over the old system in order to make people participate. Even as the old monetary regime becomes more and more inefficient, given the immense inequality it has to maintain, this is no easy task.

Conceptually, there are two different options for post-monetary economies. The first system would keep the agents as they are in place and would model a networked, data-driven process. The second approach would expand the set of economic agents and might then arrive at a surprisingly lean and elegant solution.

## Data Transactions

Money can fully be replaced by memory, according to a paper by N. Kocherlakota, at least for certain types of economic systems.[[6]](#footnote-7) Keeping track of all transactions would allow for a system of bookkeeping that enables us to regulate an economy. But within a data driven system of this kind, underlying theoretical problems appear. A memory system would still have to operate on the basis of assigned values. It would not be able overcome money completely, but only codify it in different ways. Without abolishing the idea of a general equivalent, this practice would not be better than another money substitution, even if it were more sophisticated than very simple substitutive forms like Bitcoin.

When approaching the issue of economic transaction from the side of a matching algorithm, there is no need to calculate a value for a good. Sufficient conditions for its operation would be the ability to make decisions whether a desire is fulfilled, a task is assigned, or a product is delivered – whether a transaction takes place or not. Assigning value is only necessary when the transaction has to be mapped to a universal, all encompassing unit of measurement. We all know that this type of measurement does not correspond to our daily experience. Wishes and desires change. A thing may posses an immense value for one person, while another one perceives it as a waste. One might wish to have one and the same object at certain moment, and get rid of it at other times. From its very invention, the idea of a general value has been a fictitious form adapted to monetary exchange and markets.

It may require a completely different approach to solve the issue of economic circulation of needs from another angle. If a need is expressed, it can either be served, or it stays in the system as an open ticket. In case there is more demand than supply, the good would be ideally assigned to the person who needs it most, or who makes most out of it. This would be a relational value. At the same time a message is sent to whomever is willing and able to provide more of the same good. The basic communication around a transaction would consist in the activation of this network-based relation.

A communication environment of this type is far from trivial. As it easily extends over a more than two connected positions, it tends to produce huge flows of data even for small transactions. How do we compare recursive factors like the degree of need or an expected productive use? How can the desires of one person trigger the needs of another one? What about the global impacts, like sustainability or climate efficiency?

Even the simplest relation can stretch over various links. Each transaction would then become an operation that entails the whole world like Leibnizian monades. It goes without further explanation that a data-driven system would generate huge amounts of information, with all the negative consequences of misuse, surveillance, and the rule of control regimes.

On the other hand, such an algorithm would help to prevent some of the injustices of our current regime. Just to give an example: why should a new flat be given to someone who has already five others, if there is someone who needs a flat to actually dwell there instead of keeping it empty as mere financial asset? Present day distributions, that routinely ignore needs and replace them by the law of the economically stronger, would be laid bare in all its moral doubtfulness. But not everything is distributed along these rules; there are plenty of non-monetary practices around. Just to give one example – in bars, beer is usually not served to the one who is willing to pay most.

Some of the perverse incentives coming with money were still obvious shortly after its introduction.[[7]](#footnote-8) But once the monetary regime had become the general rule, they appear to be the new normal.

## Ticklish Objects

The obstacles of a data rich exchange-oriented system may be overcome by reconsidering the participants in the market. Whomever or whatever partakes in an economic transaction may be regarded as an economic object, with its needs and desires and its own interests. This does not only refer to human beings, but also to all kinds of objects, even to objects in the sense of programmable objects, like events or communications.

For each object included in a transaction, there should be an optimization function. A car wants to be driven. A house wants to be inhabited. A beer wants to be drunk. The bottle may even command a car to be taken to a place most suitable for that purpose getting emptied. A world of this type, in which objects communicate with each other, is not out of reach.

Purpose-driven intelligent and communicating objects may resolve one of the big obstacles of a data driven economy. Once an object knows what it is made for, it is possible to operate an economy without relying on a data-rich memory system. In this model, each thing or agent would know its own use and its own degrees of freedom. One may overwrite an assigned purpose and change what a thing strives to do. But overwriting and changing its own desires would by default be a privilege of self-conscious beings.

The object-based system does not need to be completely rational and standardized, not even consistent or universal. On the contrary, in the same way humans have their changing moods and desires, objects may be as ticklish as subjects. Their behavior towards possible transactions may rather resemble dating than just being sold. They may want to enter into negotiations or complex arguments, may withdraw and reappear, may change sides and features. The system does not need to have preset rules for once and ever. Its life depends on how humans interact with things, and how objects mirror the world.

## Human Agents

As much as objects, humans have an economic agency, which can be described by sets of needs or desires. A strong concept of subjectivity or identity is not needed to operate as an economic agent. One and the same person may take different roles to appear under different circumstances.

In a data rich, transaction-oriented system, the agent would be declared the site of a possible equilibrium. That means that each agent should strive to give as much as it gets. Within an object-oriented economy, the personalized equilibrium can be replaced by the optimization function of the objects.

One of the crucial distinctions between objects and human agents lies in the term ‘dignity’. According to Kant, dignity is what exempts the human from the realm the submission under the economic sphere. ‘In the realm of ends everything has either a price or a dignity’.[[8]](#footnote-9) Unlike objects, dignity allows humans to withdraw form economic pressure, without risking their existence.

Whilst objects may exist entirely within the economic sphere, humans have to be able and enabled to choose which part of their life and their activities to submit to the rules of the economic domain. That means that the descriptor of a human agent has to be up to her or his choice. There may be capabilities or needs that one does not want to be public or to be offered to the matching function. Without this clause, economic algorithms and their drive towards optimization could easily turn into an algorithmic dictatorship.[[9]](#footnote-10) Digital profiles would replace, as they already do, parts of our personality and would more or less subtly direct our wishes and needs according to manipulative matching procedures.

Humans, in contrast to objects, have to be recognized as non-efficient, often non-rational and unpredictable beings. The model of whatever algorithm should be a ‘homo non-economicus’, and for sure not the profit maximizing automata of current economic modeling. Freedom of decision making has to be granted not only as the freedom to choose amongst given alternatives, but on a far deeper level as the freedom to choose amongst a variety of games, or even to step out of the economic circuit as such, which would bring us back to the antique idea of freedom as being freed from the need to work at all.

After all, algorithms and laws would have to be implemented according to four basic principles of human rights – dignity, public welfare, equality, and freedom. Given the poor performance of our current monetary regime, it should not be impossible to surpass the current system with its inclination to exclusive freedom for the wealthy and rising inequality.

## Multidimensional Values, Ecosystem of Games

The economic field does not need to be governed by one universal algorithm alone. A diversity of needs, different products and services may be distributed according to their own set of rules. It could even be that some of these game-like instances deploy money or money-like units or whatever other mode of ranking and measurement, like karma or health.

Rhetoric and narratives around the matching algorithms may derive from contemporary computer games. In our current digital online environment, games deliver possible procedures of how to manage the exchange and matching of activities among large groups.[[10]](#footnote-11) Players should be allowed to transfer their characters from one game to the other. We don’t want to be slaves to another game, when self-models are affected by technical protocols, and individuality or persistence of a personality turn into derivatives of online formats.

After all, behind the diversity of possible games, a basic economy needs to be put into place. For that matter, the whole ecosphere of diverse games has to participate and contribute to the basic provision for everyone. In the end, this situation may lead to a system of contribution that could replace taxation. In such a social environment, territorial boundaries would not necessarily withhold their current impact. States as entities of taxation and policing may loose their grip and be replaced by other forms of organization.[[11]](#footnote-12) The administration of the commons could as well operate on a non-territorial basis of a meta-game.

The pluralism of possible modes of interaction shapes concepts of value. We are still accustomed to assume that each thing has to have a value that is consistent over time and equal for all persons. In a post-monetary economy this rigid concept of value becomes obsolete. It could be replaced by a radically personalized concept of valuation that takes the temporal and situative needs of economic agents as an index of value. In this case, one and the same objects could have different values for different users. The other mode of valuation would be the result of a recursive operation that integrates it with systemic needs, very much like the Google ranking does for the relevance of information. The example of Google and the way it ranks information shows the conflicts of personalized and generalized concepts of value. As much as with Google, the two concepts need to be leveled against each other in a continuous process of adjustment.

Objects don’t have to be assigned one value only. Given a system in which things can be part of a multitude of different rules, they may possess different values according to which game they figure in. To give an example: an hour of electricity has a certain production cost. The price for raw material may be set in a geopolitical game that has little to do with market value. Sustainability requires a third type of valuation that counts the effects on the ecosystem at large. All these value dimensions may be kept in parallel and enter the calculation of a transaction according to the politically agreed rules.

## Commons and Infrastructure

The kind of services and products that are made available to the whole population as common goods, is the result of a communal decision taken by a political body. As mentioned before, there is no need to have these institutions construed along territorial boundaries. They may well derive from games and their rule sets, which would mean that individuals also can be citizens of more than one entity.

Under post-monetary conditions, common goods and services need no longer be included into an economic system, and especially not an exploitative regime. Without state controlled money circulation, and hence without taxation, commons may be organized along liturgical practices, so that services and tasks in the common interest are being offered to the ecosphere of games against some form of retribution.

### **Scarcity**

We are educated to things being scarce. This runs along common myths of current capitalism that things are in short supply and therefore have a market value. There is an intrinsic tie between money and scarcity, as money itself is the scarce good to which all other scarce goods have to be mapped. ‘The innovation consists in the duplication of scarcity. The scarcity of money is placed next to the very different scarcity of goods. That means, that *scarcity itself is codified.*’[[12]](#footnote-13) This relation implies that scarcity may be overcome in the moment that money as its codification is driven out of the system.

By now most of our products are no longer scarce. Usually, we have things in such an ample supply, that scarcity has to be artificially introduced. Just to name some examples: there is no shortage in shoes. Most of the efforts of brand marketing go into codifying a shoe model with social distinctions and thereby add the distinctive quality associated with scarcity. Practices of this kind may even persist in a post-monetary world. They could be part of a particular game, in which people with according distinctive needs may strive to achieve the qualifications needed to obtain the precious items.

A more critical case can be found in immaterial goods and intellectual property. Consisting in data, there is absolutely no need to limit the circulation of digital goods. Technically, each single individual can contribute to the distribution of a text, a piece of music or a video by sharing it. The desperate attempt to create a legal environment that artificially curtails what is technically possible is an example of how an overcome economic value system seeks to prolong its existence and to retain its outdated set of rules.

A game that calculates values along networked recursions would give higher value to what is most linked and liked. That does not imply that other participants would have to ‘pay’ more in order to obtain the content. As all products of intellectual labor, it would be available for free, but its producers would in some ways benefit from their success, be it by being entitled to receive more of other peoples labor, or by other types of incentives depending on which game they participate in.

That system turns the current regulation on intellectual property upside down. Instead of trying to shape the distribution of intellectual goods according to the economy of material production, one should rather transform the market of material goods along the distribution models of intellectual labor and file sharing.

## Futures

One of the main problems with all planning economies is innovation. Algorithmic economies are very different from planned economies in this respect. Their starting point lies not in a fixed regime of planned production, but in a communication about needs and desires, only that this communication is organized differently than in a monetary economy. What facilitates the drive for creation and invention is in the end a mixture of technical progress, social relations, and personal desire. As of now, the task of mediating between desires, needs, and progress is left to the market-based institution of the private company. Profit extraction and market monopolization use personal greed as the driving force for innovation.

In a post-monetary environment, a collective expression of needs may find more human ways to get translated into production. Needs for non-existing products and services will instigate research and development. With a common drive towards the non-existing the idea of social progress, that has largely vanished from our competitive and monopolized capitalist environment, could be reappropriated by the users. Their communication may feed in an informal manner into a productive environment that does not face the high barriers of market entry and subsequent monopolistic appropriation.

Without monetary constraints, games of innovation could also be less goal-driven and more experimental. As is known from a long history of media revolutions and transformations, the initially predicted purpose rarely corresponds with the final social practice that develops around a technology. Misunderstandings and inappropriate modes of use are key factors in the dissemination of communication technologies.

## Consequences

In its consequences, post-monetary economies would come very close to what Keynes envisions in his essay on the ‘Economic Possibilities for our Grandchildren’.[[13]](#footnote-14) With his prediction that the economical problem may be solved by a rise in welfare for everyone, he could not have been proven more wrong. Current capitalism has managed to install a system in which the accumulation of wealth even creates a situation of declining standards for the large majority of the population.

However, when it comes to production and supply, Keynes’ optimism could be actually right, if it were not for the lack of distribution and equality. One of the major consequences in a post-monetary world would solve the main obstacle for a more equal society. Once left without means of storing value and bound to an algorithmic distribution of transactions, the claims of a small but rich part of the population to exert power on the workforce of the rest become unsustainable.

The impossibility of today’s exaggerations in inequality will of course lead to resistance towards replacing our current well functioning system of wealth extraction. A transition may take very many different forms, other than revolutionary movements or even active resistance, which are close to impossible given the current conditions of communication and surveillance. Neither a spectacular breakdown, nor a big crisis or an increasing acceleration may lead to a change, but the slow and steady erosion of an increasingly dysfunctional monetary regime. In its niches the conditions for a different post-monetary economy are already set and growing under the shelter of and within the old structure.

Retrospectively, our current world will appear as a strange, somewhat backwards, and self-destructive place. The fury with which we exhaust our resources, produce overabundance without distributing it, and insist in making workers’ lives miserable, will be looked back at with amazement and awe.

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1. See David Graeber, *Debt: The First 5,000 Years*, New York: Melville House, 2011, pp. 21-42. [↑](#footnote-ref-2)
2. Bernard E. Harcourt, *The Illusion of Free Markets*, Cambridge: Harvard University Press, 2011, p. 241: ‘In truth, however, the “liberalization” of markets and “privatization” of industries during portions of the nineteenth and twentieth centuries merely substituted one set of regulations, of governmental forms of rule-making, with other regulatory systems that merely favored a different sort of actors’. [↑](#footnote-ref-3)
3. See Karl Polanyi, *The Great Transformation*, Boston: Beacon Press, 2001 (1944), p. 171. [↑](#footnote-ref-4)
4. Hyman Minsky, *Stabilizing an Unstable Economy*, New Haven: Yale University, 1986 p. 106: ‘What we seem to have is a system that sustains instability even as it prevents the deep depression of the past.’ [↑](#footnote-ref-5)
5. Larry Randall Wray, *Credit and State Theories of Money: The Contributions of A. Mitchell Innes*, Cheltenham: Edward Elgar, 2004, p. 79. [↑](#footnote-ref-6)
6. Narayana R. Kocherlakota, ‘Money is Memory’, *Federal Reserve Bank of Minnesota*, Research Department Staff Report 218, October 1996. [↑](#footnote-ref-7)
7. See the Aristotelian characterization of wealth acquisition in Aristotle, *Politics*, I, 10, 1257b, trans. C.D.C. Reeve, Indianapolis: Hackett, 1998, p.16. [↑](#footnote-ref-8)
8. Immanuel Kant, *Groundworks for the Metaphysics of Morals*, trans. Allan Wood, New Haven: Yale University Press, 2002, p. 52. [↑](#footnote-ref-9)
9. Antoinette Rouvroy, ‘Technology, Virtuality, and Utopia: Governmentality in an Age of Autonomic Computing’, in Mireille Hildebrandt and Antoinette Rouvroy (eds) *Law, Human Agency and Autonomic Computing: The Philosophy of Law meets the Philosophy of Technology*, Abingdon: Routledge, 2011, pp. 119-140. [↑](#footnote-ref-10)
10. Sonia Fizek,‘Why Fun Matters. In Search of Emergent Playful Experiences’, in Matthias Fuchs, Sonja Fizek, Paolo Ruffino, and Niklas Schrape (eds) *Rethinking Gamification*, Lüneburg: Meson Press, 2014, pp. 273-287. [↑](#footnote-ref-11)
11. Saskia Sassen, *Territory, Authority, Rights*. Princeton: Princeton University Press, 2006, p. 319. [↑](#footnote-ref-12)
12. Niklas Luhmann, *Wirtschaft der Gesellschaft*, Frankfurt am Main: Suhrkamp, 1988, p. 197: ‘Die Innovation besteht in der Duplikation von Knappheit. Neben die Knappheit der Güter wird eine ganz andersartige Knappheit des Geldes gesetzt. Das heißt, *Knappheit wird selbst codiert.*’[trans. from German to English by authors]. [↑](#footnote-ref-13)
13. John Maynard Keynes, ‘Economic Possibilities for our Grandchildren’, in *Essay in Persuasion*, New York: W.W. Norton 1963, pp. 358-373. [↑](#footnote-ref-14)