

# Uniting the sharing economy

## How to use big data as the money of the sharing economy

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### Abstract

We introduce a framework consisting of the three fundamental notions resources, labour and goals. Using this framework we define economy as the answer to the two questions 'who does what?' and 'who takes what?'. Both neoliberalism and the sharing economy can be understood as different sets of answers to these two questions. Now the sharing economy can be defined as the utopian answer 'I do what I can and I take what I need' by Blanc ([Blanc]). The distinction between use and exchange value as introduced by Marx ([Marx]) becomes manifest in this framework. Finally we use the distinction between coordination and trust to show how big data can be used as the money of the sharing economy.

**Keywords:** sharing economy, money, big data, DEMO, semantic web

### Introduction

As humanity's awareness rises more and more people strive to make the world a better place (see eg the archive of [Wiser]). Currently many of them operate in relative isolation. By now this movement with no name (see [Hawken]) understands that it should unite in order to offer a viable alternative to our current self-destructive behaviour. It is not yet clear though how this unification can be accomplished. Several initiatives specifically address this issue of unification, but none of these seems to have the natural power to attract the others (see eg [UE]).

### Point of departure

In this article we investigate how this unification can be accomplished. We can approach this matter from at least two angles:

- the problems we experience
- the possibilities we are aware of

By now we understand that our planet suffers from our impact and we can readily see this from the many crises that humanity faces (see eg [MDG] and [SDG] ). We contend that it is possible to reduce the causes of all these crises to one root cause. Moreover it is possible to formulate this single root cause affirmatively, viz:

Cause. We can serve each other, the world and the future much more than we do now

In other words our analysis of our crises is that people do not take all relevant concerns into account when taking decisions. We illustrate this statement using deepening poverty as an example crisis. Here the problem is that currently, as Piketty showed (see [Piketty]), poor people become poorer and rich people become richer, resulting in approximately 10.000 child casualties per day ([WHO]). Now our question is: Is this the result of the dynamics of capitalism? In other words: is this haves vs have nots division the inevitable consequence of capitalism? This question is probably most

concisely portrayed by Herman Heijermans in his play Ora et Labora (see [Heijermans]). Here a small farmer is forced to lease back his land from a large landowner due to a failed crop. This lease back construction effectively renders the farmer into a slave of the landowner. The point is that the landowner could have helped the farmer, but he didn't, resulting in the farmer becoming poorer and the landowner richer. We conclude that this widening division between poor and rich is the result of the behaviour of the landowner and not of the capitalist system. The capitalist system merely gave the landowner the tools to exploit the weakness of the farmer.

The above formulation of our analysis stems from the problems humanity currently experiences, whilst at the same time showing our opportunities. Hence both approaches yield the same point of departure.

## **Research question**

We will confine ourselves to the economic realm for our current economic realm is founded on the idea of competition implying separation (see eg [Eisenstein]). Therefore we formulate our research question as follows:

**Question.** What does an economy look like in which people serve each other, the planet and the future?

We want to stress the fact that according to our analysis the problems we face stem from our behaviour. And that the answer to our problems ultimately resides in us exhibiting other behaviour, viz that we serve each other, the planet and the future. We also contend that this other behaviour can only and will result from rising awareness (see eg [Beck]). The importance of this remark is twofold. Firstly, many initiatives seek to change our system, but according to our analysis changing our system alone will not suffice to revert our problems. Secondly this article also takes a systems approach, not because another system will revert our problems but because other behaviour will need and result in another system.

Many people believe there is not one answer to our problems but a whole set of partial solutions that together form an answer (see eg [Jonker]). At the same time the need for a utopian vision has gained appreciation (see eg [UM] and the latest works of Hans Achterhuis). Our approach is to split our question Q into two questions permitting us to cater for both perspectives:

**Question1.** What does (an economic) utopia look like?

**Question2.** How to adapt this utopia to humans?

It appears that many of the initiatives referred to earlier try and answer both questions with one and the same answer. As an example look at Timebanks: people cooperating using timebanks basically swap their labour. We interpret that in the perception of timebankers utopia consists of people sharing their labour and they adapt this utopia to humans by facilitating them to swap their labour. We want to show that there is a simple, precise and unique answer to Q1 creating space for many answers to Q2.

## **Current answers**

As mentioned in the introduction many things are happening today already. Here we will only mention three initiatives known to the author that we consider relevant in view of our question. They are: cooperacy.org. noomap.info and search & share (see guts4roses.org). Basically these tools

facilitate cooperation through sharing resources, labour and goals. These tools will gain momentum when awareness passes a tipping point.

Cooperacy is an independent research project founded on 23rd September 2014 to:

1. support a research team about cooperation theory;
2. create an online platform about cooperation in order to foster the knowledge and the diffusion of cooperative culture together with its improvement methods;
3. experiment within the platform the same methodologies through gamification (alpha).

Noomap envisions to manifest the gift economy through holonic technology along the lines of thinkers like Teilhard de Chardin.

Search & share (s&s) is an open source amalgam between google and facebook. The user enters her/his goal and s&s answers with a planning how (s)he can achieve her/his goal in the sharing economy in cooperation with others. The construction of the planning is a community effort.

## Framework and definition of economy

Inspired by Mintzberg ([Mintzberg]), we use three fundamental notions to describe economic activity:

**Notion1.** resources

all the resources of our planet, both in raw and in produced form

**Notion2.** labour

all labour available

**Notion3.** goals

we don't do what we do at random, we strive to achieve goals

All labour exercised on resources together forms a (possibly implicit) planning. Such a planning is made up of chunks of knowledge (tasks in Mintzberg's terminology). Hence we identify two derived notions:

**Notion4.** planning

**Notion5.** knowledge

Now we can define economy:

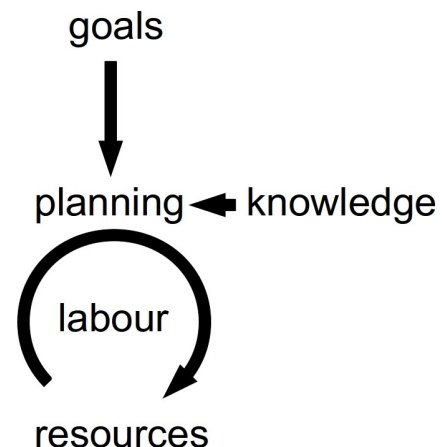
**Economy.** Economy is about the translation of goals into a planning

Usually by planning is meant what we plan to do, which might differ from what we actually will do. Here we assume that the execution straightforwardly follows the planning, ie we record the planning the way it was executed. This translation basically answers two questions:

**Economy1.** Who does what?

**Economy2.** Who takes what?

People can only take what has previously been produced, hence:



**Balance.** The answers to E1 and E2 together need to supply a balance between what is done and what is taken.

## **The I- and We-perspective**

Now what answers are given currently to these two questions E1 and E2 and what answers could or should be given from the perspective of our analysis? We can formulate two extreme positions:

### **The We-perspective**

**Perspective1.** The We-perspective, eg found in most indigeonous tribes and in healthy families around the world, answers E1 and E2 by supplying a balance for each of the questions, viz:

**We-perspective1.** I do what we need

**We-perspective2.** I take what I need



These answers supply a balance for each of the questions E1 and E2 and hence they also supply a balance for B. Balance here means that the results are worth the effort. Here the notion of worth is used in the sense of use value as introduced by Marx (Gebrauchswert, see [Marx]).

### **The I-perspective**

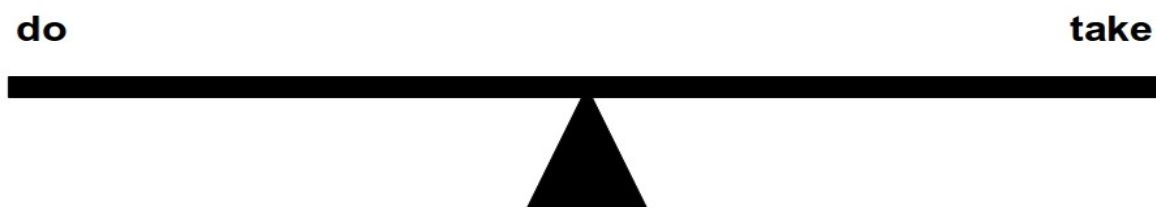
**P(erspective)2.** The I-perspective, eg found in some trade negotiations, answers E1 and E2 with:

**I-perspective1.** I do the least

**I-perspective2.** I take the most

Now these answers together don't supply a balance for B. In order to restore this balance another balance is introduced:

**I-perspectiveBalance.** quid pro quo



This is basically the balance we find in a general ledger. Again the results are worth the effort, but now worth is used in the sense of exchange value as introduced by Marx (Tauschwert).

## **Consequences**

This means effectively that the two balances WE1 and WE2 provided by the We-perspective under the I-perspective collapse into one balance IB, thus reducing use value to exchange value.

An important consequence of the 'I take the most' answer is scarcity. In its turn scarcity evokes the need for ownership resulting in competition and eventually swapping. But maybe most important is the fact that scarcity by now has taken such epidemic forms that many people actually believe that scarcity is a fact of life. Even so much that regular economic science has taken scarcity as its point of departure when defining economy as the allocation of scarce goods.

On the other hand when people take what they need the natural abundance of our planet is appreciated and hence 'I do what is needed' is equivalent to 'I do what I can'. We can see this as follows: there is scientific support for Gandhi's aphorism (see [Gandhi]) that this world has enough for everybody's needs but not for everybody's greed (eg in a report for the FAO the University of Wageningen calculated that this planet can produce food for 177 billion people, unfortunately we lack the precise reference). From this observation it follows that if everybody only takes what (s)he needs then there is enough for everybody. It also follows there is enough labour available (huge amounts of unemployment show this is already true for our current economy). From here we conclude that if everybody does what he can then together we do at least what is necessary for all of us. Hence we can reformulate the We-perspective as:

**We-perspectiveBalance1.** I do what I can

**We-perspectiveBalance2.** I take what I need

This formulation follows the aphorism of Louis Blanc ([Blanc]).

## **The Sharing Economy is the answer to Q1**

Also note that the We-perspective implements the serve-requirement following from our affirmative analysis C. Hence we conclude that the We-perspective answers question Q1. Moreover we conclude that it is unlikely that from economic theories based upon scarcity solutions to our crises arise. So now we have narrowed down question Q1 to:

**We-perspectiveQuestion1.** What does an economy look like in which all participants adhere to the We-perspective?

In order to answer this question we work from the perspective of unity as follows. We do this because unity is the ultimate consequence of caring for each other (see [Scharmer] and again [Eisenstein]). First suppose there is only one person living on this planet. How would (s)he go about organising his household? The answer is straightforward: he would set himself goals, make a plan while assessing whether the needed work is worth (use value) the result and finally execute his plan.

Now when more people inhabit this planet they can still follow the same process, the only difference is that this process of setting and assessing goals and devising and executing a plan is now distributed over all the members of the economy. Remember that because all the members of

this utopian economy only take what they need there is abundance. Hence there is no need for ownership and competition and the members share their resources, their labour and their goals. Consequently they also share their knowledge and planning.

We conclude that an economy in which all participants adhere to the We-perspective is a sharing economy in which the following are shared (N1 - N5): resources, labour, knowledge, goals and planning. In a practical implementation of this utopia the notions of ownership, competition and swapping are replaced by stewardship, cooperation and sharing respectively.

Here we also see a reason why there is no effective alternative to our current swap economy yet: by now it is possible to share resources, labour and knowledge, but goals and planning are not shareable yet. Also note that initiatives like airbnb and uber are not part of the sharing economy as defined here, they are merely new business models in the current swap economy. According to our definition couchsurfing is part of the sharing economy though.

Also note that sharing goals is usually referred to as solidarity. This theme has been acknowledged by eg Platform Duurzame en Solidaire Economie (Platform Sustainable and Solidary Economy, see [platformdse.org](http://platformdse.org)).

### **Transparency**

Finally note that the We-perspective induces transparency. When people want to cooperate, care and share they need to know how they can do that and hence they need to share their information. Again information is thus used for it's use value, whereas from the I-perspective information is considered to have exchange value, and hence should be scarce (this has proven to be a problematic prerequisite). An important side effect of free information is that information about people's behaviour permits others to see whether actions are taken from the We- or the I-perspective. Thus transparency has a mitigating effect against free riders. On this transparency basis trust can be canalised.

Now that we have concluded that the sharing economy is the answer to question Q1 'What does utopia look like?' we move on to question Q2: 'How to adapt utopia to humans?' We contend this is a matter of trust. All that the participants in a sharing economy need to know is that all their fellow participants adhere to the We-perspective just like they do and this is a matter of trust. In case a participant cannot be trusted completely the aspects in which he cannot be trusted need to be mitigated. As there are many aspects that might need mitigation many answers to question Q2 are possible. In the complete absence of trust people revert to trusting the (exchange) value of money instead, which is our current economy.

### **How to use big data as the money of the sharing economy**

Next we make a fundamental assumption. Instead of providing two integrated answers to the two questions Q1 and Q2 we contend that the answer to Q1 given above already gives rise to a viable construct. In fact we contend that a practical implementation of the We-perspective actually establishes what could be called the money of the sharing economy. We explain this as follows:

We see two aspects in our current money system: money has

**Aspect1.** (exchange) value

**Aspect2.** information

the information provided by money is the amount of value it has

These aspects facilitate two functions of money respectively:

**Function1.** (canalisation of) trust

instead of trusting each other people trust the value of money instead

**Function2.** coordination

the price information permits us to make calculations and base decisions on these calculations

It is remarkable that these two functions, fundamental for the operation of any economy, have collapsed into one single construct (money) in our current economy, just like the two balances WB1 and WB2 collapsed into one balance IB. In the wake of this collapse we use labour both for production and for the allocation of that what has been produced.

The main point is that in order to share and care we need much more information than our current money system is able to provide: I need to know what you need so that I can figure out what I can do for you. We believe that big data will eventually fill this gap. Big data is the exponentially growing amount of unstructured data that is readily becoming available, amongst which for example we find uber's data that is now freely accessible through uber's open API. So the coordination function of the sharing economy will be taken up by big data and as such big data will function as the money of the sharing economy. Trust will be canalised through the myriads of initiatives caring for a better world. In the next section we explain how to access this big data from a sharing economy perspective.

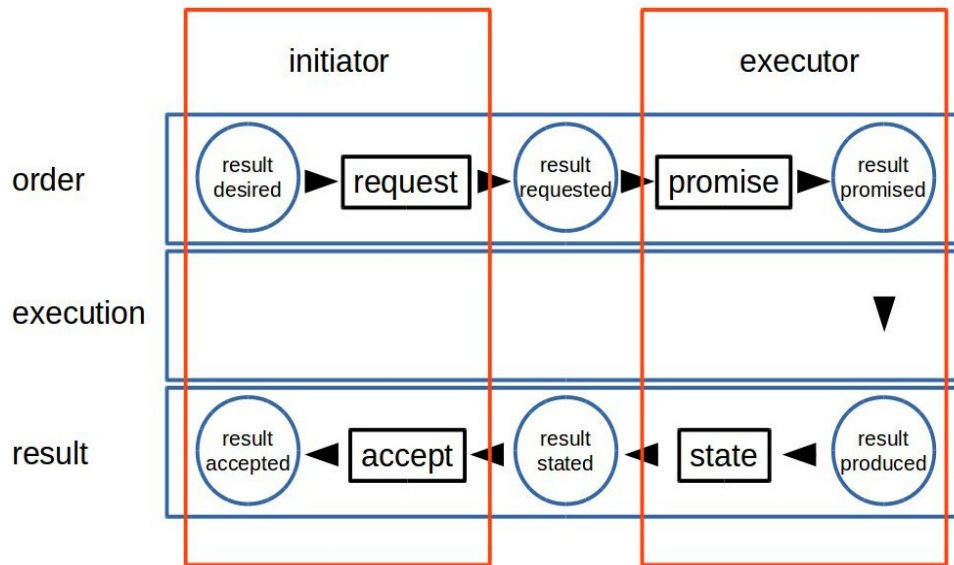
## **Practical implementation using DEMO**

So in order to revert our crises (or equivalently to materialise our possibilities) we need to care. We can care by sharing, more precisely by adhering to the We-perspective: I do what I can and I take what I need. To know what we can do and take we argued to use big data. How can this be implemented? To this end we propose two ingredients:

- DEMO
- Semantic Web

Design and Engineering Methodology of Organisations (DEMO) is a theory, methodology and visualisation technique for describing cooperation (see ee-institute.org). The idea is that all cooperation can be described from the DEMO-perspective. The, philosophically grounded, main observation of DEMO is that all cooperation can eventually be broken down into elementary interactions called DEMO-transactions. A DEMO-transaction follows the following pattern:

# demo



Now goals can be viewed as functions on the planning space, hence the goal space can be understood as the dual space to the planning space (here the notion of duality is used in it's mathematical meaning).

We envision three steps to implement the answer to Q1 and a fourth step to implement the answer to Q2:

**Step1.** Feed DEMO to the semantic web (this task is currently been taken up by a working group of Platform Linked Data Nederland, see [PLDN])

**Step2.** Feed big data to the semantic web from the DEMO-perspective

**Step3.** Disclose this DEMO-formatted big data (using tools like cooperacy, noomap and search & share)

**Step4.** Once again: the use of this money system should be embedded in answers to Q2, in trust schemes.

The first three steps much resemble the steps our current World Wide Web took: here DEMO takes the place of HTML. Feeding organisational data to the semantic web resembles the web design industry. Finally disclosing this data resembles Google.

And trust schemes resemble legal matters in current swap economy. Examples of trust schemes are timebanks, Local Exchange Trade Systems (LETS) and reputation management.

These resemblances in table format:

question	step	WWW	sharing economy
Q1	1	HTML	DEMO
	2	Web design	new industry
	3	Google	cooperacy, noomap, search & share
Q2	4	legal matters	trust schemes



Remember that in the sharing economy people collaborate instead of compete. Hence cooperacy, noomap and search & share already look into cooperating (thus bypassing personal ego's).

## Discussion

The semantic web community sees the Resource Description Framework (RDF) as the parallel to HTML, not DEMO as we proposed above. The main point is that DEMO has the chance of becoming fundamental to the next economic revolution. One way to homologise both viewpoints is to say that not HTML and RDF are parallel but SGML (the parent of HTML) and RDF are. Then it's natural to see their respective children HTML and DEMO are parallel too.

We haven't payed attention to transaction costs although in the utopian extreme these costs will drop to zero, thus furnishing the sharing economy with a tremendous competitive advantage. Note that the notion of competition is valid here because the sharing economy still is forced to compete with our current system.

Next a word on awareness. We did mention that the rising awareness of humanity is the force driving the transition to the sharing economy. But otherwise we haven't spent much thought on it's dynamics. We expect that a thorough understanding of it's dynamics can yield valuable insights. The mitigation of lacks of trust might be systematised in this way. Key is the understanding that the overall implication is:

awareness  $\Rightarrow$  behaviour  $\Rightarrow$  system

We mentioned that the We-perspective results in share and the I-perspective results in swap. Although this is a natural division the perspectives we take and the systems we use are independant: it is possible to behave from the We-perspective in our current swap system (many people do so!) and it is also possible to behave from the I-perspective in the share system. It would be interesting to fill out in detail the following 2x2-matrix:

		perspective	
		We	I
system	share	cooperacy, noomap, search & share	
	swap		economic science

One way of understanding what happens today is: in ancient times tribes lived solitary and their only viable mode of operation was a we-perspective in a sharing economy. Once tribes started to interact with each other people could shift to the I-perspective and they did so because of lack of trust towards the other tribes. Until recently this was the predominant mode of operation in eg Africa (ubuntu in Africa to many people means that they *have* to share with each other instead of *wanting* so). The first world has countered the problems inherent to this share/I-combination by developing a swapping economy. Currently our swap/I-combination has caused many problems and now we are at the verge of a next evolutionary step. The utopian combination is the original share/We-combination, but in the above line of thought there is an intermediate step, viz the swap/We-combination. Currently the term sharing economy seems to refer more and more to initiatives in this swap/We-combination like peer2peer (see p2pfoundation.net), airbnb and uber. An interesting question is where to place China.

Moreover these two dimensions, perspective and system, can be elaborated upon. There is a theory in psychology that classifies behaviour according to the stand people take wrt concerns. This classification consists of five categories: altruist, cooperative, individualist, competitive, aggressive. We expect that this theory can augment the perspective dimension. The same holds for spiral dynamics (see [Beck]) which classifies awareness.

We also remark that the altruist – aggressive dimension can itself be seen as a convolution of several dimensions, viz as (1) the stand people take towards their own concerns, (2) the stand people take towards the concerns of their fellows and there is probably even a third (independent) dimension that describes the balance between the two.

Another interesting question is whether we can augment the system dimension as well. We expect that such an augmentation will incorporate notions like property and maybe responsibility and freedom.

Finally note that the idea of a resource based economy (RBE) as put forward by the The Zeitgeist Movement is practically identical to the sharing economy. It seems to lack the underpinning presented in this article though (see [TZM]).

## **Conclusion**

We summarise our main findings:

When shifting from the We- to the I-perspective the two natural balances I do what I can and I take what I need collapse into one restore balance quid pro quo, thus reducing use value to exchange value. In its wake money is used for two fundamental economic functions, viz coordination and trust. Likewise labour is used both for production and allocation.

From the We-perspective big data has use value, whereas from the I-perspective it only has exchange value.

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