

# Understanding commons based economy, an axiomatic approach

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## Abstract

We use a simple framework consisting of the concepts resources, labour, goals and planning to study economy. We use three axioms to derive, using this framework, a description of a utopian economy, summarised by the aforism: 'I do what I can and I take what I need'. We use this utopian model to understand real life economies: the utopian model is utopian in that it presupposes complete trust, hence our statement is that all economic activity has to deal in some way with the presence or absense of trust. From this perspective an economy can share, ie it's participants can declare as commons, some or all of the 4 constituents of the framework. A link with the concept of resource based economy, as proposed by Peter Joseph, is also provided. We show how in the utopian setting transaction costs are banished thus rendering the sharing economy a sustainable alternative to the current competition model. From the framework we derive that share is the opposite of swap (in contrast to current popular understanding). We use this framework to understand how current initiatives, currently developing in relative isolation, can melt together. From this framework we also identify missing links: sharing goods and labour are becoming common practise but sharing goals and planning (ie coordination) are still lacking. Also a description of the money of the future is derived based on a distinction between information and value.

## Introduction

In order to understand what the economy in a city as a commons could look like we take a wider perspective: humanity currently faces many crises, deepening poverty and depletion of our biotope to name just two of them (see [MDG] and [SDG]). Recently the importance of a utopian model for our economy has drawn attention (see eg [UM]). Here we will use an axiomatic approach to derive such a utopian model and sketch how this utopian model can de implemented in a meaningful way.

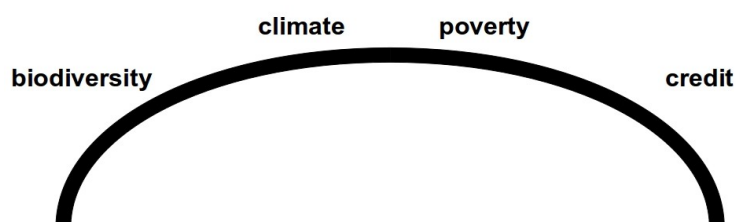
## Analysis and axiomata

Our strategy is to split the quest for an alternative to our current economy into two questions:

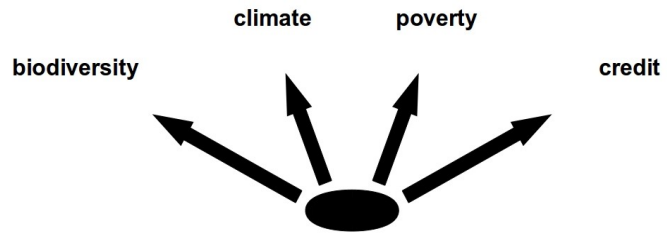
- What does this utopian model look like?
- How can we adopt this utopian model to normal human beings?

We observe that many of the solutions currently offered in fact try and answer both questions with one single answer. It is our belief that this conduct is responsible for much of the confusion we face today. Here we focus on answering the first question. In fact towards the end we will contend it is possible to actually implement the utopian model answering the first question and then leave the answer to the second question to the market.

Many solutions have been offered for our crises, usually focused on one of these crises.



We suggest that all of these crises in fact stem from one and only one root cause.



Here we offer a simple analysis that in our perception explains all of these crises. Many analyses focus on systemic causes. It is our belief that the problem eventually resides in our behaviour and that the systems we use are a consequence of our behaviour. If we want to revert our crises we should change our behaviour, not our systems. But when we change our behaviour new systems will arise that facilitate this new behaviour. Here we will describe what these new systems will look like presupposing changed behaviour. We state our analysis affirmatively, it is our first axiom (here the notion of axiom is used in the way it is used throughout mathematics: assuming the validity of the axiom we deduce it's final consequences):

**AXIOM 1:** If everybody with every decision he takes would take into account all relevant concerns there would be no crises.

The inverse formulation of this axiom is that all crises are the result of us not taking into account all relevant concerns. We illustrate this statement using deepening poverty as an example crisis. Here the problem is that currently, as Piketty showed (see [Cap21]), poor people become poorer and rich people become richer, resulting in approximately 25.000 casualties per day. 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 [OetL]). Here a small farmer is forced to lease back his land from a large landowner due to a failed crop. This lease 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.

One question readily pops up: Is it at all possible to take all relevant concerns into account? In other words: Aren't concerns ultimately conflicting? We answer this question with a famous aforism by Gandhi (see [Gandhi]): This world has enough for everybodys needs, but not for everybosies greeds. Research by the university of Wageningen [reference needed] supports this view by showing that our planet has enough capacity to nourish 177 billion people. A second question might pop up: Okay, it might be possible, but people probably don't want to take each others concerns into account. Again there is abundant scientific support [reference needed] for the aforism by Jesus (see [Jesus]): there is more happiness in giving than in receiving.

Next we look at people that do not wish to act sustainably in this way. We contend that the communist experiments in the previous century clearly indicate what we formulate in our second axiom:

**AXIOM 2:** No system is capable of making people take each others concerns into account, people have to want that themselves.

Given this axiom 2, what can we expect as to the evolution of our economic systems? We believe that several systems will coexist, in line with what we see happening today. Hence our third axiom:

**AXIOM 3:** A new economy will arise on top of the current swap economy.

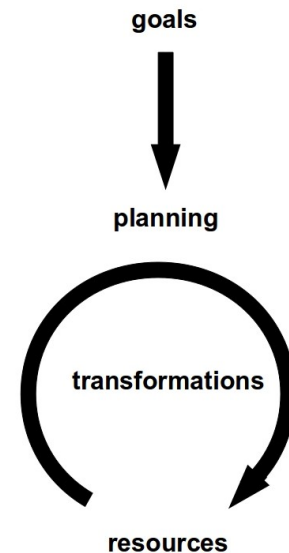
Two well known examples illustrate this point: sleeping over can nowadays be organised both in the current competition model using AirBnB (see [ABB]) and in the share economy using couchsurfing (see [CS]).

## Framework and definition of economy

In order to axiomatise (ie grasp the essence of) our behaviour we present a framework within which we define the notion of economy:

We consider 4 primitive notions:

- resources  
all the resources of our planet, in any form, raw or produced
- labour  
of all people used to transform the resources
- planning  
the course of all transformations both realised in the past and planned in the future
- goal  
ultimately people transform resources to achieve goals



Now we define economy as the study of our behaviour / the emergent algorithm that translates these goals into a planning. By the way, the percentage of goals actually achieved is an interesting candidate for Gross Global Happiness.

This algorithm basically answers two questions, viz:

- Who does what?
- Who takes what?

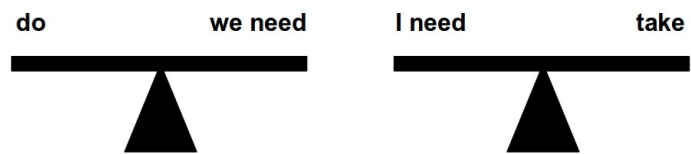
## Balances

The answers to these two questions together necessarily have to supply a balance between what is done and what is taken (I can only take a bread that has previously been produced).

We contend that the spectrum of answers to these two questions is spanned by two extreme positions, viz:

- we-perspective, in a healthy family these questions are answered as follows:
  - I do what is necessary (for us)
  - I take what I need
- I-perspective, people only taking care of themselves answer these questions as follows (as sometimes seen in negotiation):
  - I do the least
  - I take the most

Note that the answers from the we-perspective supply two balances, one for each question.



The answers from the I-perspective initially leave the coordination out of balance. In this case the necessary balance is restored by matching do and take. This is where swapping arises.



Now in a world where some or all of the economic actors answer the question 'Who takes what?' with 'I take the most' obviously scarcity arises. Hence scarcity is the result of our behaviour, it is not a fact of life. We believe current scarcity is a mindset and hence a self fulfilling prophecy. Therefore we deliberately have not defined economy as the study of the allocation of scarce goods.

Note that the we-perspective has been formulated for the first time in 1851 by Louis Blanc (see [Blanc]). Blanc's formulation is slightly different from our formulation. Blanc formulates: 'I do what I can' whereas we formulate: 'I do what is needed'. We contend that in conjunction with the statement 'I take what I need' both formulations are equivalent because together we can do more than is needed. Hence from hereon we will use Blanc's formulation 'I do what I can and I take what I need'.

Many groups have adopted this aforism one way or another (eg kibbutzim). It is interesting to see in what way exactly these groups have augmented the original aforism in order to canalise trust, thus adjusting the utopian model to human beings.

## Two utopias

Using this definition of economy and starting from these three axioms, what systems would fit these different types of behaviour?

The system fitting the I-perspective is well known to us, it is the swapping paradigm. The utopian model underlying swapping is called the free market (remember that real life markets are never free, this is why the free market is a utopian model). But what system would fit the we-perspective? In fact this system is equally well, if not better known to us. It is the even older sharing paradigm. It is the way solitary tribes used to function and (healthy) families still do today. Note that individualism means that the circle of people we share with eventually collapses to the individual.

So what does an economy look like in which every participant behaves from the we-perspective? There will be no conflicting concerns. Hence there is no need for the notion of ownership, everything will be shared, resources, labour, goals and planning (and knowledge). This form of economy is currently being promoted by Peter Joseph and his Zeitgeist Movement under the name of Resource Based Economy (see [TZM]).

One may argue that with taking out competition from our economy you also take out innovation. On the contrary, Bil & Peters argue (see [BP]) that taking all concerns into account paves the way for highly efficient innovations. In fact, research suggests [reference needed] that the psychological and social rewards present in the share economy are perfectly in line with the we-perspective.

This brings us to the second question of how we can adopt this utopian model to normal human beings. The answer to this question is easily derived from the observation that the utopian model as constituted by the aforism 'I do what I can and I taken what I need' can only function if all participants adhere to this aforism, in other words this utopian model can function if it's participants can trust each other that they adhere to the we-perspective. So in order to adopt this utopian model to normal human beings trust has to be canalised. This is what all economic activity has in common: it deals in some way with the presence or absense of trust.

Bottom line participants don't trust each other at all. One solution in this case is that participants trust the value of money instead. This is how we currently organise our economy and why trust is pivotal to our financial industry.

## **Transaction costs and externalities**

One of the most outstanding problems with our current economy (apart from the fact that it is crisis prone) is that it comes with huge amounts of transaction costs. Let us give an example: The Netherlands have as many as three cell phone networks operating in parallel. As a society The Netherlands only need one network to fulfill it's telecommunication needs. Hence a rough estimate of the transaction costs of telecommunication in The Netherlands is that they take up to 2/3 of the turnover.

We all know why The Netherlands have three of these networks: the dutch people don't trust that a single propritor would take their concerns into account. But in the utopian setting where participants share resources they would also share one cell phone network. Hence their transaction costs would drop to nill. An important consequence of this observation is that the share economy is much more efficient than our current economy can ever be. In fact in the utopian setting there is plenty of space for economic growth, even within the boundaries of our planet.

We mentioned that in our current economy concerns are not always taken into account. In the literature these are called externalities. In the share economy all goals are shared hence no externalities will arise.

## **Coordination, trust and the money of the future**

We contend that for an economy to function it needs to organise two things:

- coordination  
transformations need to be aligned in a planning
- trust  
the participants need to trust each other that they behave according to expectations

In the current swap economy both these functions are realised by two different aspects of money, viz:

- information  
prices permit us to calculate and make decisions based upon these calculations
- value  
people trust the value of money instead of each other

In the emerging share economy these functions are positioned differently, viz:

- coordination  
in order to coordinate in the share economy information is still necessary but in order to truly share and care for each other much more information is needed than just the amount of value being distributed. in the near future vast amounts of data (big data) will become available and this data can be used to coordinate in the share economy.
- trust  
this is the big challenge currently addressed by many initiatives aiming at reverting current crises. Social textures will form the basis of trust instead of value. Transparency regarding the coordination data can be pivotal in this respect.

So big data can be seen both from an I-perspective and a we-perspective

- I: big data is something you can make money with (it should be scarce in this case)
- we: big data IS the money of the share economy, it is something you can use functioning as money in the share economy

So in a full fledged share economy all four constituents of our framework are shared, ie declared as commons. What is happening in this respect right now? Resources and labour are shared by now, we have sites like peerby.com and wehelpen.nl. But as it stands goals and planning are not yet shareable. Obviously goals and planning are much harder to share from an IT-perspective. In the next paragraph we present our ideas on this. Note that sharing goals and planning permits to integrate all the diverse initiatives much like the world wide web permitted to integrate knowledge.

## **Implementation of the utopian model**

So how to share goals and planning in particular? Standards like UML and XBRL are hardly suited for this task. We propose to use DEMO (see [DEMO]) and Semantic Web technology. Currently there is an initiative within Platform Linked Data Nederland (see [PLDN]) to add DEMO to the Semantic Web. Once this is done tooling can be constructed on top of this to make big data function as the money of the share economy. Currently we are designing such a tool, called Search & Share (working title, see [G4R]) that will implement the the utopian version of the share economy. It is up to the market to embed Search & Share in the trust schemes that are being developed by the myriads of initiatives for a better world.

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The author is a mathematician alien to this field of research. Hence he is not able to link the above to current research. Any ideas concerning references are greatly welcomed.

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