Abstract: Institutions as a network logic, its exclusion and its evolve

The precise mechanism of institutions (i.e., systems of established social rules) is *the network logic.* The network that includes *some* "human and non-human actors" while excluding others. Economic theories, while being subject of institutions as well as establishing social rules, play an important role in the network logic of institutions. Repeated patterns in complex systems (e.g., institutions) reproduce *certain* human behaviour. Examining recognisable patterns in economic theories-as them being part of the network logic of institutions-could contribute to recognition of the excluded ones in the socio-cultural sphere and to fairer redistribution of the sources. This paper aims (i) to demonstrate how recent concerns on ecological research-as ecology being non-human actor here-used to systematically exclude in theories by economists while analysing the interaction between human and non-human actors (ii) to decompose development of the *ecology recognition* in economic theories from persistent exclusion to evolvement and new emerges. To do this, the author will first look at philosophical questions addressing issues of recognition in complexities. Later, the policy-scientific approach, proposed by Leeuw (2003), will be used to examine economic theories. The approach provides a framework to develop a theory-driven evaluation where expected social and behavioural mechanism can be evaluated within the lights of the arguments put forward by the economists. Cognition's natural limitation to grasp complexities or ignorance (i) the tendency of lacking complete recognition (human or non-human actors), and as a result (ii) the tendency of lacking fair distribution will be concluded.

Science, Evaluation and Policy

This brief-note will investigate difference dimensions (i.e. science, evaluation, policy) that concerns with ecological economy. It is important to understand not only their different level of approaching what nature means while they are interrelated, but also the different roles[1] they take to deal with any environmental problem.

1) Science

Agreeing on the historical summary of philosophy of the social sciences made by Baert and Dominguez (2008), over the last three decades the traditional notion of philosophy of the social science faced a new challenge within its concern of the very notion of what social itself meant. According to them, the notion of the social took its particular division of labour which put forward in the end of the nineteenth century whereas the natural sciences were assigned to the duty of nature while the social science were supposed to study social. This dualism founded its origin in Descartes' mechanistic world view that body and mind is separated entities. The first criticism came from Science and Technology Studies (STS) researchers that the artificial distinction between the 'social' and the 'natural' was difficult to maintain (Callon 1986a; 1986b; Latour 1983). Yet, this perspective was not new to anyone who is familiar to some philosophy, and relevant parts of the history of ideas. Marcus Aurelius, Epictetus (in general stoic philosophy) and Spinoza are only some names to mention who already see the oneness of human beings and/in nature. Marx was also already including 'nature' in his analysis of valorisation process although he did not give attention to nature part in similar scale that he gave to social part that is labour. This is understandable considering his moment in history. We were not aware of nature's extend as we are aware of today. In this light, for instance, Farley Daly's works can be seen as an attempt to describe valorisation process of nature in *science of economics* (i.e. heterodox) within the academic framework while materialistic approach

[1] The mentioned different roles are not replaceable with one for the other or in hierarchical order. They have their necessary place in society which should be seen as part of the pluralistic framework.

of sustainable development should be seen as *political economy* (orthodox)[2], which is another attempt to purchase surplus-value based in nature.

2) Evaluation

The recent concerns on ecological research-as ecology being non-human actor, analyses of the interaction between human and non-human actors-showed that nature used to systematically exclude in theories by economists.

Above logic leads for need of one specific form of research that is evaluation research to see whatever our current institutions are compatible within the scientific knowledge we reached, whatever is there any gap between the science and our established social rules. Therefore, evaluation is the systematic assessment of the worth or merit of some object. It is a methodological tool that closely related to the science but distinguish itself as it takes place within a political, technological and organisational context. Evaluation becoming administrative practices on many levels in different institutions. Evaluations could based on variety of ways to access knowledge or belief, the ideal and accountable way is through science-driven knowledge. It can be seen as practicing of science that addresses non-academic audience and actively engages with society from policy level.

Emergy Synthesis is one of the evaluation theory[3] become is a procedure to investigate the impact assessment on environmental performance of human-dominated products and processes in all direct and indirect inputs (Raugei et. al., YEAR). This procedure allows to decompose development of the *ecology recognition* in economic theories from persistent exclusion to evolvement and new emerges. The concept of emergy that they put forward presents the 'memory' of the total exergy that required to make a product. This memory describes the broad valorisation process of nature. It capture the overall impact of a product or service along its lifetime and supply chain. The procedure provides a framework to develop a theory-driven evaluation where policy-makers' argument on the use of natural resources can be evaluated within the lights of a scientific stand point.

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[2] Although author would argue that all sciences, in certain extend, are political, historically the science of economics were extreme example of political influence in science as it put forward clearly by Marx's work. The author thinks that within the evolution of human beings and therefore evolution of science, the one of the contribution of science of economics to society should be about greater understanding to go beyond political limitations for better holistic view of the universe.

[3] It is author's idea that to read emergy synthesis as an example of evaluation theory. Though it should be further investigated their similarities and differences.

3) Policy (applied science)

In the world where cost-benefits analysis of any policy is limited to money within deductive reasoning framework and money is the language of economics, creating tool that includes detailed valorisation process of nature (scientific) and labour in the part of the cost is an attempt to bring the role of the money as medium of exchange for distribution of justice. Base on the scientific foundations, putting price on the use of natural resources taken from market prices to all discovered 'memory' of the total exergy through evaluation methods creates power to argue wider concept of cost and, therefore; certain level of protection from exploitation of nature. Although broadening up the cost part in the analysis never can be inclusive enough (acc. to the chaos theory, we are not aware of the every little affects that creates memory of product or human being, cognition's current natural limitation to grasp complexities or ignorance create the tendency of lacking complete recognition), it can be helpful to create basic limitation to growth for sustaining the planet for living. Therefore, the ecological economics' attempt to calculate cost of using natural resources within the light of emergy synthesis should be regarded as tool for protection of nature in valid world's language of the moment. Their attempt can be even example for extended cost calculation for valorisation of labour process instead of limiting labour value to the working hours. However, the author sees these attempt rather policy-oriented inquiry rather than scientific one[4].

[4] Although putting price to each and every realised valorisation process of nature is rather attempt for concern of detailed policy-making or endless effort for exact calculation for a value, the discovery and understanding of every possible affects on memory of nature is subject of science and evolution of our consciousness.

Institutions as a network logic, its exclusion and its evolve

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Science

- Science vs. Institutions (+Science as Institution)
- Network Logic in Science (ANT)
  - Open system
  - Interdisciplinary (string theory, climate studies)
  - Macro = Micro
- Repeated Patterns as Social Construction

Evaluation

- Network Society vs. ANT
- Economy —> ecology recognition
- Network Logic in Institutions (e.g., utilitarian values of self-interest in economic theories)
- Closed system
- Exclusion to Evolve and New Emerges (Paradigm)

Policy

- Applied Practice
  - Issue of Recognition
  - Cognition’s natural limitation to grasp complexities
  - Ignorance