

3. PhD Progress Report – August 2019

Official PhD topic: The place of ecology in undergraduate economics education; the case in three European countries (La place de l'écologie dans l'enseignement de premier cycle en Science Economique : le cas de trois pays européens) - *Ecole Doctorale, Università di Corsica*

In my own words:

(a) Why does the mainstream theory of economics ignore ecology?

(b) What is the place of ecology in the undergraduate level education in economics, in three European countries?

Quick Overview: What happened since June (2019)?

1. My first poster presentation in Corte (4. June 2019)
2. Presentation at WWF workshop in Bern-Switzerland: Rethinking Economics
3. My new blog articles as raw material (drafts) for my PhD thesis: Ecosystem Mutilation & Patching Business, What is Industrial Paradigm, What is Innovation
4. Literature and other resources: The Value of Everything by Mariana Mazzucato (economist), Understanding the Past to See the Future by Clive L. Spash (economist), History of Economic Thought by Hunt & Lautzenheiser (esp. review of valuation theories, externalities, Veblen and Hobson, economic imperialism), and many other resources
5. Research: Industrial versus ecological paradigm in agriculture, the fallacy of Green Revolution in mainstream economics textbooks, GDP as a monument of industrial paradigm
6. Research: The development of mainstream economics theory as a product of cultural evolution; much influenced by the industrial paradigm and business interests (Veblen, Spash, Joe Brewer and Kate Raworth)
7. Research: Value extraction in the disguise of value creation (Mazzucato & Fioramonti); parasitic earnings in the disguise of mutualism, economic imperialism (Veblen, Hobson, Luxemburg, Wallerstein, Brand & Wissen)
8. I didn't do much for the part (b) of my PhD project since June. At the WWF workshop I have heard that there should be a research (sustainability in economics education) for the universities in UK, like the EconPLUS for German universities. I plan to find and study this research report for UK as the next step within the following months.

My first poster presentation in Corte (4. June 2019)

My PhD poster in A0 pdf format can be downloaded [here](#).

During the week of the poster presentation, I had the opportunity to talk to my PhD directors Romani and Prunetti. We also discussed in a joint meeting the possibility of a multi-disciplinary and open PhD jury.

In my poster I presented three primary reasons, that I identified so far, for the **minimal place of ecology in mainstream economics**:

1. [Industrial paradigm](#) as the mainstream ideology; humancentric, mechanistic, reductionist, imperial (exploitative) and money oriented worldview
2. Short-term and money oriented economic interests: Big corporations have the power to influence the whole education system including the education of economics, and

corporations like easy profits.

3. Career path dependence: Ecological literacy has no priority for the current structure of competitive education, academy and job market.

Considering **externalities** erroneously as exceptional and rare occurrences (Hunt & Lautzenheiser 2011) is just another expected consequence of the industrial paradigm, which ignores complex social and ecological interactions through mechanistic reductionism. There seems to be a close causal link between (a) specialization, compartmentalization and separation in (industrial) education, and (b) mental blindness to complex social and ecological inter-relationships (Schumacher, Reardon, Shiva, Kimmerer).

Each discipline in modern (industrial) science has its virtual boundary, and the complex inter-relationships (i.e. external influences and constraints) between these disciplines are often overlooked, because there are not many people like Jared Diamond, Schumacher, Spash or Vandana Shiva, who can understand multiple disciplines.

Mathematics warns us too, against the dangers of ignoring or underestimating complex inter-relationships. Devising economic policies for the ultimate goal (f.e. sustainable well-being) is a kind of constrained holistic (multi-dimensional) **optimization** problem, like biological or cultural evolution. If one overlooks some important factors (inputs), relationships or constraints in an optimization problem, one will be doomed to failure. In some cases, non action (i.e. no interference) is even better than faulty optimization (i.e. sub-optimization).

The **cultural evolution of the industrial paradigm** is another issue, which I need to investigate further. Physics or Newton envy in science, that is, the use of over-reductionism and premature mathematization to create a respectable branch of science like physics, was probably one of the primary factors (Schumacher, Spash, Norgaard, Greer, Shiva).

There seems to be other ideological factors like the imperialistic and patriarchal (masculine) domination mentality; domination over nature and domination over other, allegedly primitive and backward societies... (f.e. *The Masculine Birth of Time* by Francis Bacon). Domination mentality is closely related with the undervaluation and demonization of other societies, cultures and nature.

In 1950s, DDT based pesticides were promoted with propaganda like “DDT is the symbol of civilization and progress”, and “DDT is the *symbol of mankind's triumph in its war against nature*” (*Silent Spring* by Rachel Carson). Such propaganda gives us an idea about the mainstream mindset of the era: Domination (over nature), demonization (of nature) and ecological ignorance...

Rachel Carson: “How could intelligent beings seek to control a few unwanted species by a method that contaminated the entire environment and brought the disease and death even to their own kind?”

My answer to Carson's rhetorical question (“How could...”) would be: Economic imperialism, short-termism and ecological ignorance, that is, ideological blindness to the value of nature.

Economic imperialism may deploy both hard power (military force) and **soft power** (i.e. ideological manipulation and deception; value extraction in the cloak of value creation, parasitism in the cloak of mutualism). Note that, both kind of powers, and especially the soft power (i.e. deception

mechanisms) can be a product of complex cultural evolution, rather than 100% deliberate planning.

Note: Rachel Carson was one of the leading figures of the environmentalist reawakening in 1960s, along with others like Paul Ehrlich, Boulding, Mishan, Holdren and Schumacher (Spash 2011).

Another factor of **ecological ignorance** could be, as Thorstein Veblen claimed, mainstream economics' reflecting the limited realm of the business world; money, market, companies, human-made goods & services, government, and that's all.

For a more elaborate definition of industrial paradigm you may see my blog article: [What is industrial paradigm?](#)

Cognitive scientist Joe Brewer suggests another interesting reason for the exclusion of ecology from mainstream economics. In one of his presentations with the economist Kate Raworth (author of Doughnut Economics) he asks following central question (Brewer J 2019, [YouTube video](#)):

“If economics tried to be scientific, why didn't it update its theories with biology and ecology?”

He explains this with the influence of [Mont Pelerin Society](#) founded in Switzerland in 1947, by economists like Hayek and Friedman, and a handful of wealthy business people. The agenda of this society would be spreading the ideology of **neoliberalism** (free market ideology) through the formal education of mainstream (neoclassical) economics at certain universities, along with other channels like business schools and finance departments.

Wealthy investors and other business interests supported neoliberalism, because it enabled them to pursue their extractive businesses without inconvenient obstacles like stringent government regulations. Other kinds judiciary and democratic restrictions like the institution of Environmental Impact Analysis, or socially and environmentally concerned NGOs should also be crippled down to remove potential obstacles to easy profits (Brewer J, 2016).

Accordingly, the public awareness and knowledge of ecology (in relation with sustainable well-being) should be kept to minimum, because it makes the huge costs of social and environmental externalities caused by extractive businesses too obvious.

I don't know yet, how big was the influence of Mont Pelerin Society, first on the global economic system, and second on the education of mainstream economics. But I think, his claims should be taken seriously and further investigated, considering how well this society was organized globally. I plan to start my research into this matter by reading the book [Masters of the Universe](#) by Daniel Stedman Jones, as Brewer has suggested in his presentation (Brewer J, 2016).

WWF Workshop: Rethinking Economics

I was invited to a WWF workshop for Rethinking Economics, in Bern-Switzerland on the 4. of July 2019, to talk about my PhD project (→ [video introduction](#)).

You can [download](#) my presentation slides (pdf) explaining:

- 1) Why is the teaching of mainstream economics in a serious crisis?
- 2) Why does mainstream economics ignore ecology?
- 3) Why should economics include ecology?

The movement of [Rethinking Economics](#) was initiated by some UK universities; meanwhile it became quite an international affair. It aims a **pluralist** and critical teaching of economics, covering multiple schools of economics like Post-Keynesian, Marxist, Austrian, Institutional, Complexity, Ecological and son on; not only the mainstream or neoclassical one.

You may find my comments about Rethinking Economics [here](#) (tweet chain):

I think, pluralism (multiple schools of economics) is necessary, but not enough. To be really revolutionary in the positive sense, an initiative like Rethinking Economics needs a holistic and multidisciplinary view, including fields like evolutionary and social anthropology, biology, ecology, sociology and psychology.

Accordingly, meetings of Rethinking Economics should be a multi-disciplinary affair, including people from all these different fields and occupations. It shouldn't be an affair of the exclusive club of economists, because most economists are not totally devoid of bias (ideology, one-sided education, habits, career interests, path dependence etc.).

The response of Rethinking Economics (on twitter): “Interdisciplinary is certainly a part of our platform and is implicit in pluralism. However, you may be right that we don't emphasize it as often”

After the workshop there was an interesting discussion about pluralist education. The main points of these discussion were:

- Internalization of externalities (like the much wasteful and polluting airplane transport) through taxes to give correct incentives to consumers
- Conflicts of interests; with or without pluralist education, all economy students must find a job, but pluralist education has no priority in today's job market.
- Teaching multiple schools of economics is necessary, but not enough; a broader, multi-disciplinary education is required.

I published a [YouTube video in Turkish](#), explaining the workshop and my presentation in Bern. I will soon publish a similar video in English to reach a broader audience.

There is a booklet named [Rethinking Economics](#) published by the Rethinking Economics initiative. It includes a short summary of each economic school of thought from Post-Keynesian to Ecological. Interestingly, it excludes revolutionary economic thinkers like Gandhi and E.F. Schumacher, who pointed to the value of nature as the primary producer, and criticized the dominant worldview of industrial paradigm that undervalued nature. Veblen's ideas are handled within the topic of institutional economics. I obtained this booklet, but couldn't read it yet completely (planned).

A professor of economics at the University of Zurich told me that they already started to teach materials from this booklet in their introductory lectures.

My New Blog Articles

I wrote four new blog articles since May 2019, that are closely related with my PhD project. These articles can be seen as raw material (i.e. drafts) for my PhD thesis. I will use some of these ideas in my PhD thesis, after I have reviewed them under the light of new information and critique.

1) [Ecosystem Mutilation & Patching Business](#)

This article explains, how certain companies profit from ecosystem destruction (i.e. destruction of social and biological ecosystems) that create new needs and dependencies.

“Destroy (mutilate) self-sufficient, healthy and sustainable ecosystems in order to create new needs and necessities (hence new profit and monopolization opportunities) so that even clean water or air should become a necessity that must be paid for.”

For the initial analysis, it doesn't matter much, whether the businesses intentionally or unintentionally destroy ecosystems. Or, whether they are aware of the fact that they are profiting from ecosystem destruction. My analysis is about describing the behavior of institutions, whatever their conscious motivations or intentions are (see organic and cultural intelligence below).

2) [Aquariums and Ecosystem Mutilation Business](#)

This article explains, how I became aware of the ecosystem mutilation business already as an 11-year-old boy. It also explains, why profit seeking businesses tend to prefer unsustainable monocultures with demanding fish species, over sustainable polycultures with robust fish.

“Because it destroys the solidarity and balance between different species, transforming a sustainable polyculture into an unsustainable monoculture is one of the most common methods of ecosystem mutilation. Planned or not, deliberately or not...”

Note that industrial paradigm prefers monoculture & uniformity over policulture & diversity. In other words, the inherently short-termist and monopolistic mechanisms for concentrating military and economic power destroy diversity, self-sufficiency and sustainability.

3) [What is Industrial Paradigm?](#)

This article explains the industrial paradigm, that is, human-centered, mechanistic and reductionist worldview, which dominates mainstream economics.

“For the industrial paradigm, nature is not an active producer; nature is only a passive raw material resource, a passive infrastructure of life, and a passive dumping ground with a certain capacity for endurance and recycling. In other words, nature is not a living ecosystem; it is only a dead, non-living resource without inherent consciousness or intelligence.”

4) [What is innovation?](#)

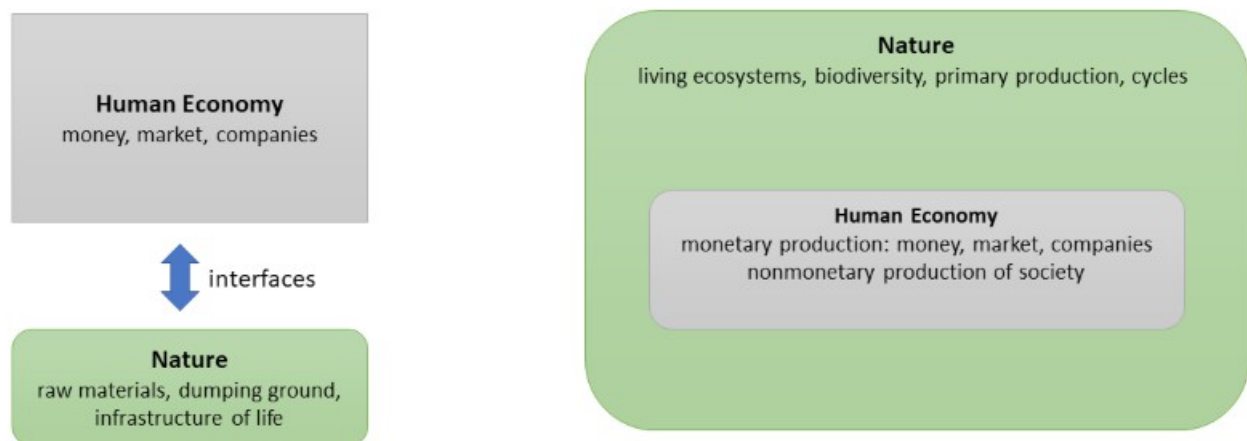
What is innovation, first from the narrow perspective of industrial paradigm, then from the broad perspective of ecological paradigm...

“So, instead of looking for fundamental solutions that would solve a problem permanently, industrial paradigm seeks for superficial and short-term solutions, like a doctor who try to heal symptoms rather than underlying causes of a disease.”

Industrial Paradigm, Blasphemers and Imperialism

Even many allegedly critical and heterodox economists like Mariana Mazzucato seem to think within the limited realm of industrial paradigm, which is actually the realm of business world (companies, markets, money, industry, state) that undervalues nature as the *primary innovator* (biological & cultural evolution) and *primary producer* (non-monetary or non-market production of nature and societies).

Industrial versus Ecological Paradigm



There are supportive arguments from broad-viewed (multi-disciplinary) economic thinkers like Veblen, Gandhi, Schumacher, Greer, Noorgard, Spash and Shiva.

For example, Veblen said, mainstream (neoclassical) economics is a kind of business ideology (Hunt & Lautzenheiser 2011). The ecological economist Spash wrote, even most of the allegedly critical economists were no **blasphemers** who dare to question the most fundamental assumptions of the mainstream economics, like the utilitarian equilibrium model (Spash CL 2011).

Clive L. Spash wrote (Spash CL 2011):

“They (i.e. really critical thinkers Herman Daly, Kapp, Georgescu-Roegen) and like are non-brethren and their *persecution* is a legitimate act in defense of the orthodoxy. Economists who are lauded as part of the establishment (e.g., Nobel prize winners) often have some heretical ideas, but they are not *blasphemers* because they still believe in the fundamental core ideas of the orthodoxy, they protect and defend that core and hold back from pursuing the logic of their ideas to revolutionary ends.”

As an hypothesis I claim that, “the core ideas of orthodoxy” as mentioned by Spash are closely related with the industrial paradigm, which in turn, is closely related with ecological ignorance (i.e. undervaluing nature).

Apropos “**persecution**” of blasphemers as mentioned by Spash:

In their book *History of Economic Thought* (page 388 in 3rd edition), Hunt & Lautzenheiser give us

some clues about the treatment of blaspheming economists:

“If neoclassical economists are asked about vested interests, corruption (which is after all, simply another aspect of the functioning of market), economic and political power, or class control of government processes, they reply with **disdain** that these issues are the concern of sociologists and political scientists (although one searches in vain for such concerns in most conservative, orthodox social science).”

Disdain, contempt, disregard, disesteem as standard tools of social mobbing, exclusion and isolation. Note that these **mobbing tools** need not always be used with deliberate purposes. In most cases, they might be subconscious reactions (f.e. fear of uncertainty).

Hunt & Lautzenheiser also tell us that economic imperialism, as conceptualized by Veblen, Hobson, Luxemburg or Wallensteiner, was considered an improper subject for the mainstream; not respectable enough for a highly esteemed scientific(!) community (Hunt & Lautzenheiser 2011).

This logic of thought is interesting; if an issue was perceived as inconvenient and disturbing, it was often stamped as improper, and the existence of it was ignored; simply assumed as non existent.

One of the most common tactics of discrediting and dismissing inconvenient ideas is rendering them as “not scientific enough”, as if all the theories of mainstream economics are based on 100% strong evidence and logic. A new theory, which might replace an old theory, need not be perfect in the scientific sense; it only needs to be better than the older one.

Another common tactic to dismiss inconvenient ideas is, searching for mistakes in details, forms & formalities (i.e. diverting the attention from content and main principles to details and forms) to discredit main ideas. Note that, all these tactics are used by creationists and neoconservatives to discredit the new synthesis of Darwin's evolution theory (Scott 2004, tactics of pseudoscience).

Apropos **economic imperialism**:

Lorenzo Fioramonti, the author of Wellbeing Economy says: “According to a research by United Nations & World Bank, 20 largest industry sectors of the world including energy, mining, transport and food production (industrial agriculture) cause much more damage than their total profits.” (Fioramonti 2017, [YouTube video at 4:20](#))

The question is then, why do such industries exist at all? For what purpose? Certainly not for the good of all humanity; rather for extraction and transfer of wealth (i.e. concentration of military and economic power), at the very high cost of hardly reversible ecosystem destruction.

Undervaluation of Government, Undervaluation of Nature

Economist [Mariana Mazzucato](#) explains the prejudices and motivations behind the systematic undervaluation of government, since the era of mercantilism (Mazzucato 2018). She tells like Veblen, that production and innovation is a social process, in which the government has a big share, with its public services like education, and risky investments in many potentially profitable as well as nonprofitable developments.

According to Mazzucato, the ideological undervaluation of government is one of the primary causes

of the undeserved (parasitic) earnings of many corporations and investment funds.

For example, many private investors observe the developments that were achieved by government efforts closely, and invest in only the most promising ones (like internet or touchscreen technology), then find various strategies (like private patents) to monopolize on the know-how which was in principle developed first by some public institutions (Mazzucato 2018).

Thus, socialization of efforts, privatization of profits... Mazzucato's words for such cases: "Value extraction in the disguise of value creation"

This line of thought (by Mazzucato) can be carried further, by asking "why are the valuable services and contributions of the government systematically ignored?"

Because, as Mazzucato explains in detail, the services of the government are undervalued. Since the era of mercantilism, there has been an **ideological blindness** to the value of government among mainstream economic thinkers, also including some broad-viewed heterodox thinkers like Quesnay (Mazzucato 2018).

Considering the nature of humans (i.e. psychology, sociology), I think, following causal relationship can be generalized for many aspects of life:

Ideological blindness to the value of X → the services of X are ignored, along with the nature and qualities of X

Ideological blindness to the value of X: Prejudice, disrespect, contempt, disdain; designations like lower race or culture, inhuman, wild, primitive, backward, undeveloped, chaotic (i.e. without an intrinsic order and intelligence)...

There are many examples from the history that support this causal relationship. I plan to mention several examples from the history that support this claim (i.e. the validity of the causal relationship) in my PhD thesis. One of them is about the highly refined, self-sufficient and sustainable polycultural agriculture of the indigenous people of North America.

Because most of the European colonizers looked down on indigenous people, they were not interested in their achievements or lifestyle. So they thought, the polycultural gardens they found in North America were just unmaintained gardens or broken forests, and destroyed them all, without even trying to understand their value (Hemenway 2009). The Europeans were so prejudiced that, they attributed zero intelligence to the indigenous people (cultural intelligence of the society), and zero intelligence to the nature (organic intelligence of ecosystems or organisms).

Concepts like **organic intelligence** (as an outcome of biological evolution) and cultural intelligence (as an outcome of cultural evolution, including language, traditions and institutions) will be quite central for my PhD thesis.

Organic intelligence: For example, the extremely complex blood circulation in a living organism, which varies properly with varying environmental conditions... We don't know exactly how the blood circulation is regulated, which part of the body takes which role for this regulation etc., but we know that, the organism has all the (organic) intelligence to accomplish such a complex task, among many others.

The same can be said for many complex cycles (water, oxygen, CO₂, nitrogen, calcium etc.) and complex inter-relationships (among different individuals and species) within an ecosystem, that are necessary for the permanency of the ecosystem. Even if it is a distributed and hardly decipherable kind of intelligence, we can safely say that a sustainable (i.e. more or less established) ecosystem has all the required (organic) intelligence to accomplish all these complex cycles and interactions

that are necessary for a dynamic, continuously evolving balance and harmony.

Cultural intelligence, that is, intrinsic intelligence in institutions, traditions, language, habits etc. of a society is sometimes very similar to organic intelligence. Even if one often doesn't know exactly, why an institution like a party behaves this or that way (i.e. deliberate planned intent, narrow interests, power relationships, sheer ignorance or unawareness etc.), one can still describe its general behavioral pattern. For example, we can know in advance which parties would protect nature more than others.

In biology, especially in the context of evolution, the behavior is generally described as if it were a conscious and deliberate behavior with a certain purpose in mind.

For example, “the male lion kills the cubs of the previous alpha male in order to make the female lions receptive again”. This is but only a convention of language; every decent biologist knows that we don't exactly know what male lion thinks or feels as he kills the cubs of another male. The phrase “ in order to make the female lions receptive again” is just an evolutionary explanation of the behavior; a theory, which might prove wrong in future.

I generally use the same **style of language** for describing the behavior of societies and institutions. For example, when I write that powerful corporations and business groups (like Mont Pelerin Society, or World Bank) have significant influence on the development of mainstream economics theory, this need not always mean deliberate malicious intent for their narrow interests (i.e. conspiracy theory). In many cases, they might be unaware of their indirect influence. Or in many cases, they might be simply defending their arguments (maybe stronger than others due to some institutional advantages), sincerely believing that their suggestions are for the good of the whole humanity.

Coming back to ideological blindness to value...

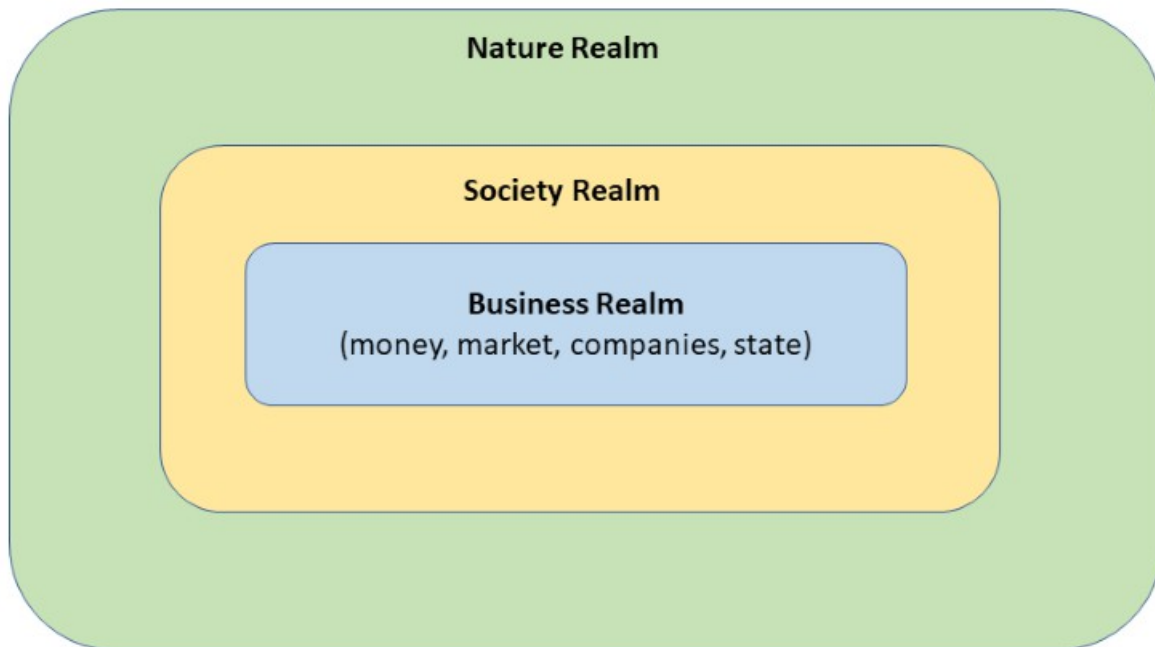
I claim with some evidence from the history, and supportive arguments of thinkers like Gandhi, Schumacher (economist), Kimmerer (biologist), Noorgard (economist), Spash (economist), Suzuki (biologist and environmentalist) and Shiva (physicist, agronomist and environmentalist) that industrial paradigm (human-centered, mechanistic and reductionist worldview) fosters an ideological blindness to the value and services of nature. I will present my case with concrete examples from the history, and selected citations from the thinkers.

The logical consequence of this ideological blindness to nature is, ignoring its services along with its intrinsic (organic) intelligence.

Mazzucato's argument about the value of government:

The systematic undervaluation of government's services is the natural consequence of ideological blindness to the value of government. That is, assuming that government is not really a productive institution; just a regulator and facilitator, which may become quite corrupt and nasty if it gets too much respect. As a consequence of this undervaluation, complex social interactions and externalities are ignored along with government services.

Why is Mazzucato different from many other mainstream economists? Because, she tries to think broader, thinking beyond the **boundaries** of the business realm (i.e. industrial paradigm). But not broad enough, because mentally she seems to stay within the boundaries of the society realm. Consequently, she seems to ignore (or undervalue) the primary production of nature (ecosystem services), along with the environmental interactions that are so important for sustainable well-being.



For example, she talks about **healthcare** as if it were purely a human-made industrial service (drugs, medicines, treatments etc.) that should be provided by the state and private companies. This industrial notion of healthcare is totally disconnected from the preventive health services of nature, like clean environment, clean water and air, healthy agriculture and food. Consequently, she tends to think, every new cancer drug is a valuable innovation, without making an *historical and evolutionary analysis* about the causes of cancer that created the need for new drugs (see my article, [what is innovation?](#))

I think like Splash, Schumacher and Norgaard, that economists should be able to see the complete picture, including the realm of nature. That's why Splash talks about “social ecological economics” instead of “social economics”. It must be critically questioned, why economics was defined as a *social science*, instead of a multi-disciplinary (holistic) science. In my opinion, evolutionary social & biological anthropology should be at the center of economics education.

GDP and the Dichotomy of Industrial vs. Ecological Agriculture

In complete analogy with Mazzucato's argument:

The systematic undervaluation of nature's services (i.e. ecosystem services) is the natural consequence of ideological blindness to the value of nature. Complex ecological relationships and externalities are ignored along with nature's services.

This kind of **ecological ignorance** is most prevalent and obvious in industrial agriculture based on monocultures, GMOs and agro-chemicals (chemical pesticides and fertilizers). That's why, the dichotomy of industrial versus ecological agriculture is destined to be one of the central issues in

my PhD thesis.

Furthermore, I claim that, non-monetary production of societies are ignored too (i.e. undervalued), along with the non-monetary services of nature.

This undervaluation becomes quite obvious in the **concept of GDP** (Gross Domestic Product) which, in principle, measures total economic production solely with money flow (i.e. ignoring not only the services of nature, but also the non-monetary services of societies). In that sense, industrial paradigm is very prevalent in the concept of GDP and economic growth ([Raworth 2018](#)).



After reading several books about the illusion of GDP (i.e. measuring production with money flow only, and the implicit assumption of limitless growth) I am convinced that the history of GDP will provide lots of interesting clues for both industrial paradigm and ecological ignorance. In her book *Doughnut Economics*, Kate Raworth eloquently explains the influence of mechanistic and reductionist worldview on the conceptual development of GDP.

For many mainstream economists including Mazzucato, GDP growth still seems to be one of the primary goals of economic policies, provided that GDP is measured correctly.

At the same time, even mainstream economists accept that **well-being** (*) of the society must be the ultimate goal of economic policies. So, in their minds, they somehow equate well-being to GDP growth. Or at least, they believe that well-being must have a high correlation with GDP growth. Where does this belief come from (**)?

(*I would reformulate the ultimate goal of economic policies as “sustainable well-being”; that is, well-being for today's and future's generations)

(**My [tweet chain](#) explaining why economic production cannot be measured with money flow)

Mazzucato criticizes the contemporary method of national accounting in USA, because it tends to undervalue government, and overvalue financial services. She doesn't but talk about the value of nature (ecosystem services). How is it possible, that even a critical minded economist like Mazzucato forgets to talk about nature's innovations and production?

Because, industrial paradigm with its slogans like economic development and technological progress has become the mainstream and dominant worldview; ecological ignorance is everywhere: in education, in science, in economy, in technology, in agriculture, in food, in lifestyle...

But so far, I have identified two subject matters in which ecological ignorance is most prevalent and obvious (i.e. not hidden behind a smokescreen of complexity): GDP growth, and the dichotomy of industrial versus ecological agriculture...

Vandana Shiva says: “Chemical fertilizer business is based on a science of ignorance (i.e. pseudo-science). They have no idea about the ecosystem of soil, about natural cycles that take place within the soil.”

For example, chemical **nitrogen fertilizers** are often sold as a solution to nitrogen deficiency in plants. But there is lots of scientific evidence, showing that chemical fertilizers destroy the life in soil, and cause groundwater pollution. There are much better and sustainable solutions to nitrogen deficiency like mixed or alternating cropping with plants like legumes, that enrich soil with nitrogen compounds.

The *dichotomy of industrial versus ecological agriculture* is full of such examples, showing that natural solutions are in most cases healthier and more sustainable. The problem is, there is not much money in natural and sustainable solutions (→ [Ecosystem Mutilation & Patching Business](#)).

So, widespread **ecological literacy** has at least two drawbacks for extractive corporations:

1. It makes the costs of environmental externalities too obvious
2. It makes people aware of the natural solutions; but there's not much money in natural solutions, because they are generally based on local, non-monopolistic, open technologies and public knowledge (i.e. no business secrets)

Response to Prunetti's critique about my previous progress report

Because my co-director Prunetti had in Corte only time to tell me his critiques, but no time to listen to my response to these critiques, I find it proper to write my response in this progress report, because I believe, scientific research must always be an open and dialectic process (→ [previous progress report](#)).

1) Designating my following statement as conspiracy theory:

“Short-term and money oriented economic interests: Big corporations have the power to influence the whole education system including the education of economics, and corporations like easy profits.”

You may see my explanations above related with cultural intelligence, and language style for describing the behavior of animals or social institutions. I am describing the behavior and influence of corporations without presuming a conscious plan or malicious intent.

Besides, the global influence of Mont Pelerin Society, as claimed by the cognitive scientist Joe Brewer, seems to be a real conspiracy theory, if the account of these events as narrated in *The Masters of Universe* (by D. Stedman Jones) is correct. As I mentioned above, I don't know yet, if his claims are true, and even if they are true, how big was really the influence of this society on the global education of economics.

2) Why did I indicate my social media accounts? For a scientific research they have no value.

I don't agree with this claim. I believe in open (i.e. non-monopolistic and non-exclusive) science. Valuable knowledge can be obtained from very different, and sometimes unexpected sources.

For example, my interactions with WWF Switzerland and *Rethinking Economics* are an example of open science. Through the discussions in twitter, I learned that many mainstream economists confuse positivism with the mechanistic and reductionist worldview (i.e. industrial paradigm).

The fact that my PhD project requires a broad and multi-disciplinary view (economy, ecology, sociology...) makes the opinion and knowledge from different fields and occupations even more valuable.

Next steps

1. Find and study reports for the place of ecology in economics education at the universities in UK
2. Attend further conferences of Rethinking Economics in Bern (planned in September)
3. Read the booklet Rethinking Economics; an introduction to pluralist economics
4. Write further articles about issues like GDP, parasitic earnings and economic imperialism
5. Read Debunking Economics by Steve Keen, books and articles of Lorenzo Fioramonti about GDP growth and well-being
6. Read Masters of the Universe by Daniel Stedman Jones
7. Further research in history of economic thought in relation with imperialism, industrial paradigm, parasitic earnings, externalities, GDP, ecological ignorance

Literature and Other Resources

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All critiques, comments, new ideas and new suggestions are welcome.

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