

Introduction to Commons Economics

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Introduction

With this introduction, it is not our intention to synthesize a full critique of neoclassical economics (NCE), an exercise that has been done before many times from multiple perspectives; nor is our intention to present a fully fledged ‘commons-based economics’ as an established framework or praxis, as we feel it is too early for such synthesis at this stage of the re-emergence of the commons. Nevertheless, it is our conviction that such a new ‘economics’ discipline and paradigm, prefigurative in its current phase, and also already very rich and diverse, is to be found in various projects and ideas around the world. These practices are contextual and specific but many are also translocal in orientation, including under the banners of commons transition, degrowth and post-growth, regenerative economy, perma-circularity, and others. Even if the commons and these other related approaches are in fact ‘beyond’ economics, and do no longer want to organize societies in econo-centric ways, we do believe that we cannot completely overcome the diversification of our complex society, and the need for an expanded but still distinct and relatively autonomous discipline.

This textbook is not written by economists, and may not convince the current economics profession; but we believe it has a specific value, because it proceeds from the learnings and insights of a global network of researchers into the re-emergence of commons and ‘peer to peer’ dynamics (i.e. open collaborative systems that people can permissionlessly contribute to); As such, it is based on the experiences of multiple peer production communities, i.e. communities that create and share value together, that mutualize provisioning systems, and work in open cooperative arrangements. These economies often encounter very similar challenges and opportunities, and have reacted to these in surprising common ways, despite their huge diversity. But this emerging ‘commons-centric’ practice, this emerging ‘contributive economy’ will be discussed further in our textbook-to-be.

In this introductory essay, we have more modest ambitions, and we would more simply like to start by answering two basic questions that inform this textbook in-the-making:

1. *Is there any specific “commons-based” critique of NCE that can be added to the generic and specific critiques offered so far by various schools of thought?*
2. *Are there already commons-based economic practices present today that can address the failings of NCE?*

We will proceed from our analysis of the failings of NCE in Part 1, to a description of the emerging solutions in Part 2 of this introduction.

The content of this essay is based on fifteen years of observation, research and analysis of commons-based practices undertaken by the research network associated with the P2P Foundation. The concepts used have been forged by this practice of a re-emerging commons movement, re-imagining notions and ways of doing, knowing and being.

1. The flaws of historical capitalist practice and neoclassical economics from a commons-based perspective

1.1 Commons Economics is Biophysical

Biophysical Economics represents a system of economics built upon the natural sciences as a base and integrated with the social sciences. It starts with the reality that all economic goods and services start with materials and energy taken by humans from the Earth. These raw materials are transformed into increasingly useful products through the application of energy (including human labor) within economies. Biophysical Economics usually pays less attention to satisfying unmeasurable and subjective individual wants and needs than mainstream economics does. Rather, it takes actual economic systems as they exist and quantifies the energy and materials associated with the actual money flows.

— Camps, Hall and Klitgaard (2020)

Key hypothesis: Historical capitalist thought treated the natural world as an exogenous concern, as if the interplay of energy, matter, and evolution took place “elsewhere”; Commons-based economics instead recognizes the embeddedness of society within the biophysical web of life, such that patterns of Nature and Human Nature are co-produced.

The main failing of NCE is that approach presents itself as a social science, focusing on relations between people and their (abstracted) resources, mediated through money. But nothing could be further from the truth ^[1]. Economics, defined as the science to allocate resources for human needs, is in fact relationally embedded in the material world and the ‘web of life’ ^[2]. The kinds of divides between Humans (outside of nature) and Nature (without Humans) ^[3] that NCE reproduces must be transcended, since we are part and parcel of that nature.

As Jason Moore writes in *Capitalism in the Web of Life*, Humanity-in-nature denotes “[h]uman engagement with the rest of nature.” It is ecology from the standpoint of human agency. “Capitalism-in-nature,” on the other hand, for Moore (2015:pp) is “not an economic system ... not a social system; it is a way of organizing nature.” The distinction between Humanity and Nature is only useful insofar as we recognize that they co-produce each other. But since we need produce from the web of life, and since the material world and ourselves are subjected to the laws of thermo-dynamics, economics should first of all be a ‘physical’ science, to take into account material and energy flows and metabolisms ^[4]; but even more a biological science, to account for and with our usage and cooperation with living beings and environments.

This quote reflects on the emergent hierarchy between different emerging levels of complexity, between geo-biological and the social level of humanity: “the mechanisms of higher strata (say, the social stratum) [...] possess emergent properties as a result of which they are irreducible to, and qualitatively different from, their lower stratum foundations (say, the physical stratum). While the laws of physics never cause social outcomes, the social is nonetheless subject to biophysical structures” (Spash, 2020, from Koch & Buch-Hansen 2020).

The first reality, that of our interdependence, is expressed by Biophysical Science, the second perhaps by approaches such as biomimicry, or more generally, the emergent Regenerative Approaches,^[5] which see production for human needs as also needing to be regenerative with respect to the web of life. Contrast the

industrial agriculture model which depletes and destroys the soil, with generative agriculture which preserves and even improves the soil.

Box 1: BioPhysical Economics

Actual economies are based upon a variety of processes whereby humans interact with nature: Extraction; production; distribution; consumption; and waste production. Material goods and energy-requiring services originate not in markets but in the Earth. But for the past 150 years, economics has been treated primarily as a social science. The conceptual model upon which mainstream (neoclassical) economics bases its analyses consist of a circular flow of income between producers and consumers, mediated by means of markets. In this "perpetual motion" of interactions between firms that produce and households that consume, little or no accounting is given to the flow of energy and materials from the environment and back again, and little account given to human interactions that take place outside of market processes. Analyses by natural scientists (and others) find that the conventional model is simply not credible. In this paper we bring to the attention of the readership of this new journal the approach of BioPhysical Economics, an important but not widely understood development in economic theory. We review these criticisms and offer the basic concepts to construct a completely new approach to economics, one that will probably be essential in our future that is likely to be highly constrained by climatic, other environmental, resource depletion and other BioPhysical issues.

See also: [Growing Importance of BioPhysical Economics](#)

1.2 Commons Economics is Abundance Engineering

“To even acknowledge at all the existence of abundance is a huge conceptual leap for many economists, whose fundamental assumptions are based on scarcity. Some economists even say that abundant goods cease to be interesting because the problem of scarcity has been solved. But if abundance solves the problem of scarcity, shouldn't economists devote as much time to the solution as to the problem itself? The answer should be obvious. Indeed, the study of abundance should be a major field of study, not only for economists but also for other social scientists and for physical scientists as well.”

— Verzola (2009)

“Malthus's limits explained away enclosures; self-limitation instead justifies sharing the commons. Sharing, as we know from egalitarian societies, precludes the accumulation of power and the competition for position that drives expansion. And if surplus is shared and expended instead of accumulated, then there is less expansion. Limits, that is, are an outcome—intended or not—of sharing. Malthus claimed that there is not enough for everyone to have a decent share. The self-limitation thesis instead is that there will be enough for everyone only when we limit ourselves to our fair share. Without limits, there will never be enough. And without sharing, there will always be those who will have less and feel they do not have enough.”

— Kallis (2019)

Key hypothesis: Markets are scarcity allocation mechanisms; capitalism is a scarcity engineering mechanism; Commons-based economics consists of scarcity respecting abundance engineering mechanisms

NCE is often defined as a science of scarcity allocation, while capitalism could be defined as a practice of scarcity-engineering. NCE assumes a world of scarcity which can be overcome by pure human ingenuity.^[6] It assumes humans have infinite wants, and that nature's resources can become infinite through technological progress, assuming infinite growth. On the other hand, it seeks to transform everything that is not scarce into scarce commodities — thus incumbent regimes of intellectual property attempt to prohibit human cooperation

and the sharing of abundant knowledge. When we say that capitalism is scarcity engineering, we mean that very often, corporate strategies and the state policies that back them try to impose artificial scarcity through law and technological sabotage. Think of practices like Terminator Seeds, ie. seeds that cannot reproduce themselves, or the outlawing of farmer community seed sharing; think of the criminalisation of the sharing of cultural expression, or the fact that farmers cannot repair their own tractors without breaking laws that protect the software these tractors run by. On the one hand, capitalist practice exhausts the resources of the planet, creating innumerable environmental problems, while simultaneously severely undermines modes of human cooperation needed to address these problems at various levels and scales.

This means that commons-based economics should be based on a mutual embrace of both scarcity and abundance. First of all, it would recognize that natural processes (which include humans as part of nature) are subjected to the laws of thermodynamics, which govern the transformation of matter and energy. In this context, the Earth System is generally not an infinite resource, but finite, as used matter is degraded for further rounds of usage. On the other hand, life has an urge to reproduce itself, and has created a theatre of abundance in the food web, which often functions as a stable ecosystem in which many species cooperate ^[7], for long periods of time. The planet is also subjected to an influx of solar energy, but also locus to renewable energies such as wind and water. Both of these are forms of relative abundance. Non-renewable resources are potentially subject to eventual scarcity, but their use can be substantially prolonged through good practices such as urban mining and eco-social service design (see Bohnenberger 2020; Murphy & McGann 2020) based on open source principles, while mutualization-commoning can substantially reduce the human usage of these resources.

While NCE assumes competition for scarce resources, it also continuously pushes for the expansion of human desire, in order for corporations to continue to produce, sell and realize surplus value, i.e. it assumes illimited needs. A commons-centric economics must challenge these premises. There are different mechanisms that insure that humans in fact do have limits to their consumption levels. Roberto Verzola mentions satiation, saturation, and satisficing, as three mechanisms that regulate the level of consumption. (see **Box 2**).

Box 2: Roberto Verzola on the demand side of abundance (the 3 SAT's)

The following concepts will help show that needs and wants can remain within finite bounds:

- **Satiation:** Many economists still cling to the hedonist principle that “more is always preferred to less. But some acknowledge, at least in theory, that a satiation level exists for some, if not most, goods. Varian, in particular, says that most goods have a satiation point and that “you can have too much of nearly anything,” which contradicts the “unlimited wants” assertion in most definitions of economics
- **Saturation:** Beyond the saturation point, one's body either will become incapable or will involuntarily reject additional servings of food and drinks. One can only wear so many clothes, or shoes. One can listen to only so many CDs or watch only so many videos.
- **Satisficing:** Even before we reach our satiation or saturation levels, we may already reach our satisfied level, in which the quantity we have of a particular good or bundle of goods already suffices to satisfy, and beyond which we would only weakly prefer more. In contrast to satiation, which results in a strictly lower preference beyond the bliss point or satiation level, points beyond the satisficing level are either equally preferred or only so slightly or weakly preferred that it does not make a difference.

— Source: Verzola (2009).

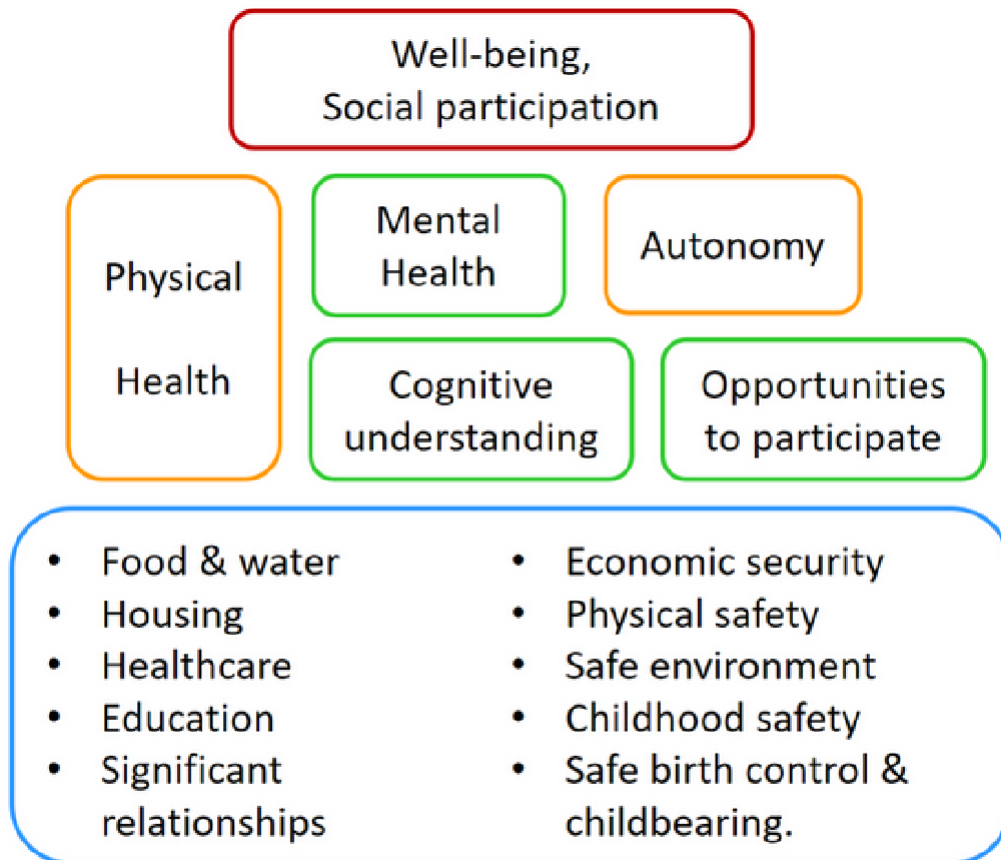
As Giorgos Kallis writes in his seminal book *Limits*, “self-limitation for sharing a limited resource” is at the heart of commoning, whereby “users come together to devise collective systems that limit their use of a common resource, given the consequences of not doing so” (2019:). Humanity has to learn to produce and consume what it needs, within the carrying capacity of the Earth, and in accordance with planetary boundaries, the vital ecosystemic processes that are crucial for the continued functioning of life on Earth. How will we get there?

The task is summarized succinctly by Julia Steinberger: “We all share a finite number of satiable and non-substitutable human needs. Wellbeing can be understood roughly as a pyramid, with basic need satisfaction at the bottom underpinning physical, mental health and autonomy, culminating in wellbeing and social participation. Unlike wants or preferences, needs are in theory satiable. The distributive principle entailed by human need theory is sufficiency: to bring all individuals up to a threshold.”^[8]

At the P2P Foundation, we propose to see the commons-centric economy as a series of interdependent provisioning systems, each of which could be improved by mutualization, i.e. commoning, as a strategy to radically reduce the human footprint, while maintaining the capabilities achieved by modern systems. Ian Gough formulates a similar insight, which builds on the understanding by the Chilean economist Max-Neef ^[9]:

“The idea of non-substitutable need satisfiers entails a different conception of the economy as a network of ‘systems of provision’ ... We must move beyond an idea of the economy as a uniform space within which nameless and substitutable commodities are produced, exchanged and consumed. In particular, there exists a ‘foundational economy’ which directly delivers a range of essential need satisfiers in contemporary market economies” — (Gough 2020).”

Figure 1: Human needs and well-being



Human needs and well-being | Based on Doyal & Gough 1991, Gough 2015.

Source: <https://cdn-prod.opendemocracy.net/media/images/needs.width-800.png> (<https://cdn-prod.opendemocracy.net/media/images/needs.width-800.png>)

Box 3: Roberto Verzola's definition and typology of abundance

Roberto Verzola defines abundance as “when a person can afford enough quantity of a good or bundle of goods to reach his/her satisfied level, then the person enjoys a state of abundance for that good/bundle of goods [...] This definition also allows a good's state of abundance with respect to one person to be quantified: it is the ratio of that person's affordable quantity (economists call this demand, which varies according to price) to his/her satisficing level, which is the point where any further reduction in price does not anymore increase that person's demanded quantity.”

Main arguments:

Information goods are a unique commodity – nonrival, non-material goods with diminishing/near-zero marginal cost (what Verzola calls “multiplicative abundance”)

Several abundance archetypes may be defined

Abundance archetypes:

Multiplicative abundance of information goods: abundance that is created when the cost of reproducing the (non-material) resource approaches zero

Reproductive abundance of living organisms: as long as the right conditions exist for the reproductive processes to occur, ecological systems of interacting biological webs of organisms will provide us a timeless source of abundance

Two additional archetypes below – among several others Verzola proposes – are based on the massive bulk of certain elements and compounds found on Earth and elsewhere (e.g. air, water, sand, wind, minerals, solar energy).

Abundance based on persistent mass: the persistence of certain types of matter allows them to be reused or recycled over and over again, with little additional processing; the principle management approach here is a better system of recovering and recycling the resource, to enhance the persistence of these abundant goods

Abundance of massive-dissipative resources – while we may start with an abundance by virtue of their bulk, the use of the resource transforms and depletes it; the principle management approach here is conservation, to leave as much of the resource to future generations, who may discover better ways of putting them to good use

— Source: Verzola (2009)

1.3 Commons Economics is Contributory

Key hypothesis: In commons-based economics, value does not derive from scarcity or labor input (commodity-driven), but from contributions to common value for humans and the web of life.

Every civilization somehow “decides” what it values ^[10]. As David Graeber has shown in his historical and anthropological study of value systems ^[11], there is no fixed, objective value system. Capitalist societies, i.e. the societies that compete on the basis of the productivity of their labor, have “decided” that the only recognized value is market value, i.e. the value that is generated by ‘scarce’ commodities, whether that is labor power, or products and services that are ‘extracted’ either from nature or from human communities (all are actually, ‘bundles of human and extra-human nature’, as Jason Moore would say)^[12]. Because of this ‘extractive’ vision, which has huge degradative effects on the web of life and the state of natural resources, capitalist firms have an incentive to minimize costs and expel ‘externalities’ from consideration. The real costs of these externalizations are borne by nature, human communities, or the public sector and the state.

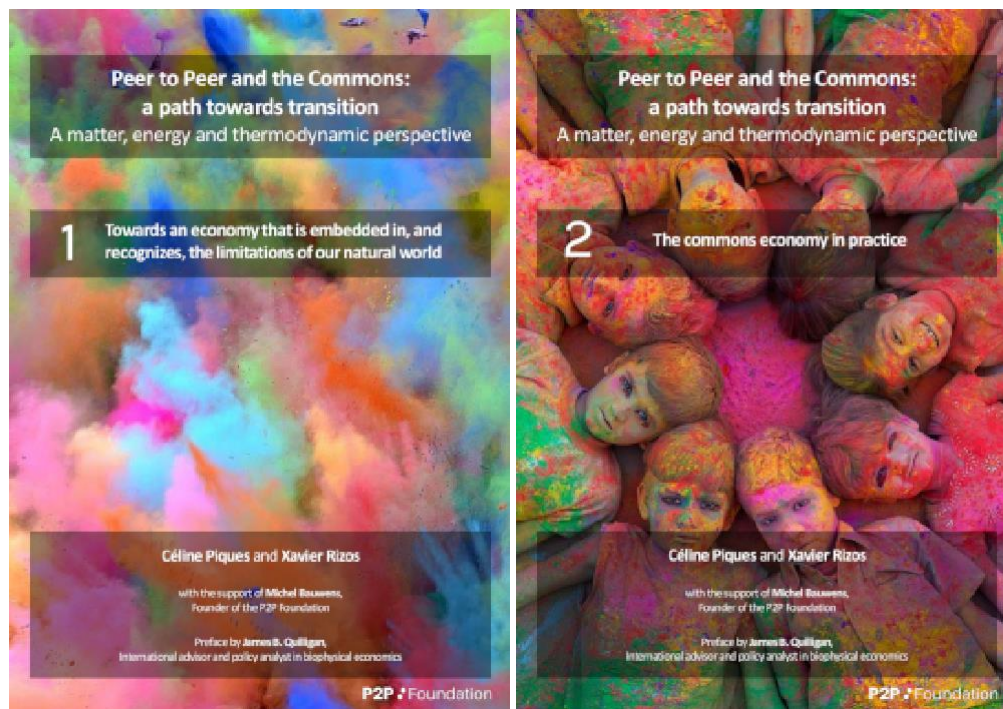
At the same time, while it ‘expels’ the cost of these negative externalities, it also fails to recognize important positive and (re)generative externalities. The work of social reproduction of human families itself, is not recognized as such, as all other forms of care work. The generation of ‘netarchical’ forms, i.e. the Googles and Facebooks of our world now also directly extract value from free labor of social communication and knowledge generation. While billions of humans co-produce the value of these platforms, the monetary value that is extracted thanks to this co-production, fails to be recognized. As the amount of digital participation increases, the feedback loop of recognized value diminishes ever more, leading to a true ‘crisis of value’.

This has a fundamental consequence for the care of the Earth and the human communities that inhabit our planet: wealth is generated by extraction, not by (re)generative work that actually improves the local, bioregional or world ecology. Generally speaking, this means that generative activities can not be directly funded, but only indirectly through redirected tax income by the state, or through private philanthropy. In the context of the current ecological dangers, this amounts to a certain suicide. We have to re-establish a new normal that implies that a farmer that improves his soil while feeding communities of humans, becomes the norm, and that industrial activities that impoverish the quality of the soil year after year, until exhaustion, becomes exceptional and in the end, becomes a disappearing practice.

This is why a commons-based value regime can only be a contributory regime, that recognizes the value of all human and natural activities that create generative value, especially those non-market activities that are vital for human and natural reproduction. Any action that improves the quality of human communities and natural ecosystems, can be considered a contribution. This is why ‘commoning is caring’, i.e. a contributory economy is a care-oriented economy.

Box 4: Contributions to Conceptualizing Value in the Commons Economy

The P2P Foundation has published several reports clarifying our ideas on conceptions of value for commons-based economies.



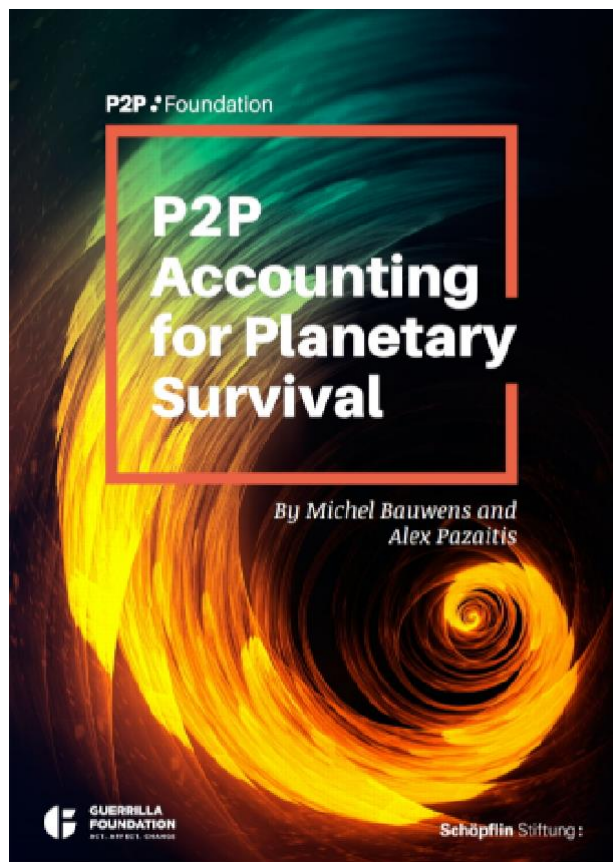
P2P and the Commons: A path towards transition – A matter, energy and thermodynamic perspective, Rizo & Piques (2017)

In this report on the ‘Thermodynamics of Peer Production’, written by Celine Piques and Xavier Rizos, we have attempted to establish the vital role of mutualization in bringing down the ‘human footprint’, i.e. our weight on the web of life. Following an analysis of the shift towards organic agriculture in food production, we estimate mutualizing certain provisioning systems could diminish the thermodynamic usage of resources (matter and energy) by about 80%.



Value in the commons economy: developments in open and contributory value accounting (https://www.boell.de/sites/default/files/value_in_the_commons_economy.pdf?dimension1=division_ip), Bauwens & Niaros (2017)

In this report, we introduce the topic of contributory value, which had been established in a joint report for the EU, called P2P Value. We look at several case studies of how peer production communities have developed innovative forms of accounting that can take into account the value of contributions, for an internal redistribution of external income.



P2P accounting for planetary survival (https://p2pfoundation.net/wp-content/uploads/2019/06/AccountingForPlanetarySurvival_def.pdf): Towards a P2P infrastructure for a socially-just circular society, Bauwens & Pazaitis (2018)

In this report, we investigated whether accounting systems, using distributed ledger technology, can help create a cyber-physical infrastructure for the coordination of production for human need, without crossing the danger levels of critical planetary boundaries. Based exclusively on already existing technologies, we look at contributory accounting, flow accounting for open collaborative systems, and thermo-dynamic accounting (direct access to knowledge of matter and energy flows). Our proposal is to combine the maximum amount of free coordination, generative market techniques that work for the commons; and 'orchestrated planning' using visualized thermo-dynamic flows, which sets limits on human usage of limited resources.

1.4 Commons Economics Recognizes the Commons as a Central Human Institution

Key hypothesis: Historically, only the human institution of the commons has shown itself to be capable of maintaining the long-term health of common resources.

The capitalist system can best be seen as a triad, consisting of Capital-State-Nation, as put forward by Kojin Karatani (2014). Capital accumulation is the core logic, enabled and supported by the State, which has to take into account the 'community' dynamics, i.e. the abstraction of the community of sovereign people as expressed through the Nation. Nevertheless, the people have no agency in the private economy and the civil society dynamics are derivative in scope, since they are not seen as value-creating. Both the state and civil society depend on the redistributive capacity of the state, which depends on the taxation of private income. Hence the vocabulary we use in denoting civil society organizations, when we name them as nonprofits or non-governmental associations. Since the primitive accumulation of capital has historically been explicitly based on the enclosure of the commons, i.e. divorcing the rural communities from direct access to common land, the commons are not even recognized as a key institution. Yet as Mark Whitaker and other schools of thought

which see oscillatory dynamics between degradative and regenerative civilizational periods have shown, the commons is a key human institution to preserve natural resources and life-webs for the long term, playing a vital role in regenerative periods of human history.

As the global system has now entered a phase of fragmentation and is in need of a reboot, the commons is now poised to play a central role in the new phase of human history. Once we see and accept a new value regime based on contributive value creation, we must recognize the commons as a real and vital form of human organization (in cooperation with extra-human nature). Elinor Ostrom, in *Governing the Commons* (1990), has shown how the success of historical commons depends on the alignment of different social groups with a stake in the success of their commons.

In our studies of peer production in open source communities and in urban commons, we see a new value regime emerging: in which contributions to the commons create value for the commons; in which generative and ethical market entities function to serve the commons and create livelihoods for the contributions, and in which enabling for-benefit institutions manage ‘the infrastructure of the commons’. What if this were the seed model for a new form of society, that consists of a central commons-contributing civil society, supported by a generative market, and enabled by common good institutions which support and enable individual and collective autonomy (the ‘partner state’, through its public-commons cooperation protocols).

If commons economics are commons-centric, it is also pluralistic, or rather, pluriversal ^[13]. This means that the position taken in this textbook is not one of replacing every other economic form with a purely commons-based one, but rather that we advocate re-arranging the relative priority, and hence the associated dominant institutions, of the various forms of allocating resources. As we will see in this textbook, we start from the relational grammar developed by Alan Page Fiske (1991), who distinguishes four modes of allocations which have coexisted for thousands of years of human history, and in all regions of the world, i.e. communal shareholding (the commons), equality matching (the gift economy), authority-ranking (state-based redistribution), and market pricing (i.e. in its current form capitalism). We also use the historical account provided by Kojin Karatani in his ‘Structure of World History’. Great historical epochs are dominated by one particular mode of allocation, which functions as a chaotic attractor for the other modalities, whose relative place is determined by societal institutions that favour one particular mode of production and allocation. But the different modes of allocation mostly co-exist. This means that when we speak of commons-centricity, we refer to a mode of society in which the commons is central, but not the only mode in existence. This also means we recognize an important but relative place for these modalities. This means the market mechanisms are not suppressed, but provided with an overall institutional framework that protects the commons. In particular, we believe that whereas extractive market value is the core value mechanism of a capitalist society, we believe contributions to the commons are the central value mechanism in a commons-centric society.

1.5 Commons Economics is based on Open Collaborative Ecosystems

Key hypothesis: The new value-engendering ecosystems are open and collaborative, based on the free and permissionless contributions of participants.

Like many modern systems of thought, NCE is still largely based on methodological individualism, which assumes an isolated individual that seeks to maximize his enjoyment of goods with limited means. Firms are profit-maximizing entities that are supposed to engage in universal competition; and capitalist accounting only sees resources and money coming in and out of an isolated economic entity, obscuring any and all ecosystem, and the so-called externalities. Though economics has evolved and enriched itself with many other approaches, it remains an important core of its world-vision. The competition of closed and discrete entities remains primary. All these axioms and practices are very far removed from the complex richness of individuals, communities and societies, which are always connected to each other and nature, and need a mix of competition and cooperation to survive. Humans and collective human entities are always already relational and part of societies. Competing collective organisms require a high level of cooperation in order to maintain themselves. At most, corporate capitalism sees itself from a ‘sports’ paradigm, in which people cooperate inside corporations, while they compete against each other; meanwhile nations see themselves as being in a similar situation.

As the Belgian relational philosopher writes: “In a phenomenological/relational approach we all are embedded in a network or relations, which has an physical/psychological impact of what we can be. Our connection with the world is organic. We are never alone individuals or a number in a collective. We are sensitive relational beings who grow up in a certain context, lifeworld.”^[14]

But the commons change that polarity: everyone depends on cooperative infrastructures and ecosystems, and inside those ecosystems, individuals can make autonomous choices and can still compete according to several criteria. What commons-based peer production brings to the fore is that they are open collaborative ecosystems, that individuals or collective entities can freely join or leave, and are able to contribute without asking for permissions ^[15]. All the individuals and collective entities contribute to their common resource. Thus we see a world emerging that consists of global-local open design deposits, with a globally coordinated cyber-physical infrastructure at the service of all the contributors. It is not possible to imagine solutions to global problems when competing nation-states are conducting win-lose games over scarce resources. This is why commons economics focuses not primarily on competition, but on the capacity for cooperation.

1.6 Commons Economics requires a direct focus on the common good

Key hypothesis: The common good is not metaphysical; it can be established through a process of a democratic consensus.

An enduring distinction in the debate between the political and social movements of modernity has been the discussion regarding the ‘common good’. Since Adam Smith, classical liberalism, the main political philosophy in support of capitalism, has always maintained that the presumed economic selfishness of human individuals creates the wealth necessary to provide for the common welfare of society, aided or not by a redistributive state ^[16]. The hypothesis is that capitalist exchange is ‘fair exchange’, but capitalism’s critics have always pointed out that there is no such equality in human relationships under capitalism, and that ‘fair value exchange’ is determined by power imbalances. This is why there are now a huge array of different social and political movements that stress that the competing entities of capitalist society have to be fundamentally transformed, to become ‘purpose-oriented’, ‘mission-driven’ entities, for whom capital and profit are but means of prioritized social and ethical goals. The specific contribution of the contemporary commons is to show that “quadruple win” (as a game theoretical concept) is a feasible societal and economic practice. Commons-based peer production communities are based on the free association of passionate and skillful peer producers around a common productive goal; while the individuals who enter in such a relationship do not have a ‘a priori’ relation of dependence, but doing it out of their own intrinsic motivation (the first win) and their free relationship is based on mutual interest (the second win); but the social object they are commonly constructing is also meant to achieve a positive win for the whole community of producers (the third win); while being beneficial for the whole of society (the fourth win). All the while, we should favour the use of public policies to strengthen the ‘commons of capabilities’^[17] of civil society actors, so that every citizen can fruitfully participate in the commons of their choice.

Box 5: Multilevel Selection Theory

On the tension between two levels of natural selection

“To build a more realistic theory of resource distribution, we need a new “microfoundation” for economics. This is the term economists use to describe their assumptions about human behavior. Most economists assume that humans are purely selfish. But this idea has outlived its usefulness. [...] I have based my approach on a theory called group selection (sometimes called multilevel selection). According to this theory, the duality of human nature stems from an evolutionary conflict between two “levels” of natural selection. Selfishness stems from selection at the *individual* level. Altruism stems from selection at the *group* level.”
— Fix (2019).

(Copy in _____ notes excerpted quotes provided by Michel at [Evolutionary Theory of Resource Distribution#Excerpts](#))

1.7 Commons Economics has a steady-state temporality

Key hypothesis: To date, human history has moved between the pendulums of extractive and generative historical periods; we have to move to a stable ecosystem for producing for human need within planetary boundaries.

In the next chapter of our textbook, we will provide a temporal framing of the shift from capitalism to a post-capitalist commons-based society. Indeed, a number of economic and historical schools of thought posit that human history is subject to oscillations, and have developed a series of rather convergent ‘wave-pulse theories’. For example: biophysical economics, the cliodynamics of Peter Turchin (2011), and the double movement theory of Karl Polanyi (1944).

The basic observation is that human societies develop through succeeding cycles of extractive-degradative phases, followed by societal collapses and a phase of regeneration. Peter Turchin and Sergey Nefedov’s *Secular Cycles* gives a lot of evidence for the existence of his cycle in agrarian civilisations. Our hypothesis is that once societies and civilizations reach the bottom of a degradative phase, a reorientation of provisioning systems around the commons is a regenerative necessity which will ‘heal’ the degradation of the environment through mutualization and newfound’s stress on harmony with nature and other human beings in the society. It would seem that the technological innovations and successive reorganizations of human society under capitalist hegemony, have overcome these cycles, as each exhaustion has been overcome by a reorganization of the productive system and how it combines with nature. However, as many observers would now agree, we have reached planetary overshoot and the succession of ‘Cheap Natures’ (Patel & Moore 2018) that helped re-organize capitalism, have reached stages of convergent exhaustion. What this means is that our societies can no longer afford to go through these cyclic waves of destruction/regeneration, but must reach a stage of ‘steady state’.

As the integral sociologist Sorokin argued, we now have to achieve an integrative cycle. The most likely hypothesis is that we will need to go through a phase of ‘degrowth’ amongst the ‘Golden Billion’ in the Global North, in order to achieve that steady-state at a global level. Kate Raworth’s *Doughnut Economy* provides the basic guidelines for that blueprint: humanity has to stay within the planetary boundaries, while being able to grow the well-being of those deprived of the provisions for their basic human needs.

2. Potential commons-centric solutions

Conceptually, the term ‘transition’ is usually used to analyze changes in society subsystems like mobility and energy, focusing on social, technological and institutional interactions. In contrast, the term ‘transformation’ is commonly used to reflect “large-scale changes in whole societies, which can be global national or local” (Hölscher et al. 2017). When we say transition, we are referring to periods where established patterns are in decline, but existing activity has yet to coalesce into a stable configuration. These are ontologically dependent on the preceding era, particularly its terms and definitions, while also being ‘critical’ in nature, as expressions of what is unraveling, rather than what is emerging. On the other hand, we define transformations as moments at which a system crosses a critical threshold and becomes a self-organized and self-sustaining entity. These are ontologically dependent on an as yet realized era, seeking to reveal its terms and definitions, while being

affirmative in nature, since they are expressions of what can happen, rather than what currently exists.^[18] The notions of transition and transformation are not mutually exclusive but lay out a plurality of nuanced perspectives on how to imagine, describe, and act upon path-deviant social and institutional change (Ibid.).

The aim of this second part is therefore to open up the policy, polity and political imaginations to a kaleidoscope of existing initiatives, together forming the outlines, mechanisms and multi-layered strategies of and for commons economics. In particular, our ambition in this section is to match the seven aspects of a tentative framework for commons-based economics outlined in Part 1 to the broader solution space, in order to show there are existing models, initiatives and networks of networks of diverse shapes and sizes, already building, in a 'bricolage' manner, this alternative paradigm. So this second part is dedicated to this renewed imagination and the kind of solutions that emerge in the sphere of commons-based peer production, and from that therefore think in a new way about society.

In our industrial form of civilization, the dominant societal debate has been one between those that favoured a key role for the market, and those that favour a key role for market dynamics and forces, i.e. the regulatory state (for example the Keynesian welfare state model), vs the "laissez faire" model (for example, neoliberalism). Karl Polanyi, in his masterful history of capitalism from the late 18th century to 1945, has suggested capitalist dynamics were subjected to a so-called double-movement. Looking at the interplay of the forces and institutions of Capital, State and Nation, the latter being the form that 'community' takes in a capital-centric society, Polanyi observed a succession of cycles, the so-called lib/lab movement. In the lib part of the cycle, market forces are ascendant and want to liberate the market from societal control. While this may initially lead to a high growth period, it usually ends with heightened social dislocation and inequality. This sets in motion the 'lab' moment of the cycle, where the "Nation" revolts and pressures the state to re-regulate the market forces. But note that in this model, it is the market that creates value, the state that eventually regulates but depends on market value through taxation,, while civil society is merely a political player, putting pressure on the state.

What we have been suggesting in part one is that civil society is in fact, itself productive. We posit that once we move from a vision in which only scarce commodities create value, but recognize that many other forms of contributions are valuable, then we enter a contributory value regime, in which every citizen and human inhabitant creates value, but even extra-human natures and living beings from the web of life. Thus we arrive, as will be explained later in this textbook, to a triarchic vision of societal institutions, in which we find at the center of value creation, the open contributive communities who create shared value through the commons, surrounded by a generative and ethical market that works generatively for the commoners and the web of life, and with a common good institution, the Partner State, which maintains the infrastructures of cooperation for the benefit of everyone.

With this new vision, we move to a triarchic Contributory Society, Economy and Civilization, which recognizes all the presently unpaid work/energy produced by human and extra-human natures, as Jason Moore would say. Once we move from a binary vision, focused on the market-state polarity, to the triarchic vision of complementary commons, market and state-based institutions, we open up the solution space to solve the many challenges threatening the development and survival of humanity and the web of life.

2.1 Biophysical Accounting: Global Thresholds and Allocations

In the P2P Foundation's 2019 report, P2P Accounting for Planetary Survival, we review three new forms of accounting that have been developed since the advent of digital networks. We start from the premise that accounting systems are signposts for the societal and economic logic in which they emerge and for which they represent vital tools that embed a particular way of seeing the world and a particular 'value regime'. Thus, the first written tablets were found in Sumerian city-states and they co-emerge with these first class-based societies; similarly in double entry accounting emerges to accompany the proto-capitalist practices of the merchants in the emerging city states in Italy.

In today's digitally networked world, co-emerging with the open source communities, we observe the emergence of three new forms of accounting:

- Contributive accounting practices are based on the autonomous recognition of networked contributions in these open source communities, where they attempt to redistribute income beyond what the market recognizes as value
- REA accounting (REA stands for Resources-Events-Actions) is no longer based on the vision of a single economic entity which only sees what comes in and out of itself, but is based on the recognition that we have to work in coordinated ecosystems of production. Thus each transaction tells us exactly what its context is in that networked environment. It allows managing flows of goods and value in networks.
- Finally, we discuss ‘thermodynamic accounting’, which refers to the possibility to actually see and manage matter/energy flows, in the context of sustainability.

In this context we pay attention to one particular project, which we want highlight and describe here: The Global Thresholds and Allocations Council, as proposed by R3.0 (formerly Reporting 3.0)

Basically, it asks us to imagine a global institution of scientists, a bit like the WHO perhaps, but which monitors the health of our planet's resource base. This group maintains the record of the available global resources that humanity could use to produce for its needs, without violating the planetary boundaries (somewhat like the logic of Kate Raworth’s Doughnut Economy). It takes into account available stocks, the potential rhythm of new discoveries based on past patterns, the bio-circularity (i.e. how much a resource can be reused after the damage of first use). Taking into account some potential equity considerations, such an institution could help regulate the responsible use of matter and energy at all scales. This is called context-based sustainability.

Imagine now that such knowledge could be integrated in eco-systemic accounting systems, so that any economic or territorial entity on the planet, would know the limit of its matter/energy usage, and so it could produce for human needs within planetary boundaries. Such a system would obviously require the commons of knowledge that would enable it, and would be accompanied by regulatory reforms. Clearly, such a potential solution requires a recognition of planetary resources as a commons that needs to be regulated.

With this proposal, we aim to integrate, i.e. to ‘transcend and include’, the best of the commons (free mutual coordination), the best of the market (‘true pricing’), and the best of the practice of common good institutions (orchestrated planning).

Box 6: MuSIASEM: Accounting for material/energy flows and their limits

Multi-Scale Integrated Analysis of Societal and Ecosystem Metabolism (MuSIASEM) is a method for biophysical accountability and analysing socio-ecosystems, that can be used for developing and managing sustainable production. The tools integrate data on various issues such as land use, energy consumption and time use, across scales (e.g. household, local, regional, national) and dimensions (e.g. demographic, economic, energetic). More specifically, it is used to detect and analyse patterns in societal use of resources, distinguishing between end users, resulting internal environmental pressures, and the level of externalization through trade of both requirements of additional end uses and resulting environmental pressures. Thus, the method is particularly suited for analysing the nexus between food, water, energy and land use, urban socio-ecological metabolisms, and rural development pathways.

2.2 Pathways toward Abundance Engineering

If market pricing is a tool for the allocation for scarce resources, and if capitalism can be considered to be a system of scarcity engineering, i.e. to transform abundant resources either for appropriation as ‘Cheap Nature’ or to render it more scarce in order to ‘commodify’ it, then commons economics could be considered a form of “abundance engineering”.

Complexity thinker Daniel Schmachtenberger has formulated this imperative in his development of Game B economics ^[19], which should replace Game A, the scarcity-based economics. Schmachtenberger writes that “the system must vector towards omni-win-win dynamics. At no point can it incentivize win-lose dynamics.” How can this be done? Our example is inspired by the ideas formulated by Gregory Landua and his colleagues at the Regen Network, but is modified here in our own framework.

Let’s take procurement as an example. Procurement today is a competitive game, in which various competing entities must be shown to deliver the greatest service at the lowest cost. It is a competitive game that may favor efficiency, but lowers resilience, as it incentivizes the externalization of costs and negative impacts. This is even true for new ideas like Social Impact Bonds, which compete for social goals, but do not allow for a holistic understanding of social causation. What if we changed procurement, not just to reflect social goals as in ‘social procurement’ which is already practiced in Scotland and other countries and regions, but by moving to a cooperative understanding of procurement.

For example, in the city of Ghent, assigning a temporary place for social experimentation was done through a ‘call for common’, which meant that the project would go to the largest coalition of citizen groups, which had shown it could work together.

The Regen Network’s proposal (see **Box 7** below), as we interpret it, goes potentially further by sidestepping competition altogether. The basic idea is to create an open and transparent ledger, say for decarbonization efforts. Rather than competing for funding, every citizen or group or corporate/cooperative entity for that matter, would be able to certify its decarbonization effects (for example, organic farmers could count their biochar production). Each citizen would then get ‘tokens’, an intelligent digital currency. On the other side of the ledger would be the funds, that are either provided through taxation, because it is a societal priority, or through agreements with entities that are benefitting from these positive ecological “externalities”. So this is not a competitive market arrangement but a system that allows to directly generate livelihoods for those engaged in contributory and generative activities. Within this cooperative field there will still be those that are better able to decarbonize, so the competitive element has not been completely eliminated.

Box 7: Regen Network: Ecological state protocols to verify advances in sustainability and regenerativity

The Regen Network, a global platform focused on ecological monitoring and regeneration, has developed the key concept of “Ecological State Protocols” (ESP). These protocols can be used to analyze changes in a wide variety of ecological indicators – i.e. it allows individuals, organizations or businesses to track shifts in an ecological state, facilitating verifiable ecological outcomes. Examples of Regen Network’s ESPs, built to analyse specific datasets, include Soil Organic Carbon (SOC), Biodiversity, Above Ground Biomass (AGB), Net Primary Productivity (NPP), Pollinator Density, Water Quality and others. For these purposes, ESPs leverage a combination of existing and emerging datasets of satellites, GIS, drone imagery, IOT sensors and ground truth data (user- or verifier-derived). ESP studies both immediate, short-term, visible impact, as well as longer-term ecological indicators.

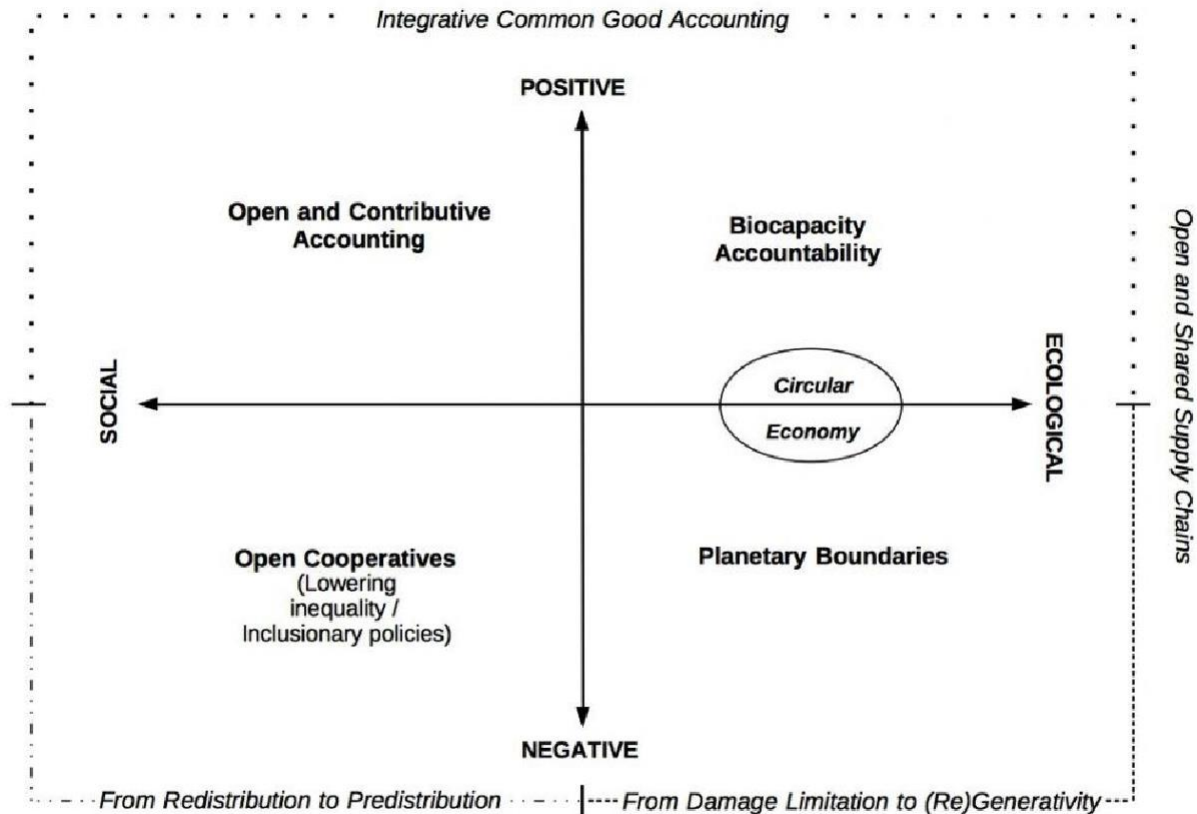
Sources:

<https://www.regen.network/protocols.pdf> (<https://www.regen.network/protocols.pdf>)

<https://medium.com/regen-network/ecological-state-protocols-1c7e97dadeae> (<https://medium.com/regen-network/ecological-state-protocols-1c7e97dadeae>)

2.3 Contributory Accounting Mechanisms

Figure 2: Four kinds of externalities



In the quadrant table above, we distinguish four kinds of externalities that are generally unrecognized as valuable in capitalist accounting systems, i.e.

- **Positive social externalities:** the enormous communication activity that serves to build the 'exchange value' based evaluation of giant companies like Facebook; or the non-remunerated free software and open design that is used in digital products that are used by private companies in their profit-making strategies;
- **Negative social externalities:** the dislocation of families due to the new just-in-time labor coordination algorithms in the gig economy; or the dislocation of communities through all kinds of harmful corporate activities;
- **Positive ecological externalities:** the cheap or nearly free access to vital natural resources that remain unpaid by corporations. For example, the community land trust movement in France, Terre des Liens, has calculated that its organic farmer-members save the French state EUR 300m a year in avoid water de-pollution costs;
- **Negative ecological externalities:** the costs of waste and pollution that are dumped in communities and natural regions without corporations paying the costs.

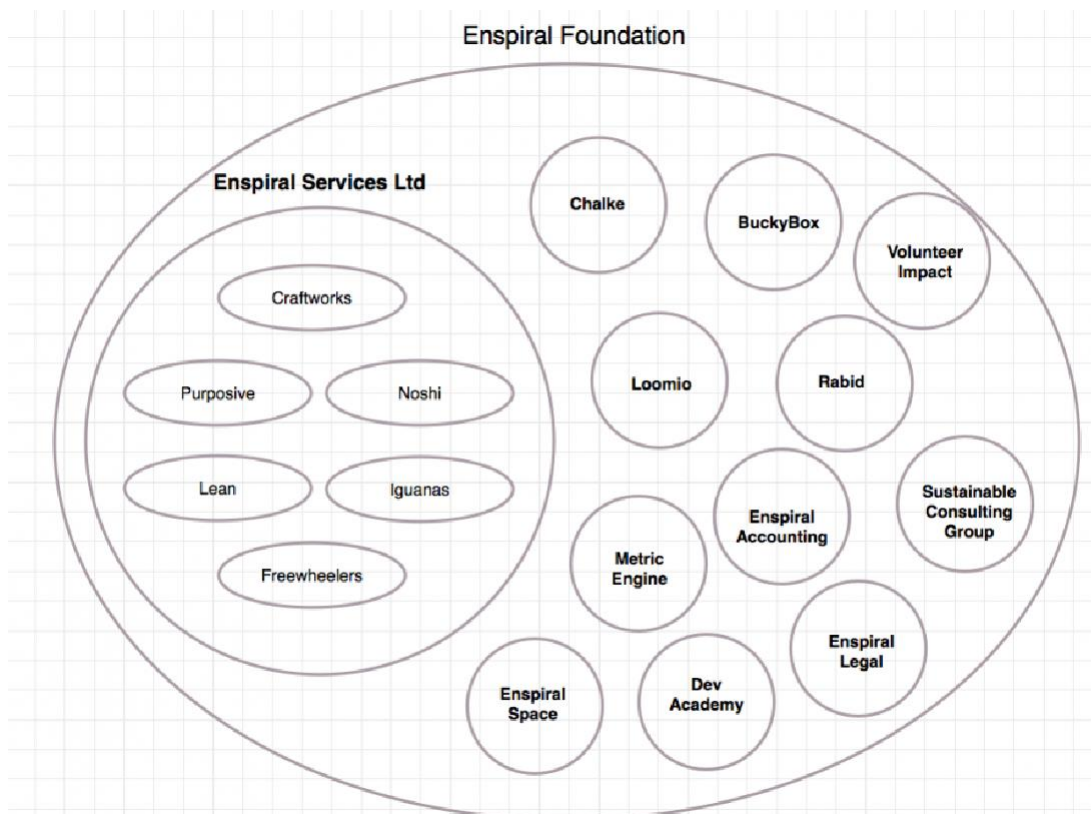
The purpose of contributive accounting is first and foremost to account for positive social externalities (but not exclusively). Consider the issue: in many open source communities, only a part of the contributors get remunerated by market or governmental entities, even if they also benefit from the unpaid contributions. This creates an issue of equity in these communities, for those that contribute but have no access to external income. Contributive accounting is a set of tools whereby such peer production communities can set up an accounting

system that recognizes such contributions, as collectively defined and accepted by the community. Most often, this happens by constituting a membrane around the productive community, where the external income is received, but having tools and techniques to redistribute internally, according to the consensus of what is a contribution of this particular community. Jeff Emmett, inspired by the work of Bernard Lietaer on yin and yang money in his book, *The Mystery of Money* (2002) calls it 'cold' vs 'warm' currency. The internal 'warm' currency, which can be an intelligent crypto-based currency, recognizes more kinds of valuable contributions, than the external 'cold' currency, and so the value is redistributed according to different value criterion, inside the membrane, i.e. inside the community of contributors. More generally, this institutes a new value regime that we call a contributory regime, and it differs fundamentally from a commodity value regime, as it recognizes a wider range of recognized values that deserve to be remunerated.

In our two reports, *Value in the Commons Economy* and *P2P Accounting for Planetary Survival*, we describe a few case studies illustrating this new practice.

Box 8: The Enspiral Network

Enspiral is a network of professionals and enterprises whose goal is to empower collaborative social entrepreneurship. It was founded in 2008 by Joshua Vial, a freelance computer programmer, running with the core idea that if freelancers donated some of their part-time income to the community, the aggregated resources could be used to support socially focused projects to which they could devote the rest of their time. Nowadays, Enspiral is made up of three parts: The Enspiral Foundation, Enspiral Services and Startup Ventures, a dynamic network of different groups and people comprising teams, which provide a broad range of services such as website and application creation, creative services and project management, all of which are aimed at generating social value.



Source: <https://github.com/enspiral/services/wiki/What-is-Enspiral-Services> (<https://github.com/enspiral/services/wiki/What-is-Enspiral-Services>)

For more, see special P2P Foundation report, [Value in the Commons Economy](#)

2.4 Partner State, Public-Commons Cooperation and the Commonification of Public Services

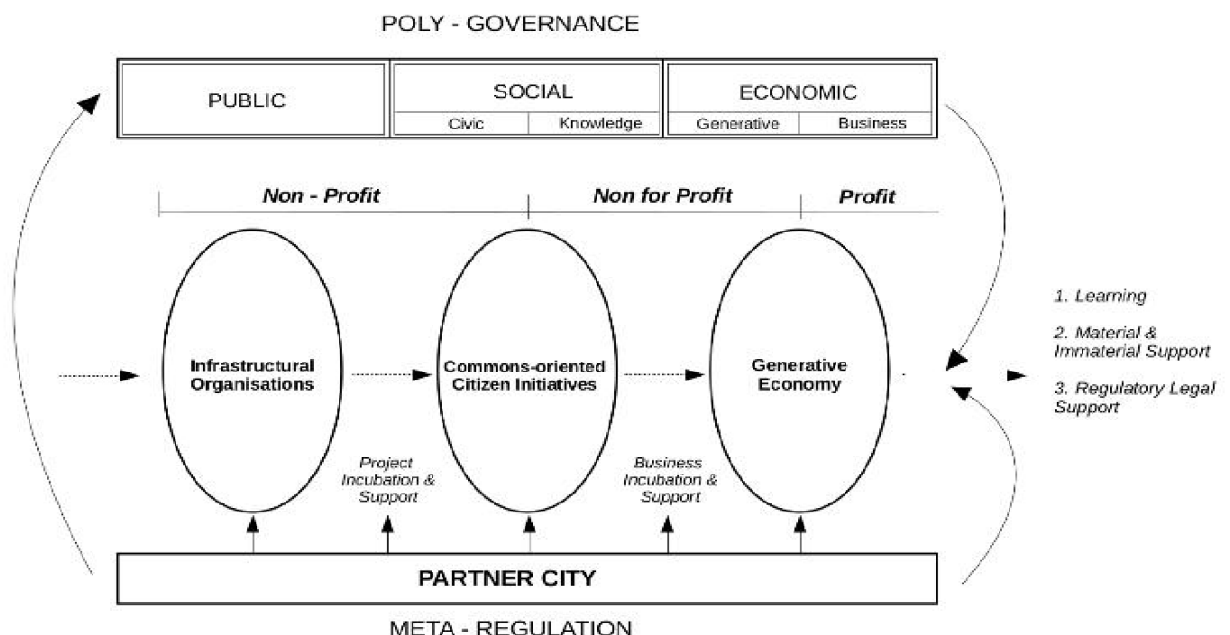
In our analysis of the practices of the growing urban commons in the city of Ghent, based on the mapping of 500+ projects, we can see that underlying this emergence, is a radical shift in value regime. What we see is an evolution from a commodity-based value regime, to a contribution-based value regime. **Commons-based economics are contributory economics!**

At the core of the new value regime is the open productive community, what we call the peer production communities, who collectively create, maintain and manage a resource, through contributions. Some of these contributions are paid for (salaries, freelancers working on paid projects), others are not. But around these commons, are also entrepreneurial (or entre-donneurial, as we call them) coalitions of those entities that create added value around the commons, depending on market needs, and in order to create livelihoods for themselves and their families. When these economies work for the commons, we have a generative or ethical economic entity. Finally, nearly all of these projects, we find this in both open source and urban commons contexts, have ‘for-benefit associations’ that manage the infrastructure of cooperation, without ‘commanding’ the work; They often also help mediate conflicts between contributors and companies for example. We also found that at nearly level, there is informal or formal support from local territorial entities. For example, the city may provide the places and buildings that can be used by these projects, and may stimulate their emergence, for example through ‘temporary usage’ policies; they also often help or subsidize the for-benefit associations that maintain these commons, and act as incubator for potential economic spinoffs.

From these microfoundations of the new commons-centric value regime, we believe that we can posit an idealized commons-centric political economy:

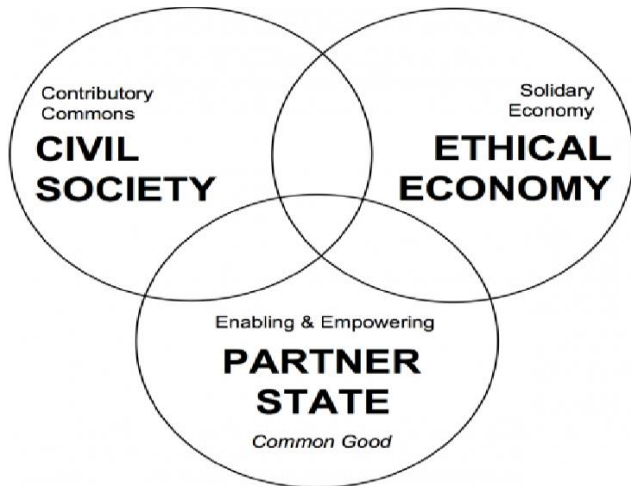
1. In which the citizens contribute to the common good through their contributory engagements to commons projects
2. In which the economy becomes generative, i.e. supporting the commoners and the non-human biotic communities and resources;
3. In which ‘common good institutions’, such as the state, as a general enabling and empowering magazines, which reinforces the ‘commons of capabilities’ of the citizenry and assists

Figure 3: Urban Contributive Economy: Commons, Markets and For-Benefit Associations



When a city or state or other public entity supports the development of individual and collective autonomy, we call this a 'partner state'. Such a partner state engages in cooperation and support with commons-centric civic groups, through public-commons protocols and may eventually 'commonify' public institutions by changing them into multi-stakeholder governed institutions and using new forms of inalienable property of which the state can be the steward, but cannot dispose or sell to the market.

Figure 4: The three great spheres of social life in commons transition

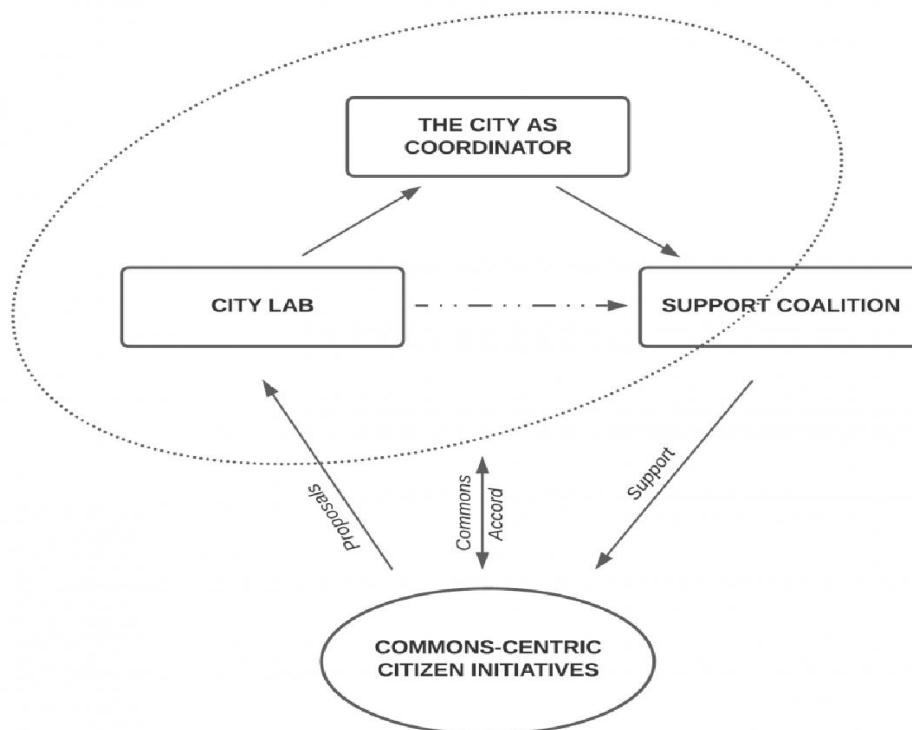


Source: Kostakis & Bauwens 2014)

The graph just below shows a stylized version of such public-commons cooperation protocol, inspired by the system that is active in the Italian city of Bologna:

1. The city has a commons lab which is the interface with the commons-centric citizen initiatives
2. The city and the citizen collectives sign a commons accord, a cooperation charter for the specific project
3. The city acts as the coordinator for the assistance, in concert with the commercial sector, the official NGO sector, and the research institutions, instituting a 'poly-governance' mechanism to organize such support.

Figure 5: Public-commons cooperation protocols



Source: Bauwens & Onzia (2017)

2.5 A cyber-physical infrastructure for production within planetary boundaries

In the report mentioned above, i.e. P2P Accounting for Planetary Survival, we envisage a three-layered integrated cyber-physical infrastructure for the coordination of human productive activities within ecological boundaries:

1. The first level is the level of **free coordination**, i.e. the open and free collaboration of contributors, who can enter or leave the ecosystem, based on stigmergy: the sharing of data across networks, following the principles of transparency and holoptism (the capacity to see the whole system from any point of view), allows participants to free coordinated their activities, without the presupposition of hierarchical command. It's the standard coordination form of open source communities.
2. The second level uses market mechanisms to **allocate** and **exchange resources amongst the ecosystem participants**. A potential example is the use of FishCoin, an intelligent cryptocurrency that uses data about the reproductive needs of fish, to protect the fish's capacity for reproduction. So we are here explicitly referring to ethical and regenerative forms of exchange, which create livelihoods for the commoners, while also preserving the natural resource base of humanity.
3. The third level is the use of '**orchestrated planning**', following the example of the GTAC project described above. This means that the free coordination and market exchange that take place in the network, can be regulated to protect the long-term sustainability of the web of life.

Readers may notice how our proposed integrated infrastructure, 'transcends and includes' the best of the two systems that vied for dominance in the 20th century, and the new system that emerged at the end of that century.

At the P2P Foundation, we like to summarize this approach as:

What signalling (mutual coordination) is for the commons, pricing is for the market and planning decisions are for the state.

In the 1930's there was a big 'calculation debate' between those that favoured market signals, i.e. the discipline and ideas around 'austrian economics', with authors like Hayek and Schumpeter who argued that centralized state decisions could not foresee and manage the complexity of a whole economy, and those that either believed it could be done (the advocates for the communist states of the epoch, based on central planning), or that in any case, the market required strong regulation if we wanted to guarantee good social outcomes (the social-democratic movements). The compromise solution emerged in the form of the welfare state after WWII, managed through Keynesian economics, but was gradually replaced by neoliberal economic models after the 1980s. After 1993, with the spread of the public web, emerged a new alternative, i.e. the capacity of huge, complex and global technical systems, such as the free software-based Linux operating system, to work together without centralized command and control, but through distributed signalling, what some call 'stigmergy', the language of the social insects. This new form of coordinated production of knowledge, software and design is now at the heart of the complex technical systems governing the current global system. But as these open productive communities establish themselves, and develop ever more tools, they also need a more generative economy, that can work with these technical commons, and generate livelihoods for them in non-exploitative ways. Hence an exploration of these generative market systems becomes necessary. Finally, these projects also use planning mechanisms, and establish common good institutions that manage the 'infrastructure of cooperation' that they need. We believe these microfoundations of the emerging contributive economy are the potential basis for a post-capitalist political economy.

2.6 Measuring and growing the common good

Can't live without them, can't live with them!

Our planet currently relies on huge multinational corporations and huge flows of financial capital, that overdetermine the human fate, and are largely predatory in character, not because they are 'evil' in any abstract sense, but because disregarding externalities is what they must do to remain competitive and profitable. So, as we are faced with a climate emergency, but may not have political majorities for a quick post-capitalist transformation, or even actual functional alternative institutions to quickly replace them, we have to start thinking of at the very least transforming the behaviour of these corporations. In this introduction, we want to briefly mention two potential strategies, but will focus on one project that we believe has potential. The first method is 'inside-out change through new accounting'. This would involve companies using triple accounting, recognizing human, 'natural' (with all the caveats and limitations we have discussed about this approach), and financial. The second method is to use 'outside-in' incentives that are under-written by society as a whole, and enforced or stimulated through regulatory mechanisms. See our example Economy for the Common Good accounting system for a description of that logic, which essentially measures the social and ecological impacts of economic actors, and then adopts regulatory policies which support positive impacts and deter negative impacts. Within this logic: private entities must change from the inside in order to 'compete' according to this new impact-driven logic.

Box 9: The Common Good Accounting System: Competing for positive impact

"The Common Good Accounting System describes the positive and negative impact of economic entities, by calculating the effects of economic activity in 17 clusters related to the Common Good. The system offers specific versions for productive entities (firms) and for territorial entities (cities and regions). Through this mechanism, firms and productive entities start competing for achieving these aims, and are rewarded for it with lower taxes and higher support, while those that fail to achieve these aims are subjected to higher taxes and less subsidies. The approach is proposed by Austrian Economist Christian Felber, and a pan-European movement of about ten thousand members. In 2018, around 2,000 entities experimented with the tools developed by this project.

See: <http://www.lteconomy.it/en/topic-interviews-en/interviste/christian-felber-economy-for-the-common-good> (<http://www.lteconomy.it/en/topic-interviews-en/interviste/christian-felber-economy-for-the-common-good>) and the Report [P2P Accounting for Planetary Survival](#)

2.7 Perma-circularity for achieving a steady-state temporality

Wave-pulse theories are theories of human history that see evolution not as progress, but as a recurring sequence that distinguishes extractive and regenerative phases of societal development. In an extractive phase, peer polities (i.e. empires or nations for example), engage in competition for supremacy, but in doing so, inevitably overuse their local and regional resources. This leads to a crisis or collapse of the society, which sets in motion a regenerative process, in which a civilization can heal itself. Our particular contention is that the regenerative phases of human history are characterized by a re-emergence of the commons as the healing mechanism to re-establish harmony with the web of life, as well as more egalitarian outcomes in human terms. The HANDY report, an overview of collapsing societies since the neolithic, affirms that equality is a huge feature of the healing process: more equality shortens the crisis period; less equality deepens and lengthens the healing period. This process is documented in *Secular Cycles* (2009) by Peter Turchin and Sergey Nefedov, and is well established for the evolution of agricultural civilizations; while Mark Whitaker, in his book on *Ecological Revolutions* (2009), documents this process of reversal towards regenerative phases, in Europe (fall of the Roman Empire), China and Japan.

Under the political economy of capitalism, while technology has upended the more short term cyclic effects, with crises leading to further globalized expansion, our global economy has reached planetary limits. James Moore for example, has argued that to expand our commodity-based economy, capitalism needed frontiers with ‘Cheap Natures’, in order to overcome limitations, and each relative crisis was solved through further expansion, until the planetary resources have been degraded and exhausted to such a level that further expansion is impossible. This is the stage we have reached in our global economy at present. Sorokin has linked the regenerative phases to ‘ideational’ cultures (pursuit of non-material objectives) and ‘sensate’ cultures (the more hedonistic pursuits of material objectives).

Our preliminary conclusion: we are both going through a meta-historical event, the loss of our balance with nature at a global level, and at a change within the cycles of capitalism. Both these temporal events, which both lead to a re-strengthening of the commons, are converging in one single global process, which brings the necessity of a re-emergence of the commons to the fore. The essential argument here is that we can no longer afford the wave-pulse alternation, thus, after a period of degrowth, we must actually achieve an integrated, stable society. This means that, rather than a continuation of the cycles throughout human history, we must now be able to shift to a more stable ‘integrated’ or ‘integral’ civilization. This means that the commons must become the central integrating human institution, not just as a temporary pharmakon’ (medicine) for a temporary illness, but as a permanent feature of a steady-state society.

3. The great convergence of regenerative economics

“A critique of growth sets the frame (what to do?), while the commons develops a narration for how to live and structure our social relationships within this frame. Degrowth helps us to understand the urgency of getting out of the “iron prison of consumerism,” while commoning shows what a “beyond-consumerist-culture” looks and feels like. Commoners tend to set forth a “logic of abundance,” the proposition that there will be enough produced for all if we can develop an abundance of relationships, networks, and forms of co-operative governance. This kind of abundance can help us develop practices that respect the limits of growth and enlarge everybody’s freedom to act in a self-determined way.”

— Helfrich and Bollier (2014)

While sustainability refers to the capacity of an economy and society to operate for the long term without destroying its material capacity to do so, resilience refers to the capacity to withstand shocks and recover from them. Circularity means the capacity to produce for human needs in such a way that the waste of one process becomes the raw material of another, in a closed circuit. Biocircularity refers to the fact that the inspiration for circular processes may come from the imitation of natural processes, as nature knows no waste; Perma-circularity, a term from Christian Arnsperger, stresses that for circularity to work, the growth of the usage of materials must remain under 1% per year, so that this growth does not become exponential. Exponential growth would undo the benefits of the circular economy. Sufficiency refers to the self-limitation of human needs, so that nature provides for human needs, but not for unlimited human desires.

Degrowth states that as humanity is exceeding its biocapacity, i.e. Uses more matter/energy than be restored by natural processes, that usage must become negative. If successful, a steady-state economy may be reached which lives within the limits set by its natural boundaries. As degrowth may be seen as a reaction to growth, post-growth advocates insist that in any system, some things must degrow, but other aspects may grow. Hence the debate is no longer about growth versus degrowth.

The current economy is extractive and degradative, i.e. it degrades the quality of natural resources such as soil. A generative economy strives not just for neutrality but to actually improve the state of nature through human economic activity; while regenerative approaches stress the need for activities that heal what has been degraded. A big debate is whether such changes are compatible with capitalism. Anti-capitalist strategies are based on abolishing the capitalist logic of our political economy; post-capitalist strategies by contrast are centered around creating alternative logics that can coexist with capitalist logics but with the aim of overcoming these logics. Commons-centric post-capitalist strategies see a crucial role for the commons and the mutualization of provisioning systems as a means to achieve this.

3.1 Commons economics vs capitalism: Where are we going ?

Commons-centric economics is not a commons-only economics, but a form of economics that takes into account human and extra-human commons, and centers them. At the core of such an economy are the commons of people and the web of life, served by market and state forms that serve the thriving of all beings.

Whereas capitalism only recognizes exchange value that is generated through the production of scarce commodities, commons-centric economics is based on the recognition of all contributions, human and extra-human.

Whereas capitalism focuses on the markets and sees the state as a regulator of markets, which depends on the markets for income; by contrast, commons-centric economics looks at the contributive value flows originating from the commons; at the generative, value-added activities from ethical entrepreneurs active in the markets where goods are exchanged and distributed, and at common good institutions of meta-governance which look at the balance between the commons, the markets, and the public institutions.

Commons-economics do not only focus on scarcity, but focus on the maintenance and growth of abundant resources, using mutualization to make competitive goods more accessible to all who need it.

Whereas under capitalism, the state is there to regulate the excesses of the markets, and often protects the rent of private oligarchic institutions, the community-centric state in a commons-centric economy and society, i.e. the partner state, enables and empowers the individual and collective social autonomy of its associated citizens. The partner state functions as the 'commons of the commons'. It does this by creating public-commons cooperation protocols and by 'commonifying' public services. Rather than considering public goods as the

private property of the state itself, it considers public goods as common goods that are co-produced by human communities and the extra-human beings that they cooperate with, and it creates multi-stakeholder forms of governance that include these various actors to protect inalienable goods that benefit everyone.

Commons-centric economics is above all a 'perspective', not the totality of reality. But it is a very useful and indispensable perspective which discloses aspects of reality that are not otherwise visible. It combines fruitfully with many other perspectives that similarly illuminate reality in complementary ways.

The commons-centric society is post-capitalist in the sense that it still recognizes and honours the market function, but on the condition that they function generatively. Corporate entities are essentially no longer profit-oriented but use their surplus for their purposes and missions.

The commons-centric society and economy is 'post-growth'. It recognizes that degrowth is an essential necessity to reduce the matter/energy footprint of human production, and ceases to prioritize material growth, but it seeks to enable and augment sustainable well-being. Therefore it at the same time strives for a reduction of the human footprint, while expanding all kinds of other services that promote well-being. It sees degrowth as a temporary pathway to achieve a perma-circular, steady-state economy, which can stably provide wellbeing services to its population, in ways that are sustainable in the long run, across many generations.

But sustainability, i.e. maintenance, is not enough. Instead, since humanity has greatly harmed the ecosystems, it aims to focus on restoring ecosystems. Commons-economics are therefore explicitly (re)generative. The new farming enriches the soil year after year, rather than depleting it. Commons-economics are for the maintenance and expansion of abundance wherever possible. The economic field is designed, not to promote and enhance purely competitive behaviour expressed in win-lose dynamics, game A, but in win-win (the four wins, see section xxxx) scenarios that benefit not only the parties in the exchange, but also the whole productive community and the planet as a whole.

This is what commons-based peer production brings to the table, as the core process for creating value in a commons-centric economy. A contributive community, the core of the peer production process is based on the free association of individuals willing to contribute to a particular common good project. This means a fourfold alignment: 1-2) the alignment of each contributive individuals who believes the project is worthwhile and creates a meaningful life or livelihood from it; 3) the common social object which improves as the result of their common work; 4) the common project is a project that improves and brings benefits to the world at large.

Commons-centric economics are also cosmo-local in nature. The principle behind cosmo-localism is that 1) everything that is light is global and shared: this refers to 'immaterial' knowledge, software and designs that can be seen as part of global knowledge commons that benefit the whole of humanity, regardless of place; 2) everything that is heavy is local to the degree that is optimal: the 'right' place for physical production follows the logic of 'material subsidiarity', the most local appropriate place for production and decision-making is the optimal one. That does not mean, everything should be local, but that placing production closer to the point of human need is preferable.

In conclusion, here are the 3 principles of cosmo-local production:

1. The production is at the appropriate and reasonable local level;
2. Knowledge is shared more broadly so that it can benefit everyone in the ecosystem of collaboration and for humanity in general;
3. The governance and property format are distributed to the value producers themselves, in ways that give them a say;; this means a preference for cooperative and other forms of participatory governance.

Endnotes

1. Hall and Klitgaard (2019)
2. Moore argues that it is necessary to develop “a language, a method, and a narrative strategy that put the oikeios at the center”; ie. “the creative, generative, and multi-layered relation of species and environment. The oikeios names the relations through which humans act—and are acted upon by the whole of nature.”
3. Moore defines the “web of life” as “nature as us, as inside us, as around us.” (p. 3) Moore’s alternative to Green Thought “begins neither with ‘humans’ nor with ‘nature’ but with the relations that co-produce manifold configurations of humanity-in-nature, organisms and environments, life and land, water and air.” In Moore’s view, ‘history’ is “the history of a ‘double internality’: humanity-in-nature/ nature-in-humanity.”
4. de Molina & Toledo (2014)
5. By Regenerative Approaches, we are referring to nascent disciplines, models and practices associated with regenerative economics that aim to improve rather than degrade the web of life in which human production is nested. Amongst these approaches are Raworth’s (2017) doughnut economics framework, socio-ecological transformations and resilience approaches as described by Wahl (2016), rewilding practices as proposed by Monbiot (2013) and others, and so-called posthumanist economics and urban planning approaches described by Schönplflug & Klapeer (2018) and Metzger (2015).
6. As Ronald Reagan put it in his State of the Union speech in 1985: “There are no constraints on the human mind, no walls around the human spirit, no barriers to our progress except those we ourselves erect.” At: <https://www.reaganfoundation.org/ronald-reagan/reagan-quotes-speeches/state-of-the-union-3/> (<https://www.reaganfoundation.org/ronald-reagan/reagan-quotes-speeches/state-of-the-union-3/>)
7. ‘Food web’ being only one example of the arenas of multi-species interdependence and cooperation.
8. Steinberger (2020).
9. Manfred Max-Neef et al. (1989) classified the fundamental human needs as: subsistence, protection, affection, understanding, participation, recreation (in the sense of leisure, time to reflect, or idleness), creation, identity and freedom. Needs are also defined according to the existential categories of being, having, doing and interacting, and from these dimensions, a 36 cell matrix is developed which can be filled with examples of satisfiers for those needs. Graphic with 36 cell matrix is available at: <http://www.rainforestinfo.org.au/background/maxneef.html> (<http://www.rainforestinfo.org.au/background/maxneef.htm>) (accessed 28 September 2020).
10. This is, of course, not a conscious process. See, for example, debates between the mercantilists, who located value in land and were close to the declining landowner class, and the early pro-entrepreneurial thinkers, who linked value to human labor and the initiative and management of the new entrepreneurial class, taking place in 18th century France. This debate is discussed by Dominique Meda in her book, *Le Travail* (1995). In relatively stable social systems organized around a particular value regime, regulatory institutions determine the ‘rules’ of the dominant value acquisition and distribution.
11. Graeber (2001).
12. As James Moore argues in *Capitalism in the Web of Life*, capitalism is a system based on the productivity of labor, which combines the exploitation of labor inside the commodity system, with the appropriation of Nature (as ‘Cheap Nature’) that is outside the commodity system, but can still be controlled.
13. On the idea of economic and cultural life in a pluriverse, see Brumas & Tarinsky (2017); Escobar (2015).
14. Source: private email, November 2020).
15. This in contrast with the older and traditional community systems, and their historical commons, which contained a much higher level of reciprocal duties and obligations to participate. Contemporary physical commons tend to have a higher level of obligations and required reciprocity as well.
16. Adam Smith himself was heavily interested in taxes for social justice, such as a land value tax and supported general public services of all kinds. Smith was primarily concerned with empathy as the source of human good, not wealth, as evidenced in the book he wrote before ‘*The Wealth of Nations*’, i.e. his ‘*Theory of Moral Sentiments*’.
17. This concept was proposed by Genevieve Perrin, French doctoral researcher on the entrepreneurial commons. Her concept marries the work of Elinor Ostrom and the work of Amartya Sen, proposing three extra necessary features (to the 8 proposed by Ostrom), to obtain more inclusive and diverse commons participation. See Perrin (2019).
18. See P2P Foundation wikipedia entry on the “[Transition vs Transformation](#)” debate (accessed 28 September 2020).

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