



## **Towards a Society of Living: Provocations on Economy and Economics by a Layman and Entrepreneur\***

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### **Abstract**

*This contribution explores the shortcomings of our current understanding of economy and economics, and how the incumbent framework of interpretation relates to structural failures which are all too obvious since the crisis of 2008. It proposes a reformulation to frame the economy as part of a larger, complex system of systems which is the planetary society at large. It points as well to social blind spots which have driven us into the accelerated gridlocks in which we live, and suggests some ideas to illuminate potential pathways for the evolution of human societies, in order to get out of the present bifurcation towards desirable futures.*

*“The welfare of a nation can scarcely be inferred from a measurement of national income as defined by the Gross Domestic Product (GDP).”*

**Simon S. Kuznets (1901-1985)**

*“Only economists still put the cart before the horse by claiming that the growing turmoil of mankind can be eliminated if prices are right. The truth is that only if our values are right will prices also be so.”*

**Nicholas Georgescu-Roegen (1906-1994)**

*“No problem can be solved from the same level of consciousness that created it.”*

**Albert Einstein (1879-1955)**

### **1. Introduction: The Vanishing Point**

Our global economic system is truly dysfunctional. It plunders non-renewable resources and destabilizes our natural environment on a massive scale, in a spasmodic process of wealth creation and destruction which also produces unemployment, low-paid labour and growing social inequalities. And in doing so it ignores the intricate nature of our relationship to life, and leaves anyway unattended so many human needs, while exciting the bulimia of others, that large-scale poverty is persistent and so many riches of human potential are neglected. Yes, the outcomes may look different if high rates of GDP growth are achieved, but for the time being this is not feasible without more environmental degradation and an explosion of

\* Disclaimer: Although based in much reading and reflection, this paper does not pretend to be an academic contribution to economics, but rather to feed the ongoing public debate. It tries a daring intellectual journey far from usual views on economy and economics (and definitely far from orthodox neo-classical economics), and it probably raises more questions than it answers. But this is consistent with its actual intention to ask provocative questions as first steps for further research.

financial debt which consumes the least renewable of all resources, our own future. Of course, this system has also winners, a few of them very powerful, and many more who aspire to win, but is that enough to keep it as it is? Is it enough to avoid complete collapse?

So, the main point should be how to fix the system. This is where mainstream thinking is, trying to find out how to come back to “business as usual”, a time before the crisis of 2008 when we thought the system was working well. But as we will see in Section 1, the failures are structural, not temporary: in a process originated decades before 2008, the system is threatening its own foundations without achieving purposes which would make human and natural sense.

So, if we are not able to fix it just by repairing faulty pieces and changing control parameters, maybe the point would be to rely on exogenous factors to do the job, and in particular on scientific discoveries and technological innovation. This is also where the mainstream thinking is, hoping that technology could create a substantial change, especially to mitigate the environmental impacts of our development. But as we will see in Section 2, science and technology are not doing that, because their potential is wrongly directed to reinforce the same structural failures.

So, if the kind of innovation we have will not do the job, maybe the point is to produce a real transformation of the whole system. And of course it is, but as we will see in Section 3 that the system is transforming itself everyday, and while we have expressed pretty well the goals which would make human and environmental sense, the efforts in that direction are hindered by the irrelevance of our tools as they exist today, and a gridlock of purposes which all in all create a gigantic gap between our well-intentioned rhetoric and our actions.

So, if we are not able to transform the transformation (and right now we are not), maybe the point would be to review the grounding concepts themselves, how we think about the system and its purposes, to check if the assumptions we make and the perspectives we take to conceive its multi-scale arrangement, from local to global, are not too simplistic and inappropriate. And of course we need a whole restatement, but as we will see in Section 4, by doing that we will realize the limitations of our conceptual frameworks, how wrong is our mechanistic model of the economy as something separate from society and nature, and the blindness of using that perspective to describe processes which are of a higher order of complexity.

So, if our epistemological approach to the economy is wrong, maybe the point is to understand why, and not only by looking for the obvious suspects, those vested interests are making huge profits from the current state of affairs and preventing a meaningful transformation. This would explain the political *status quo*, a true gridlock of will, but not why we do not find ways out of it. To understand this, as we will see in Section 5, we should have a look into our deeper fears and the blind spots they create, which govern our everyday life and the way we conceive society, in conscious as well as unconscious thinking and feelings.

So, if analyzing the state of the economy and its potential for transformation brings us to the blind spots of our consciousness, to the complexity of human perception and its consequences, maybe the point is about the evolution of human life itself and maybe it does not apply only to the economy but to Earth society at large. Yes, in our view this is the ultimate point, so obvious that it vanishes, and so complex that we are not (and possibly never

will be) even close to understanding it except in fragmented ways, through intuition and experimentation. In Section 6 we dare to propose ideas which could be useful in exploring issues relevant to define another type of economy. Have we created a society of living? Do we create more life than we destroy? Are we **in a logic of dying or in a logic of living**? Do we know that at the level of complexity of societal life, ontology (what things are), epistemology (how we understand them) and ethics (how they should be) are inevitably entangled? Do we understand that there is no difference between living and learning? Are we not committing suicide of the human species, at the same time that we destroy many others? In the end, are bacteria more resilient and therefore more intelligent than humans?

## 2. Structural Failures

What happened to the world since 2008 (and is in no way finished) has been widely described as a **global systemic crisis**, but strangely enough it has not deeply changed the framing of economy and finance generally accepted by the Western elites. The crisis is global in its geographical impact since very few people on Earth, if any, have been unaffected, but it also spans over multiple facets of social and economic life: of course finance and consumption, but also the provision of energy, food and raw materials, the challenges of environmental degradation and climate change and, not least, the balances and tensions of geopolitics, the never distant issue of war and peace.

What does “systemic” mean in this context? In our view it means that the structural principles of the current “world system” have failed and will not come back to what they were supposed to be before the crisis. For one, **governance is dysfunctional** in many scales and contexts. By committing deliberate suicide in the Western countries in the 1980s, politics downgraded itself to be subsidiary of so-called free-market economics, mass consumerism and technological innovation. The view is persistent that the political system could be at best an auxiliary to economic growth, ensuring stability through redistributive policies, and at worst an ill-intentioned or clumsy agent whose interventions could only make things harder for everybody. Since this view won dominance in parallel with economic globalization (not a coincidence), a huge transfer of power happened from politics to other areas, most notably to finance and corporate business, but also to nowhere: the deliberate decline in the institutions of global governance also indicates that in many aspects of concern the capacity to take and enforce political decisions now simply does not exist or must be improvised case by case through huge efforts of inter-governmental coordination.

But of course governance is still much needed, so that the state had to rescue the financial disaster of 2008 through massive injections of public resources into the banks “too big to fail”, in exchange of vague promises of wiser behaviour in the future. After decades of deregulation to set markets free of political intervention, politicians were called back and are now blamed for the outcomes, since to the eyes of many we already live in plutocracy and politicians proved to be closer to the interests of big business than to ordinary people. Profound as the crisis is and will be, it is having a huge impact on the political *status quo* and the future of democracy (Ali 2015, Hertz 2001).

Moreover, politics came back but **it still has to show a roadmap** to offer new and hopeful visions for the future, which cannot be those of never-ending sacrifices for the sake of “financial stability”, i.e. to ensure that a “rentier imperative” is respected. In the context of

western democracies, this dilemma of politics becomes particularly acute. Some members of the elite seven start to think that authoritarian ruling (f.i. in Chinese style) is more effective than truly democratic regimes.

The lack of governance is also due to the **changing structure of globalization**, which started with an asymmetry all to the benefit of the Western world (especially of the “Anglosphere”) but has evolved so much in the short time of a human generation. Now we know that wealth, power and influence can move long distances fast. The huge deficits which pumped growth in Western countries, most notably in the USA, were made feasible for years by extraordinary surpluses of Asian and oil-rich countries. This could not come without a cost and so, a **gigantic shift of power** happened through the (re-)emergence of new global actors in the international scene which have their word to say on every aspect of globalization, and where by the way most of humans live, so this is nothing but justice.

Part of that process was due to the addiction of industrialized countries to oil, gas and other natural resources, quite dispersed around the world and whose economic and strategic value will do nothing but grow in the future (in spite of speculative oscillations). But the crucial and irreversible part of this shift is due to endogenous and multidimensional modernization patterns, including demographic transitions, extension of literacy and political self-assertion. Ultimately, the extension of the global networks of knowledge creation and diffusion will strengthen this trend towards a more equitable distribution of power throughout the world. From an Asian perspective this is not new but rather the re-emergence, at last, of the most ancient civilizations of China and India. As Chinese say, Beijing is the capital of China, but Shanghai dreams to be the capital of the world (or is it already?). Unfortunately, we westerners still think in very primitive terms of “Us” and “Them” and, worse, we take for granted that our power of the past, and still of today, gives us some kind of moral superiority. This makes it very difficult to pursue the real opportunities to build together the tools of global governance, precisely when challenges are getting more and more global and complex.

And among the challenges is the fact that many countries (15 to 20% of total world population, around 1 billion people) are still left behind, excluded from modernization benefits and prosperity. At the same time, universal literacy, women’s emancipation and modern technologies are facilitating the emergence of a planetary interconnected citizenship which is redefining the nature of power itself (Naim 2013, Schell 2004). The paradox is that while traditional politics was committing suicide in the West by conceding more power to market owners and self-proclaimed experts, reality was actually becoming more and more political, as determined by non-trivial interactions between a greater number of autonomous actors. As the number of these and the connections between them grow dramatically, so do the **complexity and unpredictability of our human society**. This is not bad in itself, it may be instead the basement for the emergence of a new paradigm of civilization, but our tools of governance are not ready yet for that because our degree of consciousness is still way behind what is happening. In practical terms, this creates a **gridlock of will** which prevents the results of our actions, and the actions themselves, to be consistent with our discourse.

Also, the **lack of economic growth**, as measured in monetary terms, is threatening the whole building of the global economic system. While growth has been for decades the main purpose not only of business and economics but also of politics, and of course is still an

aspiration for a large part of the world population, it can no longer be taken for granted. On one side, we are realizing at last that a high and sustained level of growth was only made possible since the 1980s through financial illusions by pumping huge amounts of resources from the future into the present in the form of ever-growing debt, up to the point where the scheme was no longer sustainable and a catalyst (the “subprime” mortgages) put the whole system at risk. Actually, another big round of **burning out the future** has been performed by public intervention to prevent a complete collapse.

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*“The production of more inequality seems to be an intrinsic characteristic of our world system.”*

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Also and most important in the medium to long term, we know that our consumerist society of uneconomic growth and waste, driven by the materialistic lifestyles of the leisure class, is incompatible with the renewal of resources made possible by the interaction between Earth and Sun. Without solving that contradiction, sooner or later the collapse of human civilizations is inevitable, as it was for the people of Easter Island, a small-scale but significant precedent. But we still stay in the **gridlock of metabolism**, ignoring the bad news that we have not only to increase efficiency in the use of resources but to decrease dramatically their total consumption (Reichel 2010), while finding a way to address human needs, but the real ones, not consumerist bulimia.

To put it simply, we have been consuming more time (in the form of financial debt) than we are able to produce and more material resources than the Earth is able to deliver in a safe way. This is no longer sustainable. No doubt, the pertinence of growth, or at least the type of growth we have been used to, is a crucial question for now and the future. This issue in itself would be enough to address a complete redesign of the economic system (Daly 2008, Jackson 2009).

Last but definitely not least, **inequality** between individuals, groups and nations has been rarely a matter of concern during recent decades. After the failure of “egalitarian” regimes, common thinking was that since growth was providing benefits to many, in a direct way or through redistributive policies, no particular emphasis should be put in monitoring inequalities, much less in reducing them. Actually, and for some time, the current world system reduced computable poverty (as measured by GDP per capita) in a massive way, especially in Asia, although it is certainly more the result of endogenous processes of modernization triggered by a virtuous triangle of political stability, investment in public goods and the reduction of illiteracy, rather than merely the consequence of globalization in investments and trade.

At the same time, inequality has grown in a very visible, often obscene way, when one compares the 1% of wealthiest people to the 50% of poorest, whether at national or global level. Instead of an undesired consequence of growth or (to be very optimistic) a transient phenomenon soon to become irrelevant through global development, the production of more inequality seems to be an intrinsic characteristic of our world system. Like in ancient aristocratic regimes, economic differences accumulate across generations, basically through a **rentier premium** to the benefit of those already wealthy (Piketty 2013). And this is not something of the past: in the “knowledge economy” successful innovations are characterized by monopolistic concentrations of wealth in the hands of lonely winners (e.g. Microsoft,

Google). Of course, part of the premium is the rampant tax evasion by rich individuals and corporations, helped by governments which are supposed to be democratic.

Till recently the promise of prosperity for all could ease the burden that growing inequalities put on the legitimacy of the system, which still tries to keep alive the dream of meritocracy to attract talented people and acquire legitimacy. But, once growth has been put in jeopardy, after public policies have reduced welfare benefits for the sake of “financial stability” and when massive unemployment and low-pay jobs are produced, inequalities of all kinds have become much more important in the minds of millions of world citizens, not only the poorest whose fate was already desperate but especially those fearful who are quickly losing standards of living taken for granted. Not least, the perception is now quite general in Western countries that living conditions will be worse for the next generations, that **progress and modernity are no longer connected**. Aware as citizens of the world are of their rights (even in countries without a formal democracy), this situation is an excellent recipe for resentment, upheavals and a **dramatic loss of legitimacy**. Of course, the top salaries in financial institutions saved by huge sacrifices in public budgets did nothing but fuel the resentment. This is certainly one of the reasons why elites live today in so much anxiety of coming back to “business as usual” as soon as possible, instead of taking the effort of rethinking substantially the systemic characteristics which led us to the present state.

In brief, fundamental principles of our current world economic system are failing, and in a permanent way. As described, the challenges are not a consequence of exogenous circumstances happening at a certain point in time and creating a transient crisis from which recovery can be envisioned, but rather a product of the system itself in the way it has been working for decades. In some sense, **our economy does not work well even when it works well**.

### 3. The Illusion of Technology

Technological innovation is the “deus ex machina” invoked to solve all challenges. In many senses we praise science and technology today as much as we revered ancient gods. We consider them to be the source of modern truth, since scientific knowledge is labelled with the prestige of objectivity and neutrality per se. And science and technology (S&T) feed our dreams since their secular success has made feasible many crazy wishes of human imagination, like flying, travelling to the outer space or chatting with other people wherever they are on the planet. Not least, precisely because of that success, we easily extrapolate the future of S&T to bring us omnipotence, an infinite capacity to break the physical limits which restrain us and, who knows, even that of time and death.

In other words, the wonders made possible by S&T in the last centuries are not enough, we add to them an extra layer of enthusiasm which goes much beyond their actual capacity. All the technological miracles we now take for granted have required huge efforts, a lot of patience, large investments over long periods and a good amount of serendipity. And, most important, they are based not on breaking the physical limits but on better understanding them and finding ways to build on our limitations: we do not fly by ourselves as birds, we mobilize our knowledge and resources to create artifacts which transport us in the air while still respecting physical laws. Of course this is an extraordinary achievement but it is bound by reality, something we easily forget.



Somehow we deal with the rationality of S&T in an irrational, almost religious way, which is nothing but the expression of our emotional nature. We are driven by a complex perception of reality and so many times by our fears, and we need some kind of belief. For three centuries the driving belief has been in the progress of humanity, of course reinforced by the success of S&T. But, while for generations born before the 1980s changing the world for the better would require also (or primarily) political and social innovations, now it seems that S&T has even displaced every other source of hope. The launching of the latest digital artifact creates a widespread frenziness, but also a true and exciting entrepreneurial spirit is mobilized by the potential of technologies to address human challenges. In a sense, we put **S&T at the core of societal evolution**, or to say the least we do not conceive any transformation without them playing a significant role, and this is also why we think they should rescue us from all disasters, even those provoked by ourselves.

This is ironical, since science and technology (S&T) have been not only central to the development model followed by human societies in the last few centuries but often (still today) very effective instruments of mass destruction, environmental degradation and social exclusion. **S&T have been definitely part of the problem**, a key component of our model of economic development, and not only an exogenous factor as considered by mainstream economics, which anyway recognizes their crucial role to improve productivity and sustain long-term growth. But they are also deemed to be the core of the solution, a paradoxical vision grounded in the mentioned beliefs, and in the idea that finding a technical fix is a good way to avoid the less comfortable question of how power and wealth are distributed in society and with what consequences.

Of course, the essential role of S&T cannot be denied. On the contrary, in their capacity to shape human perceptions their role is even greater than their actual abilities to change our relationship to nature. But are not we being unrealistic in expecting them to solve every relevant challenge? Coming back to the structural failures mentioned in Section 1, first S&T will not solve by themselves the challenge of governance. Starting as usual with military power, the latest technologies have been used to redefine warfare in a double way: by limiting almost to zero the losses of tech-savvy armies (to conciliate public opinions in Western countries), and by pretending a high precision in killing only the “bad guys”. But instead of deterrence of wars, the effect has been to relegitimize them after the fiasco of Vietnam (and actually that was the political intention). So, has this been good to build up a peaceful global governance or rather a sure bet for further violence and destabilization? Also, along with deep demographic trends like the progress of literacy and the change in status of women, S&T have contributed to make people more autonomous and more connected, and therefore to increase the complexity and uncertainty of our societies: now, everybody could be the initiator of a trend of worldwide impact, and we are getting farther and farther away from what could be a “controllable system” (Naim 2013). That could be good news, and in another boast of technological optimism we could imagine that this would bring us to a new era of planetary “collective intelligence” (Attlee 2008, Rodriguez 2004, Sunstein 2008) but for the time being this is still just an aspiration and not an effective tool of governance.

Second, as mentioned, mainstream economics expects S&T to deliver “external” shocks in order to produce high growth rates which are needed to keep the system running, but is that what really happened in the last few decades? This is a controversial topic, and different types

of evidence could be found, but it seems pretty clear that S&T, and in particular information and communication technologies (ICT), have been central to the ultra-sophisticated financialization of the economy and the artificial, debt-driven growth model in which we have been living. Further progress in S&T is now subject to an **endless stream of speculative bubbles** on financial markets (Pérez 2002). Their logic is short-term obsession, to cash in now on future and fully uncertain realizations of innovative ideas, which is a good recipe for inflating an already huge amount of fictitious capital and actually preventing that enough investments are made at the right pace over enough time to ensure that the benefits of S&T are reaped for the common good. S&T could be part of a sustainable model of development but not in the way their relationship with the economy works today.

Third, S&T will certainly be the fundamental tools needed to address the environmental challenges but today this is not what we are using them for, or only in a marginal way. Instead, they are used to produce a continuous flow of new and more things, in disregard of the many environmental threats this creates. And fourth, regarding social inequalities, the role of S&T is definitely ambiguous. Yes, the benefits of knowledge can be distributed evenly, but they can also be used to concentrate more power and wealth in few hands. This is what typically happens in activities with high network externalities, like software business or the commercial exploitation of telecommunications and the internet, and so are created private monopolies like Microsoft, Google or Facebook. And the disruptive power of digital technologies is often used as well to change the social fabric by pretending a capacity to reduce costs (*cf.* the illusion of “zero marginal costs”) while they actually change the structure of prices, i.e. the distribution of power. So for instance taxi drivers, presented as if they were abusing of a monopolistic position, are in risk of dispossession by Uber, which intends to avoid the full costs of transport (including social charges and the fulfilment of public regulations) in order to create a new brand, not a publicly owned service but, this time for good, a private monopoly. Yes, the “sharing economy” could be real but as a mechanism to create capital accumulation in monopolistic hands, it is simply a false metaphor and a fraud.

All in all, increasing our knowledge and applying it into new artifacts have for sure a strong potential to benefit humankind, but the processes and rules through which scientific discoveries and technological innovations are promoted and produced are not neutral at all, but rather reflect a particular organization of society and therefore embody certain values and interests, explicit or not, which of course have a strong impact on the outcomes of S&T activities. It is legitimate to ask on which factors does it depend that S&T could contribute **to overcome or to aggravate the challenges** we face. Of course this question has much to do with the key players in the domains of scientific research and technological innovation. Under the dominant view of who should have the leading role in the evolution of society, we almost forgot that the state has been the most consistent player in research and innovation, with a unique capability to mobilize and orient public and private efforts through its multi-faceted capacities: as the no.1 client in every country and as such able to drive large-scale innovative demand, as the regulator pushing companies to invest heavily in R&D effort (f.i. in pharma and biotech sectors) and, not the least, as an entrepreneur able to bear the burden of uncertainty and long-term planning much better than private corporations (Mazzucato 2013). In the last decades we have been unlearning this historical experience and vision acquired in the second half of 20<sup>th</sup> century (Bush 1945) which was so successful in the USA and other countries to produce a long-term gigantic leap forward.



As a consequence of relying more and more on private initiatives, the agenda of S&T itself is deeply changed. While the public agendas of research and innovation include “societal challenges” as part of their targets (as f.i. in the Horizon 2020 programme of the European Union), most of the innovation really happening is driven not by the type of concerns exposed above, but by the existence or not of short-term profitable demand which businesses could exploit (as is coherent with their logic). And if the demand does not exist yet, it is created by bubbles of speculative investments and the pressure of fashion. Our culture praises innovation, a magic word omnipresent in our mass media, but it generally translates to a high-speed consumerist stream of instantly obsolete artifacts for which we put in danger the supply of rare earth minerals (Valero 2015) while it is the fuel of wars being fought in Africa. And on a larger scale, we consistently ignored over the last decades the opportunity to increase resource productivity (Weizsäcker 2010), because our policies ensured that wasting non-renewable resources imported from the other side of Earth makes more economic sense than using the potential of local labour.

In this context, a very specific role is being played by ICT, for most simply a synonym of “technology”, the paradigm since the 1980s of technological innovation “changing the world”. No doubt, their impact is huge, but do we fully understand it? And do we harness it for the common good? Nothing is less sure. The digital industry is brilliant in producing a succession of fast-moving **rhetoric waves** which are tuned to our most irrational beliefs in the omnipotence of S&T. For instance, intangibility and dematerialization are used as a call to get free from limits, as is implicit in terms like “zero cost” or the “cloud”, while this is made of huge material infrastructures and, of course, we still are physical beings living in a physical (and finite) planet with physical costs. A different, real kind of dematerialization should certainly happen, enabling human development to be free from the accumulation of material artifacts, but this is not what the digital industry is doing.

Moreover, digital innovation is increasingly focused on the disposability of humans, on replacing them by automated machines, potentially threatening every single job on Earth, skilled or not, up to that of President of the USA for which the IBM Watson software has been proposed, and the campaign is not a joke. Even analysts of stock markets are at risk of being replaced by automated machines in the ultimate self-devouring pirouette of financial capitalism (Popper 2016), pointing to the true dystopia of a world owned by the happy few and operated by machines, while the 99% of us would have to struggle for the crumbs. Instead of falling into the messianic **illusion of “digital solutionism”**, we should pay serious attention to how it is practiced today and to its contingent nature (Lanier 2010, Morozov 2013), since it could pave the way to full dehumanization, “technolitarian” futures in which human and environmental purposes would be secondary to the logic of technological innovation. “Transhumanism” and the quest for “singularity” are examples of an arrogant techno-utopianism full of metaphoric promises which are just vaguely related (or not at all) to the challenges mentioned above and could instead aggravate the risks of collapse.

When facing this contradiction between the potential benefits of innovation for humanity and its practical outcomes, one cannot help remembering T.S. Eliot, as he asked almost a century ago where is the knowledge lost in so much information and, worse, where is the wisdom lost in so much knowledge. Drowned as we are by an endless deluge of gossip, our minds get lost in the “trending topics” of the day and thinking in perspective becomes

extremely difficult: if we connect to everyday reality we are not able to think; if we disconnect from it, will our thinking be valuable or even heard? Of course alternative thinking exists and is probably richer and stronger than ever but we do not pay much attention to it. We live in a constantly accelerated time (Rosa 2005) and we are not so interested in learning relevant knowledge when it is contrarian to the high-speed mainstream. Conversely, we are able to unlearn easily some wise lessons acquired at high cost in the past (f.i. that of a strong regulation of financial markets). And while the active participation of stakeholders (actually, the whole planet) would be key to reap the benefits of S&T for the common good in an “innovation democracy” (Stirling 2014), we look at what happens as if it was a show. Debord was right, we live in the “société du spectacle” and thus in a **gridlock of thinking**, in which our lives are entertained as much as to block genuine humanity (Postman 2005) and to avoid a real impact of modern art and creation on our conformist mass-media culture.

The combination of scientific knowledge and technological sharpness has a strong generative capacity, which could lead either to old-fashioned accumulation in very few hands or to the emergence of vibrant ecosystems for the benefit of sustainability and diversity of humankind. But right now innovation is obsessed with speculation, not driven by societal challenges, focused on “solutionism” rather than on specific contexts and produced without the stakeholders. So, we cannot take for granted that it will drive our course away from socio-ecological disasters. It could be (it is right now) the opposite. Overcoming this situation requires making explicit the processes, rules and motivations driving S&T as an expression of our social organization, and developing the appropriate criteria to assess the relevance of new inventions for the course of humanity.

#### 4. The Lampedusian Syndrome

Then, the state of affairs described in Section 1 calls for some kind of radical transformation, a goal which is claimed by many although prescriptions vary greatly from one to another, and some even think that the right diagnostic is actually a lack of enough “free markets” and deregulation. But even if we assume that the economy has to be transformed, this statement is still pretty weak. Weak because the call for reforms or transformations is heard everyday in the public arena, but the purpose and details of what has to be transformed and in which direction are not so much discussed. So many times the implicit prescription is to better adapt to globalization, just as if it was a universal law of physics. But the statement is also weak because economy, society and life at large are always by themselves in a process of permanent change, of combined transformations happening simultaneously at different spaces and time scales, slow or fast, intentional or undesired. Our social systems are autopoietic; they are always recreating and transforming themselves (Maturana 1980). So, how to make the difference and ensure that the net result of all the transformations taking place, intentional or not, is going in the right direction? In other terms, how do we avoid the Lampedusian trap of changing everything in order to change nothing, how do we **transform the transformation**?

This raises the question of normative criteria, the question of what we mean by “the right direction”. A minimal requirement would be structural stability, so that the system evolution should not create the conditions to destabilize and destroy itself (which is exactly what it is doing), but this certainly will not be enough. To be true, an optimistic vision of how the failures described in Section 1 have been treated in the public agendas since 2008

could provide some answers. To start with, the role of economic growth and its ambiguity are addressed in the document “Transforming our world: the 2030 Agenda” adopted by the United Nations in September 2015, and a detailed definition of “the right direction” is proposed in the statement of 17 Sustainable Development Goals (SDGs) and 169 associated targets. Moreover, the unanimous agreement at the COP21 conference on Climate Change in December 2015 shows the public concern of governments, corporations and society at large on the undesired consequences of the current economic development model.

Also, inequality has been addressed by many, in and out of the academic field, and Piketty even became a no. 1 best-seller on Amazon in April 2014. Again, the concerns about growing inequalities and poverty, and their implications in terms of social responsibility are present in the public discourse of governments and core institutions of the current economic system such as the OECD. The changes in the asymmetric structure of globalization are being (painfully) recognized as a fact of life, and a new way of dealing with multilateral negotiations may be emerging via the replacement of the G-8 group of rich countries by a much wider G-20 with a strong representation of so-called “emerging” economies. And the crucial role of politics is being re-emphasized in the European Union by parallel phenomena (although mainly divergent): new political actors have dramatically shaken the status quo in many countries (Greece, Portugal, Italy and Spain, to name a few) and the European establishment is making efforts to build a “stronger union”.

But are these reactions to the challenges of the right ones, are they enough and are they happening at the right speed? And could we claim that the challenges are new to us, that we are reacting in time? What if we had a look back to the past to judge how good we have been in changing our course in the right direction? 50 years ago, Radovan Richta, a now forgotten philosopher from Prague, said that our civilization was at a crossroad (Richta 1966). Some years later, the Club of Rome proposed the concept of limits to growth in order to avoid collapse of civilization as we know it (Meadows 1972). These and many other works published in the 1960s and 1970s had a real impact on the public debate and fueled controversies with a potential to influence policy making, and in the last decades environmental concerns have certainly played a role in shaping the political agendas, both at the national and international levels. But in terms of civilizational changes, it seems fair to say that the outcomes have been quite limited, or not even that as far as sustainability is concerned.

Actually, new research is showing that the recent evolution of humankind has been close enough to the predictions for the “business as usual” scenario described by Meadows and her team back in 1972, which they interpreted as a sure path to collapse (Turner 2014). We did not hear the alarm, not that of 40 years ago, and not the previous ones: since Robert Malthus wrote “An Essay on the Principle of Population” back in 1798, dozens of thinkers and leaders have expressed deep concerns about the fate of humanity as a consequence of a socio-economic model based on the core assumption of unlimited growth. And we did not pay attention either to those practitioners who developed solutions which would be labelled today as “green”, such as the solar machines created by Augustin Mouchot back in the 1860s, from which humanity could have profited to avoid the dependency on fossil fuels (Bonneuil 2013).

We humans live on perceptions, and we excel in denial, especially when the reality we have to face may have a negative impact on the way we live. This makes us prone to believing in story-telling, like the supposed recovery from the 2008 crisis which is part of the official

framing in Western countries, just to be denied by stubborn reality (Chang 2016). But what if the collapse anticipated by many as a threat for the future had already started? What if the Malthus curse, cited as the perfect counter-example of how civilization overcame fatalist visions of its future, was revealing to be true? Are not the flows of phosphorus and nitrogen, so essential for the agricultural revolution to deny the predictions of Malthus, already way beyond the boundaries where their exploitation is sustainable (Steffen 2015)?

Moreover, the COP21 agreement creates the perception that climate change, the most publicized issue of environmental degradation, is being properly addressed, but are we not blind to the multi-dimensional and intricate nature of how our systems of production impact on the natural environment? Are not we ignoring many of those dimensions, at least as critical as climate change, as for instance the plundering of mineral resources in unsustainable ways (Bardi 2014)?

All in all, Richta, Meadows and many others were fundamentally right, but in practice they have been unheard for decades. As a result, we are no longer at a crossroad, where we can easily choose between different directions, but trapped in a planetary high-speed gridlock, actually in a combination of intertwined gridlocks. We move faster and faster towards nowhere, and we are less and less able to think in perspective and get out of them. We already mentioned the gridlock of will and that of metabolism, linked to the growing divergence between what is humanly desirable and feasible in harmony with the environment, and what is financially attractive. And we trap ourselves into a **gridlock of purposes** when financial profitability becomes the core obsession of our economy, while human and natural welfares are displaced to be only fourth or fifth derivatives of what we call success. That way, the economy produces unemployment, poverty and inequality except at very high rates of growth which, as mentioned, are lethal for the depletion of resources, including climatic stability and, the least renewable of all, our own future.

And this leads us to the most intriguing **gridlock of culture**, so difficult to apprehend. Consciously or not, when facing the contradictions of everyday life we tend to pursue selfishly our individual interests, taking for granted the powerful but false idea that such a behavior is the recipe for individual and social progress. Powerful because it connects with many people adopting selfishness as a misleading relief for their fears, but false because it actually produces concentration of power and richness in the hands of a few, and therefore inhibits the potential of most and compromises the sustainability of our ecosystems. Still, what could make us choose generosity freely instead of selfishness?

Ultimately, we suffer from a **gridlock of vision**. So many concerned individuals and organizations around the world are already aware about what we describe here. Many books and reports have been written to explore the complex challenges of our times, hopefully bringing a better understanding and capability to harness them. But a strong feeling exists that it is far from enough, that in the fundamental dimensions of our future inertias are much stronger than true innovation and that our high-speed pace of change is actually reinforcing the gridlocks. For all we say about change and innovation, we mentally live jailed in the imperialism of the present. We believe that human nature is essentially immutable and that the accumulation of contingencies which has brought us to where we are today, unpredictable and often erratic as it has been, has nonetheless given birth to the only world possible. In the

name of realism, we censor ourselves, labelling as utopian so many alternative ideas of how to live, precisely when the only realistic option for the future, as Edgar Morin says, is to be utopian.

How to untie the gridlocks? First by being aware that they exist, by describing them, whatever the effort it can take to leave our usual comfort zone. Most of the time, we abandon ourselves to the social high-speed stream leading to nowhere. While we know this is crazy, we practice the very human sin of procrastination and indulge ourselves by complaining about what we live and missing good old times. So, we have not built up yet the universal sense of urgency required for deep transformations to face the threat of collapse. It may just be because those who are suffering the most are much underrepresented in the public sphere: they are too poor and generally far from the core of rich societies and powerful media. They could appear occasionally on the TV news, as Syrian refugees do, and even have a voice on the internet, but in the gridlock of thinking in which we live, who is listening for long enough? Still, when tensions of all kinds are accumulating everywhere and some of them exploding in violent ways, it is very hard to sustain that we are doing enough and going fast enough in the transformation we need. In view of the simultaneous growth of inequalities and unsustainabilities in the last decades, one cannot help asking if the dystopia of the movie “Elysium” (Blomkamp 2013) is so far away from what we are starting to live.

And what if the arts were more capable than economic and political sciences to apprehend what is happening to humanity? What if our rational capacity of analysis and action was blurred by blind spots which prevent us to be lucid and effective? Of course, at some point we will really start listening to the bad news, once the anger and fears of millions on the verge of exclusion will have destabilized enough the societal *status quo*. Will it be too late? What if the ultimate gridlock, “the gridlock to rule them all and in the darkness bind them”, was our blindness to collapse?

## 5. A Transformative Restatement

We live in an oxymoron: everything accelerates and we are gridlocked in many ways, such as those mentioned above. But we do not live in total abstraction, we always use particular frameworks of interpretation, although we pretend to have an impossible “objectivity”. We could adopt **different perspectives** in multiple space and time scales, which would produce different analyses and prescriptions. What if we take a step back and adopt the perspective not only of the economic outcomes but also of how we conceptualize the economy and how we think we control it? For sure, the systemic failures are not ignored by the mainstream thinking, but generally considered as opportunities for improvement, while keeping alive the same fundamental hypotheses about how the economy works (or should work), as a system based on efficient “free markets” which can be analyzed separately from society and the environment (in the now widespread triangular representation of sustainability). Attempts even exist to define a virtuous path out of economic dysfunctions, as f.i. in the “Lisbon Strategy” of the European Union (Kok 2004) through a combination of knowledge economy, global competitiveness, innovation, productivity and sustainability. But the Lisbon Strategy failed and the mainstream thinking did not prevent us from the deepest financial and economic crisis in many decades. Should we still use, in spite of that, the same reference framework for the debate about transformation?

For many reasons that framework is too limited, to say the least. The debate on policies still flows on simplistic stereotypes of “state”, “capitalism”, “markets” and “innovation”, and the traditional controversy between “more state intervention and industrial policies” versus “more market and competitiveness”, as if state and market were separate options while they are intrinsically entangled. No market exists without the state and public regulations, and such a thing as a “free market” does not last for long, if it exists at all (Chang 2010). And looking at real markets, the omniscient magic box able to produce an optimal allocation of resources is simply a fantasy: markets are dynamic, for sure, but they reflect the distribution of power among actors with very different outcomes ranging from private monopolies à la Google to situations of zero profit for all players or even self-destruction. Putting on this an “optimal” labelling is just an ex-post legitimization.

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*“The General Equilibrium paradigm of prevailing economic thought is built on hypotheses which are false and not even approximations to reality, the main flaw being that we humans, our organizations and life at large are always dynamic and far from equilibrium.”*

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Likewise, neither “capitalism” (a family with different species, originated in national and historical contexts not to be ignored), nor the economy should be assimilated to markets, while there are significant contradictions between them which should be better understood and exploited for the common good (Braudel 1988). Markets appeared long before the onset of capitalism and they can be used as regulation mechanisms to produce social profits instead of the accumulation of wealth and power in a few hands, but of course this is not interesting for capitalism *sensu stricto*. Also, most activities of a modern economic system happen in ways coordinated otherwise for the sake of effectiveness, inside public or private organizations not applying internally the market paradigm but practicing collaboration instead of competition (Sapir 2000). And enterprises, as one of the social forms where the production of goods and services is organized, may lose their strength if focusing on financial metrics only. Actually, “companies should not be run in the interest of their owners” (Chang 2010), since true entrepreneurship requires the unfolding of purposes much more complex than short-term financial accumulation (including of course the creation of new jobs). By the way, does it make any sense to use the same concepts for organizations whose size could differ in 6 or more orders of magnitude, from the small shop to the largest multinational, from ants to elephants?

Furthermore, prices are not a good measure of human value since they are dependent on the distribution of power among stakeholders (Strange 1988, Sapir 2000), unless we consider that what we call “value” has to be exactly that. Prices are determined by complex processes where technical and political elements are intertwined, and they do not express either the true costs of exploiting high-energy-low-entropy resources and returning low-energy-high-entropy waste (Valero 2015). This points to a **critical gap between economic measurements and the physical world**, quite obvious when one considers the huge impact of our economic system on the environment (Georgescu-Roegen 1971, Odum 2001).



Moreover, as shown by many, the General Equilibrium paradigm of prevailing economic thought is built on hypotheses which are false and not even approximations to reality, the main flaw being that we humans, our organizations and life at large are always dynamic and **far from equilibrium** (Prigogine 1997). Surprisingly enough, the paradigm has been re-worked by additions over the original hypotheses to try to improve the results, instead of changing the assumptions completely, as would have been done in physics, a science frequently considered by economists as a model to imitate for the excellence of its practical results.

There is still more. One of the main outcomes of the current economic system is the production of huge amounts of **fictitious financial capital** (Durand 2014) as shown by the tripling of the figures in the 25 years before 2008 of the global “financial depth” (ratio of financial assets to GDP). This is a hard fact: financial figures are not reflecting reality but building up a virtual one in which fictitious capital claims of course real profits. This has been made possible by a dangerous lack of regulation of financial markets (Naulot 2013) and by our unlearning of lessons from the past, and is a pretty good recipe for further collapse (Rickards 2013).

And, last but definitely not least, the representation of human behavior in mainstream thinking is fundamentally flawed (Bina 2011). Up to a point we respond rationally to economic incentives, but we are much more than that, we are (fortunately) emotional beings whose intelligence goes much beyond so-called “rational” thinking (Damasio 2005). Maybe that gap between behavior and representation could explain the growing gap between GDP per capita (on which we use as a degree of welfare Kuznets himself was sceptical) and other measures of material well-being and human satisfaction, such as the Genuine Progress Indicator (GPI) and qualitative surveys results. Above a certain threshold of material prosperity (reached in the West in the 1970s), the GDP per capita can continue to grow while **human well-being remains stagnant** (Canois 2007, Nelson 2012). But of course this would not surprise psychologists who know that, once a certain degree of material comfort is ensured, other fundamental human needs become the critical elements of satisfaction and motivation, intangible qualities such as receiving affection and recognition, feeling a sense of protection, belonging and achievement, and developing a greater self-esteem through participation, freedom and creativity (Maslow 1943, Maslow-Neef 1995, Bauman 2008, Schor 2014).

In brief, mainstream economic theory is a conceptualization of a certain view of the world, hence of certain values and interests. For sure it has played a role (though a disputable one) in the evolution of societies during the last two centuries. But, whether for academic or practical purposes, this view is not able to bear the fruits we need (Mollo 2015). Getting out of it is no easy task either, in the absence of alternatives to the world system of global capitalism and its economic thinking, which is strong enough to “naturalize” its ideas and prescriptions as if they were the consequence of physical laws, and to exclude a large part of economic decisions from the political debate to justify them as “technical solutions” (as done f.i. through the “independence” of central banks). This **perception of no alternatives** is of course reinforced by the historical failure of communist regimes, which prevents us from looking into the realm of other options for the future. Conservative opinions abound, on one hand with the expectations of many to come back to pre-crisis scenarios with little variations.

And without a more elaborate vision, the revolutionary momentum of radicals betting on a whole system replacement will probably not succeed to reach power or to achieve their goals even if political power is conquered, so that radicalism may be unintentionally conservative.

Escaping from the current framework also implies recognizing that both mainstream and traditionally critical views (whether keynesian or marxist) actually share the concept of economy as a separable and mechanistic system (a machine), which can be controlled to produce desired outputs in order to fulfil our needs. Many keynesian and marxist authors would disagree with neoliberals about the design and especially about the purpose and outcomes of the machine, but still think that somehow it is a machine. This vision is built on analogy, inspired by the success of physics and its corollary of useful artifacts which have brought so much progress to humanity. And although the analogy derives from a misled understanding of classical mechanics and further developments of physics (Mirowski 1991), this conception of **the economy as a separate mechanical artifact** is widespread and has a huge impact on our social organization, long ago anticipated (Polanyi 1944). In our view it is also at the core of frustrated non-capitalistic configurations of society. Adhering to the concept of a separate machine designed to fulfil human needs and legitimate in doing so to use natural resources, whatever the consequences, has been the perfect recipe for the over-exploitation of resources in unsustainable ways, and it is no coincidence that environmental degradation happened at least as much in the Soviet Union as in Western countries.

But we still need to build something else or, to be more precise, alternative foundations which could, over time, help to transform the current system into something else (Wallerstein 2014). And the sleight of hand of the elites, adopting all alternative labels to empty them of real content, will not do the job. Actually, **systemic alternatives are building themselves**, not at the core of the system which will not transform itself until facing collapse, but rather at its borders, where there is room for true innovation. Fortunately, action precedes reflection and spontaneous phenomena happen before they are fully conceptualized. For centuries, local communities have been able to design complex rules in order to preserve scarce resources critical to the life of whole ecosystems, so that we should not speak anymore of the “tragedy of the commons” as a universal law, but rather of the “potential of the commons” (Ostrom 1990, Barnes 2006). Now, dozens or maybe thousands of local experiments are taking place in the world to find alternative ways for living sustainably.

Most of these experiments are based on bottom-up organizations, different from governments and corporations. Some of them, such as the Open Source movement, use **innovative property rights**, different from the basic options of public and private, and develop a whole new domain of peer-to-peer, “collaborative ownership” which is much wider than the most visible tip of Wikipedia (Ghosh 2005, Kostakis 2014). Some address how poorly the official indicators driving our decisions represent reality, and propose **new indicators of well-being and sustainability**, like the Sustainable Development Indicators (SDI), the Human Development Index (HDI) and others (Canoy 2007, Talberth 2007), or even try to reinvent corporate accounting to focus on the “common good” (Felber 2015). Still other initiatives foster the participation of citizens to develop **collective agendas of socio-ecological priorities** through mechanisms like the “participatory budgeting” originated in Porto Alegre and used now in hundreds of cities around the world. And of course a lot of energy is also invested by “**social entrepreneurs**” around the world to find

solutions to societal challenges (Bornstein 2004), in ways which many times build on local availability, open-source science and natural biophysical processes to square the circle of social, environmental and financial benefits (Pauli 2010). This widespread momentum even innovates in the **theory and practice of law** to explore indigenous concepts (Nagan 2013) and to help people build their own sustainable economic alternatives (Orsi 2013, Capra 2015). Not least, innovation looks also at the conception of money and value, including the use of **complementary currencies** designed to foster circulation instead of accumulation (Spash 2008, Lietaer 2011).

In the end, all of these experiments draw from human inventiveness, tenacity and solidarity when facing the consequences of hardship, when the official economy does no longer provide the right solutions (Latouche 2006, Santos 2002). And they show that alternatives exist and need not be large or mobilize huge resources to have an impact. Provided there is a good cause they can digitally mobilize people around the world, and they also show that financial incentives or the prospect of private accumulation may be worse motivators than the sense of being useful to others and get recognition for it. Moreover, these initiatives extend now beyond the territory of “freakies” and radicals, they are definitely part of the kind of transformative strategy we should envision to transcend the false, simplistic dilemma of governmental vs market-driven solutions (Klein 2015).

But of course, the alternatives could reveal to be too weak or too slow to make a significant difference and prevent the system collapse. Scaling up, climbing the ladder from local phenomena to global transformation is not an easy task, and it depends on how to make possible that the alternatives keep their entrepreneurial spirit of finding new solutions and do not switch purposes to the usual maximization of financial returns and preservation of the *status quo*. At the core of the system itself, true renewal could be easily promoted by positive action in favor of innovative SMEs when competing with established corporations. And citizens could be empowered by investing massively in education to develop personal talents and the capacity of lifelong learning, or by experimenting with social endowment as a universal foundation for equal opportunities (Mangabeira Unger 1998). So many opportunities exist for institutional innovation, democratic experimentalism and participatory processes, and using them would be so important to rebuild collective confidence, that one has to ask why only innovations compatible with the *status quo* are tested, why are we able to produce so much technological innovation, but not the political innovation needed to meet human aspirations. The answer is obvious: the *status quo* is still very strong, especially in the minds of the people taking the main decisions.

The blindness to collapse of ruling elites is reinforced by a binding effect: the limited perspective of economy as an engineered, purposeful machine whose top-down design works better when left in the few hands of enlightened leaders and private power, is perfectly coherent with their own interest in self-preservation. Of course the actual purpose of our systems is never independent from the way we describe them. The “economy as a machine” sets clear that the rest of the world is there to provide inputs and absorb the outputs, and also that there is a natural hierarchy separating the managers and designers of the machine from the rest of humans.

So, the transformation we envision requires **changing the conceptual framework** at the same time that we start transforming the system itself (Göpel 2016, Hoffman 2012, Sterman

2006). We could start by getting rid of the illusion of omniscient “free markets”, which are supposed to produce an optimal allocation of scarce resources while we actually get a growing scarcity of critical resources to optimize the affluence of a few. And we could follow by a **transformative restatement**. What we call the economy is no less than a **societal-scale system of systems** whose purpose is (or should be) to **address human needs** by mobilizing and coordinating human capabilities in interaction between themselves and with the environment. This focus on human needs, instead of the creation of private wealth, is not neutral. As mentioned, above a certain threshold of material comfort our needs are intangible, so they are not necessarily conditioned by traditional wealth creation in the first place and they can also be achieved without money. Thus, monetization is not always a must, as we know from the universal feeling that the most valuable things of life, the shadow of a tree in a sunny day, the smile of a child, the sound of music cannot be computed in monetary terms.

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*“The transformation we envision requires changing the conceptual framework.”*

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In fulfilling its functions, the economy creates and destroys **social structures** as well as private and public wealth. It uses all kinds of coordination and accumulation mechanisms, and especially money, which plays a significant role but does not displace everything else. The system exploits human knowledge, mostly in the form of technologies, and over the last two centuries it has developed an impressive capacity for innovating and reinventing itself (through “creative destruction” in Schumpeter’s words). Of course, the economy is **multidimensional and dynamic**, always far from equilibrium and subject to shocks of exogenous and endogenous origins, whose effects can be of first-order magnitude. The system is **recursive, autopoietic**, since the outcomes of its processes modify over time the structural elements (the human needs, the environment and the economic structures themselves). Therefore, it is also **historical and evolutionary by nature**, as a system but also at the micro level, where organizations of all kinds have to adapt themselves in many cases by switching from their original purposes to mere survival.

Moreover, the economy is composed of an assembly of decentralized and **autonomous agents** of different kinds, from individuals, associations and small businesses to corporations and states, from micro to macro-scales. These agents take decisions and interact continuously. They have a limited knowledge of their environment but are able to learn. The conditions under which they take decisions connect the economy with politics (through regulations and property rights but especially through the **distribution of power** between economic agents) and with society at large (through the relational and cultural structures which frame power and decision-making). And the central role of the **interactions between decentralized and heterogeneous agents**, whether happening through markets, by governmental intervention or via other forms of coordination, also means that the economy is a **network of networks**, so that nonlinearities, resonances, externalities (both positive and negative) and emergent behaviors are standard outcomes and not just accidents.

The economy is then a **complex system of systems**. This puts us in the domain of “post-normal science” (Funtowicz 1993), which means that **uncertainty** about the future is not a limitation of our knowledge but an intrinsic and irreducible characteristic we cannot escape from (Prigogine 1997). And the challenges we face to avoid collapse are themselves **complex**,

**multidimensional and incommensurable** and they need new ways of coordination, involving all kinds and dimensions of human intelligence, both individual and collective. For that we need the holistic paradigms of 21<sup>st</sup> century science (Healey 2009), in order to acquire a higher level of consciousness (Jacobs 2014).

## 6. Blind Spots and the Locus of our Fears

The economy is a complex system of systems in which a multitude of autonomous agents, individuals and organizations, play a central role. Thus, the economy cannot be limited to our conceptions of the economy. It is also about how people live and dream for them and their children, how they are inspired and motivated, how they perceive and grasp opportunities of fulfilment and how they deal with the frustration of hard presents and uncertain futures. The economy is not a machine with well-defined boundaries but part of a much more complex living system, whose meaning and purpose, yet to be resolved, may be just the persistence of life itself. And do we know enough about life to be sure that we are not destroying the very conditions of its human variant?

The more we know, the less we know. Scientific discoveries often provoke dramatic changes in the foundations of what we thought we knew. Suddenly we discover that plants have mechanisms enabling them to communicate and learn (Baluska 2010). And now we know that we have a “second brain” in our stomach, hundreds of millions of neurons active in our guts amid billions of bacteria which not only do the digestive work but influence our moods and perceptions (Gershon 1998). What we call the “brain” is not a biological equivalent of the central processing unit of our computers, but an extremely complex network of networks fully intertwined with our corporal ecosystem and beyond, thru the zillions of sensors which make us perceptive of our environment. Dualism, our reductionist view of mind and body, is dead for good. But now that we are getting more and more aware of the complexity of life, and of the amplitude of our ignorance, how could we claim that we live in the “knowledge society”, or that we will reach it by using the current conceptual frameworks, or even that we are able to act in a way consistent with the degree of knowledge we think we have?

The more we know, the less we know. Our world is becoming more predictable and less predictable, at the same time. On one side our advances help to have a better understanding of partial phenomena and to produce sophisticated artifacts, which we design to be effective and predictable (although we succeed less and less in that). And at the same time the outcomes of our actions make the world more difficult to apprehend: the societal dynamics produce more autonomy for individuals, groups and organizations of many kinds, and the connections between them do nothing but grow. Autonomy and connections are what makes society a complex system that is much more than the sum of its parts, and as such also truly, intrinsically unpredictable, even more when we destabilize our environment beyond what it can deliver in a sustainable way. The balance between both trends, towards predictability and the opposite, is pretty obvious. We who hate uncertainty, we actually excel in producing more and more uncertainty on a massive scale. As a result of our dreams coming true, we live in a small world in which the distant flap of a butterfly can produce a tornado next door, in which details and macro-behaviors are connected and the center of the world is everywhere. The more we know and act, the more uncertain is our future.

The more we know and act, the less we are able to understand and control. Fortunately, this also brings the opportunity of unexpected emergent behaviors, of new capabilities of self-organization for the sake of life. And it could create as well the feeling that we are all together, of any origin, language or color of skin, in the same adventure, and that the best ideas may come, why not, from a remote place in Africa, where the whole story began. But who could ensure that our course will be happy? How could we think and work for a better future? How could we pursue any kind of relevant reflection about life, society and the future?

We could try to assume the gap between our anxiety to control and the fact that living systems are complex, autonomous, self-referring and self-constructing, but not controllable (Maturana 1980). And who said anyway that life should or could be controlled? We are emotional beings, in spite of consciousness we do not control our intelligence, which for the most part is unconscious. Modern neuroscientists have at last rediscovered what poets know since the beginning of times: that we do not take any decision without emotions, that emotions are an integral, irreducible part of what we call intelligence (Damasio 2005). But again, if the behavior of our social systems relies on human intelligence and most of it is unconscious, how could we consciously work for a better future? Let us try a crude extrapolation, the crazy hypothesis that we have **social blind spots**, which respond to deep emotions widely shared and could create, when facing the contradictions of life, the kind of hysterical behaviour which has driven us so close to collapse.

Let us apply this lens to the seemingly reasonable definition of sustainability established by the Brundtland Report (UN WCED 1987), which ideally should be a guideline for the future. It says:

*“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:*

- *The concept of ‘needs’, in particular, the essential needs of the world’s poor, to which overriding priority should be given; and*
- *The idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.”*

Who would not adhere to this? And yet it contains some implicit assumptions which are not so benign for the future of life. First, from the point of view of the signatories (representatives of governments), it establishes a category of persons, “the world’s poor”, as if poverty was an ontological condition of some humans and not a burden which is shared by all of us whenever somebody is in need. Then it puts the environment in a subsidiary position, not as the ecosphere of which we are part, but as the reservoir of resources which we are entitled to exploit for our needs. And not least, it points to technology and social organization to overcome our limitations in exploiting the environment. So, well-intentioned as this declaration could be and important as it was for raising environmental awareness, it is still compatible with what really happened since the 1980s: we did not give priority to “the world’s poor” but to a deregulated globalization for the sake of free movement of capital and goods (but not of people) and to an ever increasing over-exploitation of natural resources.



Let us dare to name some of those blind spots on which we build our societal systems.

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*“When we strive to translate everything into quantitative figures, we forget that life at large but also the value of ecosystems or the performance of human organizations are complex, diverse, infinite-dimensional realities, so that they are not commensurable with a scalar, one-dimensional magnitude.”*

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**Fantasy of exclusion, denial of bonds.** There is a subtle but critical difference between distinction and exclusion, which we override all the time. The first principle of social organization is still to establish the difference between “Us” and “Them”. Heritage is still based on kinship, and we indulge ourselves with the concept of the individual as a microcosm, while alone we are strictly nothing. But of course this is useful to ground a moral superiority of “Us” over “Them” and to build up artificial boundaries, on which we practice zero-sum games, avoiding responsibility and recognition of unpaid labor and ecological externalities, on which ultimately we base exploitation of the many weak by the few strong, of helpless natural resources, of future time as the scarcest resource.

**Fantasy of omnipotence, denial of limitations.** Again, there is a subtle but critical difference between inquiring into our limitations and ignoring them; it is the difference which separates art and science, on one side, and the bulimia of instant consumerism and void entertainment to death. While in our natural instincts for drink, food, sex and fertility, sufficiency is the rule (and excess is a sign of disorder), we are insatiable in looking for material gratification at a growing speed and we feed with it our weird dreams of unlimited growth, control over the universe and insane eternity.

**Fantasy of measurability, denial of complexity.** The obsessive act of measuring embodies our values much better than our public discourse. When we strive to translate everything into quantitative figures, we forget that life at large but also the value of ecosystems or the performance of human organizations are complex, diverse, infinite-dimensional realities, so that they are not commensurable with a scalar, one-dimensional magnitude, whatever it is. In spite of that, we try to reduce the value of companies or the ecological impact of our actions to money, and the welfare of nations to GDP. Somehow, we have not yet abandoned the habits of slavery, when we used to do the same with humans.

**Fantasy of capital, denial of potential.** A prosperous future is of course built on the best we can get from past generations, infrastructures and resources, and especially the non-computable: cultural and artistic heritage, scientific knowledge, institutions and “social capital” (Putnam 2004). But at a point, capital gets disconnected from the productive economy and from reality itself, when it becomes a pure abstraction in computerized systems where it reproduces itself in a fictitious way without the backing of any human labor creating authentic value. At that point we start taking for granted that the past should have greater rights than the future, because the yields of fictitious capital absorb more and more resources and finally

inhibit the potential for further progress, until overwhelming debt is simply repudiated, as it happens once and again (Graeber 2011).

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*“The transformation we envision will not be straightforward, it will not happen through societal evolution unfolding in a smooth and linear sequence of causes and effects.”*

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**Fantasy of power, denial of learning.** Entitled by tradition or as a reward to the heterogeneous distribution of skills and capacities, we accept the existence of inequalities and hierarchies, and the right of a minority of people to take decisions on behalf of the rest, even in the most democratic of regimes. In many senses this is a practical solution to organize societies, until power forgets the contingent nature of its position, originated in history and certainly some capacity and tenacity but also pure chance, and maintains itself over time through self-preservation and inheritance. At that point, power becomes “the ability not to have to learn anything” (Schein 2002).

**Fantasy of certainty, denial of time.** Our imagination is the most powerful of tools but when coupled with fear, it makes us hate the uncertainty of future, as much as we avoid the certainty of our own death. So it is no surprise if we appreciate so much the determinism of classical mechanics and its capacity to predict, which we would like to imitate in every other discipline, and in particular in economics. And looking for relief we implicitly assume, as a social taboo of our time, that money cannot lose value, that it has a natural right to reproduce itself whatever happens to society, whereas the second law of thermodynamics ensures that value does nothing but erode with time, unless we learn and work to create new possibilities.

Needless to say, the understanding of distinctions, the impetus to overcome (not override) our limitations, the capacity to measure, the accumulation of useful assets, the organisation of society and the will to create some certainties are valuable drives without which social life would simply be a nightmare. But they easily fall into the blind spots we have described because these are deeply rooted in our many fears, the fear of pain and hardship, the fear of loneliness and irrelevance and of course the ultimate one, “the fear to rule them all and in the darkness bind them”, that of our sure death. We feel that we are increasing the contradictions between our human drive and the future of life as a whole, on a planet whose biophysical limits have been reached, whose climatic stability is endangered by human activity, whose living and mineral resources are being exhausted at great pace, all of that without eliminating human hardship. And afraid as we are of this permanent conflict with the world, we invent self-delusions to alleviate our fears. We observe social status and practice individual accumulation to protect ourselves not from need but mainly from the feeling of personal irrelevance and the anxieties we face everyday in our eternal quest for meaning. Is that the right response to our fears?

## 7. Sparks to Show the Way

Human values evolve over time, according to the way we organize our survival on Earth (Morris 2015). Time has come for a quantum leap in our strategy of adaptation to

transcend the gridlocks mentioned above by creating a new paradigm of civilization. That said, how to proceed? The challenge is daunting, since decision-makers ask for solutions, not for problems, and until the conceptual framework they use is changed, they will only accept ideas compatible with that framework, hence the acceptable “solutions” will aggravate the failures. Moreover, as shown, the economy is not an exercise of deterministic science which could be “solved” by even the most sophisticated degree of engineering. So we live in a vicious circle. For sure, the transformation we envision will not be straightforward, it will not happen through societal evolution unfolding in a smooth and linear sequence of causes and effects. We are in the realm of “wicked problems” (Camillus 2008), with high “social complexity” (Aaltonen 2006) requiring the setup of a “good transition arena” (Tukker 2007) and dealing with many dimensions at the same time. As is often the case, poets may be best suited to face complexity: Antonio Machado rightfully said that “walker, there is no way, one makes the way by walking”.

Then, what can be done? Of course creating a sense of urgency for transformation (Kotter 1995). But we do not know yet where to go, so the everyday transformation goes astray. What should be the goal? An obvious answer could be “sustainability”, but this cannot provide the meaning, it is only an attribute with so many interpretations that it is used as well by the elites willing to keep the current *status quo*. At least we need a substantive such as in “sustainable happiness”. And we need a restatement of the whole purpose itself: from creating financial opportunities and making them humanly acceptable, whatever the social and environmental costs, to make **socially inclusive and ecologically compatible what is humanly desirable**. But this trinity does not point to separate dimensions, they are only descriptive aspects of the same, complex focal point which is an ethical statement: **human aspirations** to personal autonomy, participation, recognition and creativity cannot be fulfilled without a **universal awareness** to take care of all humanity, living beings and the planet at large. Composed expressions such as “socio-ecological” or “auto-eco-organization” are frequently used in the literature to stress the multi-dimensional complexity of the transition to be done, taking care at the same time of economic, environmental and social issues (usually giving priority to the economy). Instead, we suggest to refer to “life” as encompassing all the complexity we could imagine. Both as a synoptic guideline and the best expression of meaning, we should go towards a **Society of Living**.

But again, how we could know we are going in the right direction? Stating a practical list of policies to be applied tomorrow goes beyond the scope of this paper, which is more of an opening to debate and further research. Instead, let us try with some mottos and ideas to illuminate our way.

One could be **Diversity beyond Measure**, to ensure that social experiments as those referenced in Section 4 find their space to grow. Our obsession with simplistic measurement and high performance produces learned helplessness at the individual level and a constant pressure on purposeful organizations to switch to monetized growth for the sake of it, while entrepreneurship could instead be devoted to minimize the exploitation of natural resources and maximize employment and the participation of human talents without material growth. This would require relying on complex knowledge already available (Ostrom 2007), promoting and protecting new and collaborative forms of property, developing other types of

measurements to connect economic and physical values (Valero 2015) and experimenting as well with demonetization or alternative forms of monetization.

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*“The progress of civilization is not grounded on selfishness but, since ancient times, on extending the frontier inside which we practice generosity and trust by default .”*

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Of course, promoting diversity is also about recognizing the sacred principle of dignity for all, and that overcoming segregations, whether for gender, social, cultural or racial reasons, is both a moral and a practical imperative. It is about transforming power from a drive towards expansion and conflict, a zero-sum game played by alpha males of both genders, into a practice of shared potentialities and care of the common nature from which we all live, in which collaboration is not always but so many times better than competition. This could be achieved by **Weaving for Life**, connecting ourselves with what is beyond the boundaries we have artificially created, to recognize that we are just autonomous nodes in a myriad of networks intersecting with us, we are fragile ecosystems in dynamic (dis-) equilibrium with the zillions of bacteria on which our life depends, ourselves being tiny creatures of a societal network of networks embracing the whole planet, of which no part is truly a separate microcosm.

Then it would be clear that the progress of civilization is not grounded on selfishness but, since ancient times, on extending the frontier inside which we practice generosity and trust by default (Godelier 1994). Let us do it not only with our relatives but with the children of all nations, with all forms of life and, not the least, with the inanimate nature on which our life depends as well (just remember water). By weaving wisely, protecting the existing institutions of collective welfare and creating others, extending their reach to the whole planet and being self-demanding in our personal commitment, we could receive more than we give and create more life than we destroy.

Of course, in such a framework the only consistent way of conceiving prosperity would be through **Wealth as Networks**, not as unlimited private accumulation. Actually it is just our fantasy of capital which makes us think otherwise. Life-relevant achievements require mainly the mobilization of mindsets towards collective goals and taking advantage of the knowledge accumulated over time in the form of science, technology, art, culture, infrastructures and institutions which altogether play the crucial role of absorbing entropy between agents and across generations, and which could be made easily accessible to everybody in order to multiply human potential (Benkler 2007).

Needless to say, we will have to get rid of our neurotic consumerism, towards **Material Sufficiency and Exuberant Creativity**, which is exactly what life teaches. Demographic transitions originated in a better status of women show us the way: quality is more important than quantity, in particular for children. Moreover, there is one unlimited game to which we can direct our human drive in harmony with the environment, it is that of learning and experiencing together in the infinite variety of disciplines of knowledge, of sports and crafts,

of art and science, of beauty and truth. Unleashing human potential is another way of ensuring the universal right to beauty while avoiding burning the planet (Sen 1999).

The world would look very different if we recognized at last that every human being has talents of his own which must be developed, that emotions and human relationships are among our most valuable assets and that they can be educated to produce a multitude of individual passions for the profit of all, not for the sake of individual accumulation. Which in turn would require education to be no longer centered on reproducing social hierarchies and selecting narrow elites, but on the assumption that everybody has the same right and obligation to achieve personal fulfilment. This would lead us to a **World of Symmathesies**, to use a term recently invented to think beyond individuality and exclusion, to emphasize that there is no difference between living and learning, that we are always experiencing contextual mutual learning through interactions (Bateson 2015).

Of course this is not what is happening when, even in rich countries, the promise for most is made of exhausting, full-life work days just to ensure some material comfort and avoid the threat of unemployment. But we cannot help saying that life should be different from a mad race towards status and hyper-consumption, where so many lose and some seem to win (while losing their own time). Societal arrangements are feasible to produce what is needed with shorter workdays and a variety of professional engagements over personalized curricula, so that ordinary people would no longer be just workers and consumers, threatened by the exclusion of unemployment or the emptiness of retirement, but empowered citizens who could enjoy lifelong learning, exchanging across generations, practicing passions and participating in collective decisions at all levels.

Empowering citizens would be part of a bold claim, that of **Opening the Space of Possibilities**. Instead of suffering from our limitations, we should realize that what binds us to others, human or not, is also what makes us free, what opens new possibilities for desirable futures (Ceruti 2004). And we cannot separate any longer ontology, epistemology and ethics: the obligation to do good is not separate from recognizing the complexity of life and our connection to every other part of the universe (Kunneman 2010). Overcoming our gridlocks requires reclaiming the legitimacy of good governance and regulation to produce public goods and limit public bads, and restarting politics as the common space where collective problem-solving is debated and addressed, with ideas truly “out-of-the box”. If the way we practice innovation leads to private monopolies, maybe we should revert them to public domain after some time. If the real interests of virtual capital are killing our potential for tomorrow, maybe we should try with a global wealth tax (Piketty 2013) or with currency demurrage to ensure that sleeping capital loses value over time (Lietaer 2011). Even mainstream economists know that the burden of financial debt is killing the economy, but up to now they only admit negative interest rates to get out of it without shocking the rich and powerful.

Starting with these sparks in the dark, we could try to follow the teachings of life in order to improve our social organization and avoid committing collective suicide. But, one could ask, how to learn from the mystery of improbable birth and inevitable death? Life is a pure contradiction and we will find no easy solutions to the dilemmas it creates, starting with the need for animals to feed themselves by destroying other living beings. Life is in itself a source of permanent conflict between creation and destruction, between its propensity to grow and

expand by default and the finiteness of exploitable resources. Yes, but any particular form of life, even the simplest, is also a singular opportunity to transcend that contradiction by creating the possibility of more life.

Right now, we should recognize that our expansionist and selfish interpretation of life is destroying more than it creates, and in particular it destroys the proper conditions of our own life in the future. How to reverse that? By redefining the boundaries inside which we calculate the balance of creation and destruction, in other terms by including the victims (human or not) of any kind of exploitation into our concerns. Of course, we humans cannot live without feeding ourselves, and we cannot aspire to a decent life without extracting many resources from our environment. But we can decide in which ways we frame and deal with the conflicts our existence creates. If not preserving each living being, we can apply permaculture to preserve species at the same time we ensure the appropriate feeding of all humans (Vala Ragnarsdottir 2015). We can decide to deter mutual destruction of humans through war and violence. Instead of fighting others, we can decide to fight ignorance and prejudice. Instead of accumulating useless artifacts, we can fight our inner limitations and develop our talents. Instead of practicing depredation, exploitation and exclusion, we can require ourselves to behave better for the profit of all. We can use thermodynamics and humanism to reconcile beauty and truth, the beauty of our aspirations and the truth of our limitations. We can choose creation (and self-creation) instead of destruction. We can create the Society of Living to ensure that life is able to continue its adventure on Earth. We can choose life instead of death.

## **8. Conclusion: Bifurcate for Good**

We used to think that all human inventions mean progress, but we know this is not always true. We have accumulated an impressive amount of cultural, social and material achievements, and by so doing we have also brought the expansionist drive of life to a much higher and destructive level, able to fill the planet and alter dramatically the environmental conditions of all species, including our own, and put them and us at risk. And for all our inventions, we know we are still not able to deal with the basic contradiction of life without entering into conflict with others, whether they be humans, other living species, the natural environment in which we live, or even our own future.

Up to now we have been trying to hide those contradictions behind social blind spots which have led us into the accelerated gridlocks in which we live. And the reason for these to be so strong is that untying them is not possible in the same plane where they were created. We have to change our intellectual and emotional framework. In that plane, a clash of imperatives is already happening, **rentier aspirations are not compatible with democracy and the environment at the same time**. So tensions will only accumulate, up to a point of rupture where the sum of systemic instabilities will make a bifurcation happen towards a very different path. But this will either go down, towards collapse, violence and misery, or up, towards higher complexity and richness. Unfortunately, in historical perspective it tends first to go down before going up, because increasing complexity is not the easiest path to follow. It requires additional energy, consciousness and a sense of holism, as well as determination and generosity, all of them qualities which so many times do not win the game except when all simplistic options have been tried first, which is why human history has been built so often on tragedy.



The European wars of religion from 15<sup>th</sup> to 17<sup>th</sup> centuries were finally resolved by accepting a higher level of complexity, that of religious diversity and tolerance. Likewise, the complex and diverse European Union, that “unidentified political object”, did not emerge until the unprecedented catastrophe of two gigantic civil wars of planetary scale. For sure, we will transit to a new bifurcation, this is guaranteed by the aspirations of most of humanity to break with the current *status quo*. But how do we avoid the bifurcation heading first towards catastrophes, before eventually giving birth to a new planetary eco-civilization which is far from granted? If we do not fool ourselves, f.i. by pretending that Daesh is not related to the failures of our global economic system, it is pretty obvious that we are already in the path of violent collapse, and the question maybe instead if we should focus on system reform or in building aside for the future.

The changes envisioned in this document will not happen spontaneously, they would require the political and economic elites to open their share of power to build a better world together with citizens at large, and this will probably not happen until too late (supposing we are not already too late). But in the meantime we have to go the extra mile to adapt wholly new concepts and actions. Their seeds are certainly there, dispersed but alive, some imagined by poets, others by voluntary outsiders, but also many claimed by sensitive insiders. Time has come to assemble the seeds and give them the right soil and nutrients to make them grow into a new and beautiful embodiment of life on Earth. Of course, some will say that we speak about Utopia, a land of wishful ideas which will never materialize. But being only realistic is today a recipe for disaster. And the practicality of painting sketches of desirable futures is that they can inspire not only those who already dream but also those many more who still do not dare to dream.

We, all humans, aspire to personal autonomy and dignity, to express our multiple identities in local or global communities, to receive social recognition, to practice our passions and enjoy with our relatives but also with the unknown who share our feelings, whether near us or on the other side of Earth. In a deeper way, emotional, conscious and imaginative beings as we are, we constantly look for meaning and transcendence. Achieving these aspirations is feasible in harmony with our environment but it requires changing the purposes of human organizations, a cultural revolution towards values of care and collaboration, an educational system focused on the expression of human potential through the talents of all, and the promotion of generosity as the real driver of individual and societal progress.

We do not have the roadmap to achieve those changes at global scale. But at least we know that holism and complexity are required. Ecosystems are holistic and complex *per se*, and the bifurcation we need will not be less so. First we have to recognize that complexity is not wrong, it is the testbed for the emergence of new synchronicities, of qualitatively new social artifacts (Jantsch 1980, Ostrom 2007). Second, the center of the world is now everywhere. Time has come to conceive the world not from the West to impose our conception and values to the rest, but rather to build something new together. And third, being holistic also means building with and from citizens of all over the world, through a combination of top-down, bottom-up and cross-generational approaches without which no new legitimacy will be possible. No doubt, new political and cultural processes will be necessary to transform our world, and maybe the right bifurcation will start in and from the cities, as the roots of active citizenship and small-scale worlds where we could try to untie the gridlocks and open ways to a better future.

So, let us get back from the future of our common dreams, and start making them real. Let us continue this adventure, the greatest on Earth, that of a paradigm shift of unprecedented scale in human history. Let us abandon the pervasive disenchantment of the early 21st century, obsessed with money and the exhibition of material privileges. The challenge is to build a Society of Living at peace with itself and the planet, an inclusive, sustainable and more feminine world where we could practice the obligation and pleasure of making life meaningful and enjoyable. We will never suppress the eternal dilemma between beauty and truth, but by extending our innate generosity and practicing intelligence, we can make life joyful instead of miserable. To do that we will have to bet on that word never mentioned in serious essays, but worth enough to finish with it by asking: what could be the meaning of our presence here if we do not dare to love?

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