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l'anthropocène et ses issues

The Permacultural Revolution

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Permaculture is not simply a different way of gardening, but a true vision of post-industrial society in which we have to relearn how to live with less energy and in a more local and down to earth manner. It gives a certain pace to finitude and a plan for a convivial energetic descent, as well as being a toolbox for soil regeneration. Permaculture is a silent Revolution; but will it know how to become an exit solution to the Anthropocene?

The neologism "permaculture" comes from 1970s Australia, where its co-founders, Bill Mollison and David Holmgren, contracted two terms: "permanent" and "agriculture" but also "permanent culture". From the first pages of *Permaculture One*, the founding book from Mollison and Holmgren that was recently translated into French[1], permaculture places itself in a long-term vision of time. It borrows references from pre-industrial aboriginal societies whilst projecting itself into a future beyond oil: "Permaculture is the completion of an absolute life support system for humans, going beyond solutions developed by preindustrial societies". "The fact that it's based on permanence helps to define it", the co-authors insist[2]. Permanence thus takes multiple dimensions: it takes as much account of living plants as it does the sustainability of food systems. In permaculture, time, just like space, is a resource.

Bill Mollison was born in Tasmania, he successively worked as a baker, fisherman, shark hunter, mill worker, trapper, tractor driver, glass blower, spent nine years working for the inspection of Australia's natural reserves and did planning work for the interior fishing service. In 1968, he became the director of studies at the University of Tasmania and later taught as a senior lecturer in environmental psychology. He has also published books on Tasmanian aboriginals and on small vertebrates found in the region. In 1978, he created the Tagari community in Stanley (Tasmania, Australia) where he practiced his permaculture methods through self-sufficiency, on 28 hectares of land. His revelation: "the characteristic of all permanent agricultural systems is that their energy requirements are fully provided by the system. Modern agriculture fully depends on external sources of energy – hence its dependence on oil. Without permanent agriculture, the possibility for a stable social order does not exist[3]". According to Mollison, the practitioner of permaculture, who finds himself at the junction of the esthetic and the useful, is a creator of beauty, microclimates and security.

David Holmgren studied the environment at the University of Hobart in Tasmania. His interests lie in landscape planning, ecology and agriculture. In 1974, he met Bill Mollison with whom he developed the idea of permaculture. However, instead of staying in a classical agricultural framework such as organic agriculture, the first and only book from the two co-authors gives permaculture a much larger sphere of action: "We didn't want to establish a fixed and dogmatic scheme, but a model that integrates multiple principles coming from a myriad of disciplines: ecology, energy conservation, landscape planning, urban renewal, architecture, agriculture (from all its aspects) and geographical location theories". David Holmgren set up his "laboratory" for permacultural experimentation with his wife Su Dennett, in the Melliodora Gardens near Hepburn Springs, in the State of Victoria, Southwest Australia. Since 1983, he has been a consultant for Holmgren Design Services. In 2002, he published the book *Permaculture: Principles and Pathways Beyond Sustainability* and, in 2009, *Future Scenarios* (Chelsea Green Publishing Company).

Both Mollison and Holmgren are filled with a deep awareness as to the impermanence of the industrial system. From Tasmania, the birthplace of their "enlightenment", they formulated a hypothesis whereby the energy subsidies injected into the current agro-industrial system would collapse: "It appears that the energy supporting our system does not come from the sun via photosynthesis, as in the pre-industrial era, but almost entirely from the combustion of fossil fuels via an industrial system. (…) A decrease or total collapse of this subsidy could provoke a catastrophic fall in production. Hence, the basis of our modern food system would no longer exist, preventing the nourishment of world population, even if it's numbers were to return to pre-industrial levels. The real damage caused by energy voracious agriculture on arable land and the environment, is not yet fully known. However, we do know that soil degradation, pollution and the proliferation of resistant insects are widespread and acting over long periods of time. The extent of the damage will only really be discovered once our endlessly growing energy consuming system comes to an end[4]."

Hence, permaculture emerges as a vision where a change of direction is a necessity in view of the risks we face of either a slow erosion, or a total collapse of our industrial agricultural model due to shortages in non-renewable resources. Permaculture on the other hand, is conceived as a low energy consuming system that uses a great diversity of plant varieties. The term "permanent agriculture" suggests the use of cultivation methods that allow the soils to maintain their natural fertility. It also questions the "unused potential of perennial plants in the world[5]". Contrarily to modern agriculture, which totally depends on external energy sources, the aim of permanent agriculture is to ensure energy self-sufficiency. The authors define permaculture as "(…) an integrated evolving system that self-perpetuates plant and animal species useful to mankind. In essence, it is a complete agricultural ecosystem, inspired by existing examples made more simple[6]".

1 Bill Mollison, David Holmgren, *Permaculture 1*, p.19

2 *Ibid*. p. 20.

3 *Ibid*, p.19

4 Bill Mollison, David Holmgren, *Permaculture 1*, p.19

5 *Ibid*. p. 20.

6 *Ibid*. p. 15.

A vision of the world

As such, permaculture is much more than an agricultural technique. It reveals itself not only as a different way of gardening, but also as another way of perceiving the world, as a complete philosophical and material transformation. It's a vision of future societies that will be confronted by the evolution of energetic and climatic systems. Thus, we can understand the imperative need to revise practices in order to stabilize food systems beyond energy scarcity issues. Mollison and Holmgren insist on their basic convictions: modern agriculture "totally depends on external sources of energy – hence its dependence on oil. Without permanent agriculture, the possibility of a stable social order does not exist", even states Bill Mollison[7]. Permaculture is a dynamic thought process: "it's a relatively recent occurrence to think of agricultural land in ecological terms and taking into consideration the relations, interactions and energetic functions of factors instead of considering them individually[8]". It synthesizes various influences: "We didn't want to establish a fixed and dogmatic scheme, but a model that integrates multiple principles coming from a myriad of disciplines: ecology, energy conservation, landscape planning, urban renewal, architecture, agriculture (from all its aspects) and geographical location theories[9]."

An answer to the entropy of thermo-industrial societies

In his book written in the early 2000s, *Permaculture: Principles and Pathways Beyond Sustainability*, David Holmgren presents permaculture as an answer to the world's energetic descent. According to him, the wealth and economic growth that compose our industrial world are based on the unprecedented exploitation of vast quantities of fossil energies that took hundreds of millions of years to form within the bowels of the planet. We have used a significant part of this precious energy to increase our extraction of the earth's resources in unsustainable ways. The consequences of this overexploitation will reveal themselves, as our access to fossil energies decline. Holmgren emphasizes that squandering so much capital would lead any company to ruin.

Permaculture questions itself on a way to break with this energetic mismanagement that is founded on an erroneous conception of wealth. One of its fundamental principals asserts the necessity to capture and stock energy over the long-term. It particularly focuses on ways to optimize the capture of photosynthesis. The laws of thermodynamics have not been omitted from permaculture principles. As David Holmgren emphasizes, "understanding of these energy laws of energy was fundamental to the development of the permaculture concept[10]". In the second principle of permaculture, "capturing and stocking energy", Holmgren returns over the laws of entropy: within the universe, energy dissipates from areas of concentration and tends to dilute itself. High quality energy has a tendency to degrade into low quality energy, thus loosing its transformative power. This tendency towards dissipation and chaos is called entropy and it effects all living and inanimate systems. Living systems organize themselves in such a way as to optimize their ability to transform and stock energy: those who find the most efficient ways to do so are those who stand out throughout evolution. All biological and mineral resources can be considered as embodied energies. Our infrastructures and technological devices, on which we base human societies, whether they are simple or complex, are the result of these primary energy sources. Agriculture is nothing else than a century old technique to capture the power of photosynthesis. Hence, for millennia gardeners and farmers have captured calories coming from photosynthesis in their seasonal cultivations. The seeds collected from one year to another are also a very dense stock of energy that is absolutely vital for the next harvest.

Creative energetic descent

In a world where energy availability will decline, we are going to rediscover the advantages of collecting and stocking immediately available renewable energies and to reuse wasted resources found in rural and urban landscapes, as well as those found in our homes and local economies, believes Holmgren. But this does not only come down to a simple technical transformation. In its multidisciplinary approach, permaculture also questions scales of governance, culture and the various myths required to create the adequate conditions for energetic descent. "To claim that it is possible to use permaculture principles to design a sustainable culture and society may be too big a leap, but I believe it is possible at least to use them for evaluating the diverse cultural phenomena we find ourselves participating in[11]." Thus, some values and attitudes can contend towards energetic descent: valorizing knowledge systems that are external to scientific rationalism, connecting and crossing disciplines, collecting local knowledge and direct transmission practices. Bioregions will be the founding frameworks for energetic descent, they will be culturally, intellectually and biologically diverse in order to strengthen the hybrid vigor of their human and natural resources. Holmgren also imagines that they will have their own political and economic structures, reflecting the geographical diversity of their territories, and that they will be little dependent on centralized technologies. The corporate bodies and "guilds" of energetic descent, will develop diversified and integrated practices on farms and manage them through collectives.

Closing ecological cycles

The soil is the place where carbon, phosphorus and water cycles are closed. Indeed, for the carbon cycle, humus retains carbon and thus contributes to the stabilization of green house gas emissions. For the water cycle, the different techniques of soil covering and swales retain and distribute water in the landscape. For nitrogen, phosphorus, potassium and calcium, permaculturalists pay attention to the composition of soils and tend to produce their own fertilizers and organic composts. Permaculturalists are very conscious that any loss of humus as a consequence of industrial agriculture is a direct contribution to global warming. Therefore, all organic waste must return to the earth and all forms of industrial livestock farming must be

7 Bill Mollison, *Permaculture 2*, Charles Corlet Editions, Condé-sur-Noireau, 2011, p. 20. (1979).

8 Bill Mollison, David Holmgren, *Permaculture 1*, op. cit., p. 21.

9 *Ibid.* p.16-17.

10 David Holmgren, *Permaculture: Principles and Pathways Beyond Sustainability*, Permanent Publications, 2011 (2002), p. 28.

11 Holmgren, op.cit, p. 47.

banned, as they use fossil fuels. On the other hand, extensive pastures are developing fast when meat consumption is strongly decreasing. Vegetables must be included in rotations, or much better, simultaneously planted in order to rebuild nitrogen stocks found in the soil. Mineral fertilizers must replace soluble fertilizers; charcoal can be used to enrich the soil. The integration of "edible trees" – whose fruit can be harvested and eaten – becomes a central feature of any farm's landscape. Holmgren writes: "When the earth beneath our feet is less like a dead concrete slab and more like a dark moist living sponge, then we know we are on the right track[12]".

Integration as an antidote to collapse

At the dawn of a change of state, it is necessary to acknowledge the need to rid our system of its least important elements, in order to reduce the complexity of its management. From a permacultural perspective, we must favor integration over segregation. A system will only last if cooperation is promoted over competition. For example: the reconsideration of the industrial process such as the systematic recovery of methane in the vicinity of livestock farms is a first step towards industrial integration. The idea is that functions that used to be segregated are now associated, the challenge now being to apply this notion from the very start of the agricultural process. The same can be said of a garden where plants and animals are not necessarily in competition, but can on the contrary, have a positive impact on one another. In a world of energetic exuberance, permaculture remains a marginal movement. However, in a world of energetic descent, the permacultural approach becomes central: indeed, it puts forward an idea where we have to reconsider the ways in which we structure our thoughts and suggests new creative strategies. In other words, permaculture is a new paradigm that unsettles our current cultural references.

12 Holmgren, op. cit., p. 40.

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Change of Era

The Momentum Institute met for the first time on the 10th of March 2011, the day before an earthquake struck Japan and unleashed the nuclear catastrophe we know as Fukushima.

The starting point of the Momentum Institute is based on the awareness that today we are living at the end of the period marked by the greatest material wealth human history has ever known – a wealth that is founded on cheap, concentrated, temporary energy sources that made everything else possible. Just as the most important sources of energy for this material wealth are entering irreversible and inevitable decline, we are embarking on a period of generalised economic contraction.

The Momentum Institute is dedicated to responding to the challenges of our era: how can we organise the transition to a post-growth, post-fossil fuel, climate-altered world? How can we understand and act on the issues of the Anthropocene? What are the emergency exits? What will resilient societies look like in the time of the triple crisis: energetic, economic, and ecological?

The post petrol, post-nuclear, post-coal transition means completely redesigning and rethinking the infrastructures of society and alongside this, working to achieve a new social imaginary by envisaging a near future without petrol and without non-renewable energy. The objective of our approach is to establish a community of contributors made up of citizens engaged in the major areas of transition.

The contributors to the Momentum Institute intervene in their area of expertise, in relation with the thinking on transition. They produce diagnostics, analyses, scenarios, and original proposals regarding strategies of transition and resilience. The Momentum Institute is there to encourage them and to make them known, to individuals, to businesses, to local and national governments. We are also concerned with providing visibility to emerging solutions that are already put into practice by towns in transition, such as energy cooperatives, AMAPs (organic local produce cooperatives), non-profit businesses, social employment, and eco-districts.

If we manage to disseminate them, the initiatives and contributions for imagining and creating the post-petrol world will spread – both locally and globally. They will come to represent the status quo and the efforts that we go to today will not be unusual tomorrow. In the meantime, we have a chance, and it is perhaps our last chance, to step back from the precipice. A challenge, a singular moment, a window of opportunity: Momentum.