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**Biodynamic Farming and Nutrition and the Conscious
Evolution of Consumer Society**

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MA Programme Euroculture Declaration

I, Marion Wierzbicki, hereby declare that this thesis, entitled “Biodynamic Farming and Nutrition and the Conscious Evolution of Consumer Society”, submitted as partial requirement for the MA Programme Euroculture, is my own original work and expressed in my own words. Any use made within it of works of other authors in any form (e.g. ideas, figures, texts, tables, etc.) are properly acknowledged in the text as well as in the bibliography.

I hereby also acknowledge that I was informed about the regulations pertaining to the assessment of the MA thesis Euroculture and about the general completion rules for the Master of Arts Programme Euroculture.

A handwritten signature in blue ink, appearing to be 'M. Wierzbicki', written over a light blue circular stamp.

September 30th, 2012

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Biodynamic Farming and Nutrition and the Conscious Evolution of Consumer Society

I. Introduction

Topic Area and Problem

It is commonly accepted that humanity is facing an environmental crisis, whose various phenomena (most notably global warming) are induced by the industrialization of societies. We, as Europeans, are also increasingly aware of our dependence on resources which are becoming scarce, especially fossil fuels. If there is little discussion whether they need to, much thinking should be devoted to apprehend how Western societies could move to carbon-low, sustainable societies.

Industrial agriculture is often at the core of the debate, because of its impact on greenhouse gas emissions (in 2005, agriculture produced about 10 to 12% of global anthropogenic emissions of greenhouse gases)¹, its dependence on fossil fuels, its role in air, soil and water degradation, biodiversity loss and so forth. Beyond farming, industrial food systems are also incriminated with, among others, the globalization of unhealthy eating patterns, the sprawling of hegemonic supermarket-like structures or the fostering of inequalities in terms of access to food and market.

Of course, striving for sustainable food systems is not a new challenge: it is the basis of the organic agriculture movement which has been developing for over 50 years. Meant as an environmental-friendly mode of farming but also, as an alternative approach toward marketing and eventually social organization, this movement has actually won up huge successes: today, just over the EU territory, 8,6 million ha of land are organically managed². But this rapid development occurred as organic was taken up as a niche by the industrial food systems and, applied to the mainstream commercial practices (intensification, standardization, mechanization...), was popularized throughout conventional retailing structures³. Because a large segment of organic agriculture has become incorporated into the agribusiness, it has failed to address efficiently the environmental, energetic and social problems induced by agriculture. In light of this wide fracture between what Pollan calls “Big” and “Little” Organic⁴, one can conclude that there is a need for a

¹ Smith, Martino, Cai et al. 2007, 499

² Agence Bio 2011a, 28 (the number includes land under conversion)

³ Pollan 2006, 34-184

⁴ Pollan 2006, 134-184

new form of farming which would meet higher standards (species diversity, culture rotation, true animal welfare...) and integrate issues that have been overlooked by organic legislation (energetic resilience, healthiness, fairness...). Several independent labels have indeed, as a consequence, developed a set of stricter requirements, but lack the international scope and visibility of a movement.

In this regards, the so-called biodynamic farming is considered by some as, eventually, the “new organic”. Biodynamics has indeed been developed over the same period than organic and, although it stayed more marginal, has reached an international consistency, especially in the wine sector. It has been given attention as it is considered to bring farming to a further environmental level, since it is embedded in a vision of the farm as an organism which should strive for self-sufficiency. That implies, notably, self-production of fertilizer (composts), crop diversity, respect of natural cycles (such as cosmic rhythms), careful managing of the topsoil, etc. These practices suggest that biodynamics, besides being more requiring, is hardly industrializable and that it could, therefore, be a relevant alternative to industrialized organic farming.

Research Question

However, this approach to agriculture seems at odds with our current food production system because, among others, it emphasizes quality over quantity, advocates another mode of eating, requires more human work, more time and a deeper knowledge of the functioning of the forces at work in the farm...Biodynamics also operates under a vision of life processes that is generally not recognized by mainstream agronomy, and may as a consequence seem obscure for the large public.

As of today, biodynamics stays relatively marginal on the world agricultural stage, since it constitutes only about 0,003% of the world agricultural land⁵. In light of the obstacles faced by the movement, one can ask if there is any chance for the movement to integrate in Western food systems otherwise than as a niche for enlightened farmers, altruist-minded retailers and conscious consumers. The present thesis is therefore an attempt to determine how biodynamics could integrate European societies, and which cultural, economic and societal changes this integration would imply.

Goals

This thesis aims in the first place to bring attention on biodynamics as a solution to many problems related more or less directly to farming. It is meant, in the first place, to provide the reader with a more concrete knowledge of the understanding of biodynamics, in the production,

⁵ A rough estimate, if we take account only the hectares recensed by Demeter (147,00ha).

distribution and consumption realms of food systems, without alienating it from the wider sustainable food and farming movement

The ultimate goal being to apprehend the moving of European food systems toward sustainability, the integration of biodynamics is investigated from economic and cultural perspectives by highlighting the obstacles to the development of biodynamic or biodynamic-like farming and by proposing a set of leverage points.

Relevance

The relevance of biodynamics to agriculture-induced challenges will therefore be investigated in the first chapter. For this purpose, its theory is associated with practical initiatives in food supplying and consumption that, altogether, provide a global vision of biodynamics all along the food chains.

While defining the obstacles, fieldwork was conducted in order to adapt the research in the European contemporary reality. In spite of a necessary focus on France, the results and implications for action are reckoned applicable to the whole of European food systems.

Lastly, solutions and ideas proposed aim to make of the thesis a tool for individuals or associations of consumers, retailers, teachers, policy-makers, or any actors willing to participate in the evolution of food systems towards sustainability.

Methodology

The thesis starts with a comparative study of the practices and principles of biodynamic, organic and conventional farming all along the food chain. For this purpose, it draws mainly on secondary sources such as reports from NGOs, organic or biodynamic-related books, scholar articles from various academic backgrounds (agricultural, sociological, ethnological, cultural, scientific and so forth) as well as journalistic sources. Analysis of secondary literature also serves to extend the theory of biodynamics to the economic and cultural realms.

The investigation is completed by a fieldwork, which consists of a survey conducted among French biodynamic farmers. A number of interviews will be gathered, whose results are meant to highlight the obstacles for biodynamics in France, and by extension, in Europe.

Finally, as the thesis aims to define leverage points for action, it takes the form of a normative prescription from the perspective of social science, for professionals and individuals. The prescription is supported by the outcome of the fieldwork and findings from existing research (including the overview of various food-related initiatives).

State of research

The theory of biodynamics draws on “funding” writings, from Steiner⁶ and Pfeiffer⁷, who set the bases of this form of farming, but also on more recent works, such as “Cosmos, Earth and Nutrition”,⁸ which altogether give a comprehensive vision of biodynamics. Organic and conventional agriculture are also described from various books⁹, reports and academic studies.

As biodynamics is part of the wider sustainable farming movement, it is rarely researched separately from it when the focus is on the social dimension of food systems. And, although organic agriculture as a set of farming methods is reaching the limits of its capacity to challenge the mainstream system of food provision, it nevertheless instigated major changes in the overall approach towards farming, shopping food and eating. The integration of biodynamics through alternative food system is therefore investigated through the perspective of “Little organic” agriculture, which is documented by many researches, in various fields of studies, such as sociology, geography, culture, political science or agriculture or through works such as Pollan's *Omnivore's Dilemma*¹⁰, or Belasco's comprehensive overview of food issues¹¹.

The economic and cultural dimensions of biodynamics and of the sustainable food movement are already explored by several authors (Groh¹², Karp¹³, Lamb¹⁴), who discuss alternative, “biodynamic” models of food supplying (“Community Supported Agriculture”), of economic organization (“Associative Economics”) and of social life (the “Threefold social organism”). They thereby give a compelling vision of the broader mission of biodynamics. Still, their pertinence for the thesis is limited for, beyond the fact that they are applied to an US context, they do not – yet – give a vision of the very shift of food systems toward the societal ideal they envisioned.

In order to fill these gaps, that is, to ground the thesis in an European context and to investigate models for action, we then focus on the various alternatives and initiatives mushrooming in Europe which altogether contribute to the ongoing evolution of food systems. We can cite, for example, the Transition Initiatives, a network of communities/towns that are engaged in building energetic resilience (that is, to decrease their energetic dependence), the saving of land for organic

⁶ Steiner 1924

⁷ Pfeiffer 1938

⁸ Smith 2009

⁹ Guet, Chotard and Riman 2011

¹⁰ Pollan 2006

¹¹ Belasco 2008

¹² Groh and McFadden, 1997

¹³ Karp 2007

¹⁴ Lamb 2010

farming through social land trusts or the coming-back of food buying co-ops.

Structure

The first chapter is devoted to a theoretical framework, which consists of a comparison between three food systems: industrial, organic and biodynamic. This theoretical framework provides an overview of the main agricultural features of each form of farming, and explores their stances over different issues of food systems such as globalization, price, eating, etc. In this way, it aims to understand how biodynamic, better than organic farming, can address future challenges of European agriculture (climate change, energetic dependence, food sovereignty...). Simultaneously, while bridging biodynamics with more general consumption alternatives (short supply chains, gardening) this comparison allows to highlight the main points of discordance between industrial and biodynamic farming.

The second chapter starts by an overview of the structural and cultural obstacles that prevent or could prevent the development of biodynamics, relying on both fieldwork results and bibliographic sources. After widening the discussion to society and the role of farming, it focuses on a set of political and economic issues, for which it presents existing alternatives or potential solutions.

Assuming that ultimately, the future of biodynamics will be determined by farmer's and consumers' interest, the thesis finally investigates the shift of values and behaviors that would induce production, shopping and consumption patterns adapted to the development of biodynamics. Thence, the third chapter is in the first place an attempt to define the cultural dimension of biodynamics. Afterwards, it concentrates on several points in education that would foster public interest in alternative food systems.

The thesis will be concluded by a summation of the findings and suggestions for further research.

II. Comparative Study of Biodynamic, Organic and Conventional Agriculture

1. Introduction

The aim of this chapter is to provide the reader with a theoretical basis for the comprehension of the biodynamic-based food system investigated in this thesis: if in the realm of

productin biodynamics is easily characterized by specific farm practices, outside of the farmers' area of competences, it is not always clear what actually differentiates it from organic farming. The following comparison is thus an attempt to define and to situate biodynamics in the agricultural and societal landscape in comparison to both organic and conventional agriculture. By doing so, it overviews the main issues arising from the confrontation between highly industrialized agriculture and sustainable farming such as biodynamics.

The chapter is introduced by a short overview of the historical context of each form of farming, of their main principles, agricultural practices, and goes on with a brief assessment of these various forms of farming. For simplification sake, the comparison is drawn largely on the basis of legislation, even though nuances are, as far as possible, made mention of. The assessment relies on existing literature on the theme of agriculture; but sometimes takes the form of a reflection over the main issues faced by agriculture. As the comparison moves from farm to fork, it becomes more difficult to situate biodynamics in comparison to organic, because of the many aspects, especially of consumption, which are neither codified nor systematic. The theory of biodynamic farming is thus extended to alternatives in food distribution and consumption which are obviously not its own exclusivity, but whose theory and development are part of its philosophy (such as Community Supported Agriculture)¹⁵. At this point, the comparison, from threefold, becomes twofold, and incorporates basic dualities of food such as conventional/ alternative, global/local, industrial/artisanal, processed/natural, fast/slow...

1.a. Terminology

Conventional agriculture in a contemporary context refers to non-organic farming, that is to say farming making use of products and cultivation methods avoided or forbidden in organic agriculture. In this thesis, it relates to agriculture embedded in the industrial agrofood system. Hence, the terms “industrial” and “intensive” agriculture are generally used as synonyms with “conventional” agriculture, even though it has be considered that unlike industrial agriculture, “conventional” does not exclude small-scale and local farming.

On the other hand, “industrial farming” may theoretically encompass as well intensive forms of organic farming. To avoid confusion, when such agriculture is referred to, it is under the term “industrial organic” or “Big/Little Organic”, drawing on Pollan’s distinction in “The Omnivore Dilemma”¹⁶. The term “organic” itself has an intricate meaning. When used from a legal perspective, it applies as well to biodynamic farming (even though the latter exhibits a set of

¹⁵ Biodynamic Farming and Gardening Association, nd, a

¹⁶ Pollan 2006

additional features framed by Demeter¹⁷, the international brand for products from biodynamic farming) but in other parts of this chapter it is investigated exclusively from biodynamics, precisely because of the industrial orientation towards which the organic sector . For this reason, biodynamics is most of the time presented distinctly from organic. In some points however, the focus can be extended to “biodynamic-like” forms of farming, such as “Little Organic”, who work according to the same principles but who do not use the practices controlled by the label Demeter. The term “sustainable agriculture”, finally, refers to biodynamic, organic and other forms of agriculture (like agro-ecological farming) which by their practices aim to minimize their impact on the environment.

1.b. History and core principles

Conventional, industrial agriculture developed since the industrial revolution onward, made possible by the creation of national and international markets, the development of food transports (container shipping and refrigeration¹⁸) and of mechanization. It is nevertheless only after the WWII that agriculture shifted to an agro-industrial model¹⁹, as a result of the so-called Green revolution, and that it acquired the technological features which allowed for a substantial intensification of food production: large-scale irrigation, synthetic nitrate fertilizers, chemical pesticides, high-yielding hybrid plants²⁰... This shift of course implied rise of the productivity, of the farms' size (chemical control and mechanization cut down the need for human labor), of specialization, while it induced a decrease in the number of farms and in food prices²¹. The development of food processing and storing techniques and the subsequent development of highly processed food items, on the other side, induced great changes in consumption patterns. Within 50 years, the food sector underwent the biggest evolution ever since the creation of agriculture and our diets changed more than it had during the previous thousands of years²². Today, the industrial food sector – the biggest industry in the world - has reached an extreme complexity, not so much on the production than on the processing and distribution level.

Industrial agriculture is embedded in a productivist approach to farming, that is, “the traditional paradigm of rural agents, based on neo-liberal doctrine of economics, which makes the economic growth an absolute, when the greater output is primarily reached by technical means, intensification of agriculture.” With the rise of globalized markets, chemical pest control and fertility management and mechanization, this intensification necessarily implied a standardization

¹⁷ Demeter International, nd, a

¹⁸ Malassis 1996, 2

¹⁹ Malassis 1988, 195

²⁰ Pollan 2006, 48-73

²¹ Garden 2003

²² Kenner 2008

of agriculture. As Pollan writes, “it fostered the whole reimagining of the soil (and with it agriculture) from a living system to a kind of machine”²³: a machine with inputs (pesticides, fuels, fertilizers, seeds, feed) and outputs (corn, chicken and so forth)²⁴.

Organic farming as a conscious non-industrial approach to farming can be traced back the beginning of the 20th century and Sir Albert Howard's work, which highlighted the interrelation between soil, plant and human health²⁵. A magazine named Organic Gardening and Farming was being published since the year 1940 in the U.S, while the Soil Association was created in 1946²⁶. Nonetheless, it is only in the late sixties/early seventies that the later drew up concrete standards, that the journal Organic Gardening and Farming doubled its sales²⁷, and that the International Federation of Organic Agriculture Movement was created (IFOAM)²⁸: this rise of popularity coincides with the revelation of major environmental disasters, like the harmfulness of pesticides, revealed by Rachel Carson’s Silent Spring, or with the Santa Barbara oil spill²⁹, and the subsequent rise of environmentalism (or ecology). Organic farming was therefore embedded in a counterculture which used food as a medium for broader changes³⁰. It stayed therefore rather marginal until the very end of the 20th century, when, following notably the mad cow crisis, organic products met a surge of demand.³¹ Growing consumer demand induce an important growth of the organic sector and many farmers converted to organic agriculture as this part of the food market appeared economically interesting. That obviously led to a transformation of organic farms' landscape: although mass conversion allowed more land to be organically managed (and thus a greater part of agriculture to become sustainable and less harmful for the environment), it nevertheless shifted the "organic ideal".

Organic agriculture today is mostly understood as a mode of farming that refuses chemical inputs (synthetic pesticides and fertilizers) and genetic modification. According to the EU, organic farmings aims to “deliver public goods contributing to the protection of the environment and animal welfare, as well as to rural development”³². Legislation, in the EU like in other countries, merely applies to the nature of inputs. Not only such a vision of organic farming does not exclude

²³ Pollan 2006, 147

²⁴ Horrigan, Lawrence and Polly 2002, 1

²⁵ Lotter 2003, 3

²⁶ Guet Chotard and Riman, 2011, 2

²⁷ Pollan 2006, 158

²⁸ IFOAM 2009a

²⁹ Belasco 1990, 23

³⁰ Ibid, 23

³¹ Guet, Chotard and Riman 2011, 3

³² European Commission 2007, 1

industrial production (like large-scale farms, high irrigation and mechanization, standardization), it also totally overlooks its ethical dimension^{33,34}. It can be argued, however, that “Little” organic farming, carrying the principles of Health, Ecology, Fairness and Care,³⁵ is still embedded in a societal alternative that works for worldwide food sovereignty, fair trade and social inclusion.

Biodynamics is indeed an early form of conscious organic farming, since it was articulated for the first time in 1924 by an influent Austrian thinker, Rudolf Steiner³⁶. In this set of agricultural lectures, Steiner defended his view of farming as a response to the industrialization of agriculture and scientific materialism which, according to him, induced a loss of vitality of the soil (illustrated since then by mineral depletion of soils under intensive agriculture)³⁷. He therefore elaborated a first model of organic farming but also challenged the ways of thinking about plant growth and nutrition. Following the lectures, a circle of farmers undertook to put his hints into practice³⁸ and, 14 years later, “bio-dynamic” as a name and as a tested and developed agricultural set of methods was finally articulated by Pfeiffer in the book "Bio-dynamic Farming and Gardening"³⁹. The same year of 1938, he created the Biodynamic Farming and Gardening Association in the U.S.A⁴⁰. Throughout the following decades, biodynamics also developed in several countries such as Australia, Germany or the Netherlands, while its theory was extended further – the most important advance being the cosmic sowing calendar elaborated by Maria Thun. Also relatively marginal on the worldwide agricultural stage, biodynamics also met a renewal of interest as witness, for example, the creation of an international Demeter organization, the ratification of Demeter processing standards or the foundation of the International Biodynamic Association (IBDA)⁴¹.

In this lectures, Steiner defended his vision of the farm as an individuality; an organism made up of crops, livestock and farmers. That implies, in the first place, ecological balance between inputs and outputs. It also implies that the farm, as far as possible, should strive for self-sufficiency – that is, it should produce on-farm all the manure needed for composting and feeding the soil. This goal of a self-sufficient farming is present also in organic and other forms of sustainable agriculture, but biodynamics embeds it in a vision of the life processes where vitality (humus quality, harmonious plant growth...) is the result of an adequate circulation of energies. These energies,

³³ Pollan 2006, 159

³⁴ Guet, Chotard and Rimani 2011, 6

³⁵ IFOAM 2009b

³⁶ Paull 2011, 26

³⁷ Smith 2009, 27

³⁸ Paull 2011, 29

³⁹ Paull 2011, 37

⁴⁰ Biodynamic Farming and Gardening Association nd, b

⁴¹ Demeter International, nd, b

according to biodynamic practitioners, are enhanced by an appropriate managing of carbon and silica⁴², as well as the consideration of cosmic rhythms, (most notably moon's phases), in operations such as sowing, planting, harvesting, etc⁴³.

2. The farm: production

2. a. *Managing fertility and pest control*

The first aim of every form of farming is to exploit the soil in such a way that its fertility is enhanced, so that soil can support root growth⁴⁴. The second is to manage pest control, that is, protection against diseases and parasites, which can harness the growth process or damage the plant. The term “pest” encompasses every living organism being potentially harmful for the crop, whether directly (pathogens, insects, rodents) or indirectly, through concurrence for water or sunlight (weeds).

In conventional agriculture, the substantially high yielding capacity results from the use of synthetic nitrogen fertilizers⁴⁵ which, most of the time, are made out of natural gas⁴⁶, and which provide the plant with the threefold recipe: nitrogen, phosphorus and potassium. As it began importing artificial fertility from outside of the farm, conventional agriculture did not need any more to rely on traditional fertility management methods such as crop rotation and on-farm livestock which implied small-scale farming. That is one of the reasons, together with the development of mechanization and of irrigation systems, why the farm landscape abruptly shifted from diversity to specialized monocultures and from plurality of farms to large, concentrated agricultural enterprises. With the means mentioned above (fertilizers, tractors, irrigation systems) and because of their uniformity, monocultures are indeed easier to manage.

Mono-cropping practices, however, appear to make crops more vulnerable to pests, since the lack of crop diversity facilitates their proliferation. It is the reason why conventional agriculture relies so much on synthetic, often petroleum-made pesticides (fungicides, insecticides, herbicides...). These products revolutionized farming, as they marked the end of systematic manual control of weeds and guaranteed some security for the farmer. But, beyond environmental or health claims, the use of pesticides is also discussed for the reverse effect regular use may have – pest-

⁴² Groh and McFadden 1997, 25

⁴³ Smith 2009, 26

⁴⁴ Tilman et al, 2002 4,

⁴⁵ Tilman et al, 2002 3

⁴⁶ Pollan 2006, 44

resistance or greater plant stress⁴⁷...Thence, the two past decades have also witnessed a rise in the development and the use of genetically modified organisms as a part of the pest management strategy: GMOs are generally used to give the crop genetic resistance to commercial herbicides or to make the plant itself pest-resistant, by integrating a gene producing a certain toxin⁴⁸.

In organic production, fertility should, according to the EU legislation, be obtained thanks to a proper “choice of species and varieties, multiannual crop rotation, recycling organic material and cultivation techniques”⁴⁹. It means that the farmer should choose the most appropriate crops varieties considering the nature of the soil and the climate patterns⁵⁰. Irrigation is generally less intensive than in conventional farming, because of a set of techniques aiming to enhance soil permeability and to hinder evaporation⁵¹, while the balance of nutrients is regulated by crop rotation (legume crops, for example, bring nitrogen to the soil⁵²). Furthermore, organic farmers have the possibility to use a wide range of organic - eventually mineral – fertilizers (compost, animal manure, green manure, peat, guano, and so forth).⁵³ Even though it is suggested that these inputs should as far as possible come from the farm, it is rarely so: from this perspective, (Big) organic farming, merely substituting inputs from chemical to organic, is “a much greener machine, but a machine nevertheless”⁵⁴.

As for pesticides, organic farmers are allowed a certain range of natural insecticides and fungicides, mainly animal or vegetal substances (like gelatine, vegetal oils), micro-organisms (predator of the pest, such as viruses), or other mineral substances (sulphur, potassium soap...)⁵⁵. These products are alone, insufficient to ensure a complete pest protection. Indeed, organic agriculture focuses on prevention rather than control; a prevention which consists mainly, here again, of an appropriate choice of species and varieties, biodiversity management (which basically acts by specie antagonism – one eats the other)⁵⁶ and crop rotation, which regulates the amount of weeds (thanks to plant species more “competitive”) and limits the development of specific pests (related to a specific crop...).

Overall, biodynamics uses the same fertility methods than little organic (crop rotation,

⁴⁷ Smith 2009, 15

⁴⁸ Horrigan, Lawrence and Walker 2002, 449

⁴⁹ European Commission 2007, 2

⁵⁰ HDRA 1998, 18

⁵¹ Guet, Chotard and Riman 2011, 78

⁵² Guet, Chotard and Riman 2011, 127

⁵³ Guet, Chotard and Riman 2011, 79

⁵⁴ Pollan 2006, 159

⁵⁵ European Commission 2008, 8

⁵⁶ Lotter 2003, 19

appropriate species choice...). Demeter requirements however additionally emphasize the importance of preserving the humus layer⁵⁷ (organic matter in state of decomposition, which is highly beneficial to plant rooting as it improves the soil's capacity to hold nutrients⁵⁸) and of composting with manure from local herds. If it is not possible to have sufficiently livestock on-farm to produce the said manure, then a formal association should be made with neighbouring biodynamic or organic farms, on the basis of the farm organism. The most distinctive feature of biodynamic farming is the use it does of the so-called "preparations", that complete the action of animal or green manure. According to the French Demeter legislation, they are meant to "help the self-organization of organic systems", that is, to enhance soil's vitality, equilibrate the balance of nutrients and fortify the plants against diseases⁵⁹. These preparations, some of which are added to the compost, and the others sprayed over the fields, are made up of vegetal elements (yarrow, chamomile, stinging nettle) or manure which undergo a process of fermentations, eventually enclosed in animal organ (cow horn), after what they are diluted into water and put into use. ⁶⁰ In their farming operations, biodynamics also work with the help of a biodynamic calendar, although this practice is not controlled by the certifier Demeter.

Enhanced soil and crop quality is also part of the prevention strategy in regards to pest control. Besides the cultivation practices used in organic farming, resistance can be enhanced by certain plant-based infusions, macerations or decoctions: horsetail, for instance, can be used against fungal diseases⁶¹. If these methods are not sufficient to prevent disease outburst, some of the natural pesticides used in organic farming are allowed, generally under the control of the Demeter association.

2. b. Animal husbandry

In animal husbandry, industrial agriculture refers to intensive animal farming, or factory farming. As a part of the Green Revolution, animal production adopted new methods such as animal confinement, which implied a concentration of the production in a smaller amount of farms⁶². Factory livestock farming is thus characterized by an extreme density of animals destined to produce meat, dairy products or eggs, high inputs of feed and massive use of antibiotic (their use as hormone growth in the EU is nevertheless prohibited⁶³). It is incriminated for its role in

⁵⁷ Association Demeter France 2002, 12

⁵⁸ Smith 2009, 19

⁵⁹ Smith 2002, 42

⁶⁰ Smith 2009, 117

⁶¹ Smith 2009, 134

⁶² Fraser 2005, 7

⁶³ Nierenberg 2005, 26 [It is true for most of the cases, but in the EU, growth-promoting use of antibiotics for animals is prohibited since 1998.]

environment degradation, Human health issues (antibiotic resistance among consumers⁶⁴, sanitary crises, food poisoning) or animal cruelty (restricted vital spaces, mutilation, long-distance transportation, etc.). It is however important to take consideration that, here even more problematically than in other areas of agricultural production, industrial is not synonymous with conventional. Indeed, it is estimated that factory farms account for about 40% of the world's meat production⁶⁵: a certainly substantial share, higher in richest regions such as the European Union, but which implies that an important part of meat and other animal products are still grown in non-industrial farms. Since conventional meat basically refers to meat from an animal fed with non-organic feed, it can as well come extensive farms – in which cases, additional labels are generally used to express the difference in husbandry methods (grass-fed, free-range...).

If conventional animal husbandry does not exclude extensive farming, on the other way round, organic farming is not synonymous with extensive animal husbandry: apart from the requirements concerning the feed (which has to be organically grown), the EU legislation on this matter stipulates that “any suffering, including mutilation, has to be kept to a minimum”, that “the livestock shall have permanent access to the outdoor” and that the “stocking densities and housing conditions shall ensure that the developmental, physiological and ethological needs of animals are met”⁶⁶. Even though organic legislation ensures the consideration of animal welfare and limits industrial practices that do not respect animal's natural behavior, it does not comply producers to comply with a grass-fed or free-range model. This loose regulation on animal treatment is thus puzzling for the consumer: it is what Michael Pollan refers to as the “Supermarket pastoral” practices, further down the food chain; the “wordy labels, points-of-purchase brochures and certification schemes” that create the impression in the consumers that “farm animals live as much as they did in the books we read as children”⁶⁷, whereas This discrepancy between pastoral impression and eventual industrial reality is also unfair for the “little organic” farmer, whose product obviously suffer from competition.

In biodynamics, farmers involved in animal farming are bound to integrate in the farm grassland and crops for animal feed, as well as low stocking density: from this perspective, it can be considered closer to the pastoral representation evoked above. The transportation, slaughter, or other operations are tackled with care for, as mentioned in the French Demeter regulation, the treatment of animals raises important moral and ethical considerations⁶⁸. More generally, biodynamics, like traditional farming, emphasizes the importance of animals for the farm, in regards

⁶⁴ Horrigan, Lawrence and Walker 2002, 445

⁶⁵ Nierenberg 2005, 5

⁶⁶ European Commission 2007, 10

⁶⁷ Pollan 2006, 137

⁶⁸ Association Demeter France 2009,

to their role in the food chains (manure-provider) and encourages farmers to have their own livestock.

3. Production: assessment

Now that the genesis and functioning of conventional, organic and biodynamic farming were overviewed, it is worth to consider the wider cultural environment of agriculture and of the scale of values shaping and represented by each of these forms of farming. The following pages will be devoted to a number of general divergence points between industrial and sustainable agriculture, such as farming, science, productivity, quality, price and ecological impact.

3.a. Science and farmer's role

Science and the status of the farmer are actually quite intertwined issues. The development of industrial agriculture, as suggested before, happened together with its “scientification”, as a matter to have a better, cleaner and easier management of both fertility and pests. Genuine methods of fertility and soil management were replaced by the development and use of chemicals, while genetic modification, whose use spread out quite widely (though not systematically) in the late 20th century, took the place of traditional breeding and selection of the best locally suited species. As a matter of fact, the role of the farmer, from producing food to sustain the immediate community, shifted to maximization of profit from material inputs. As food became a commodity and agriculture a business, the role of the farmer quite naturally evolved to something like the “proprietor of a growth factory”⁶⁹. In Western societies, the farmer - who semantically interestingly became an agriculturalist - suffers from a quite negative image. Because of recent sanitary crises such as the mad cow disease, together with the even stronger claims about agriculture-induced environmental damages and the absence of direct threat of hunger, there is a tendency among European public to perceive the farmer as the one who exploits and destroys the land⁷⁰.

Although organic agriculture relies to some extent upon traditional methods of crop management, it is still embedded in a technical, scientific approach towards farming, and integrates many innovations (such as the use of pheromones to disturb insect's sexual behaviour as a form of pest-control⁷¹). Organic farming can therefore be defined as both traditional and modern

⁶⁹ Pfeiffer 1957, 4

⁷⁰ Ewald 2010

⁷¹ Guet, Chotard and Riman 2011, 163

agriculture⁷². But, unlike intensive farming, it uses the precaution principle, which implies that before integrating a new technology, it ensures that it has no possible negative consequences, especially on the long run. Thence the rejection of scientific advances such as genetic modification (too risky and hazardous, in terms of propagation, resistance, allergies...). Meanwhile, the role of the organic farmer is still, in the first place, to produce food in sufficient quantities. Unlike the traditional peasant, the production is not necessarily destined to the local, immediate community, but to the market: from this perspective, the organic farmer/agriculturalist is still leading a sort of business. But because he works in an environmentally sound way and manages biodiversity, soil fertility and water conservation, he can be, in some way, perceived as the steward of the natural landscape.

At the core of Steiner's "Anthroposophical agriculture" (the first name and formulation of biodynamic agriculture) is the promotion of a more holistic approach toward science and farming. Materialist, mechanic science was criticized for failing to take account of what any plant or animal growth lie upon – the life process⁷³. Likewise, Howard talked about agronomic science as the "NPK" mentality – that is, the reduction of the whole growth process to inputs of nitrogen, potassium and phosphorus⁷⁴. It can therefore be reckoned that, although biodynamic practitioners do not reject agronomic science, they wish broaden its scope to consider a system of energies transcending the comprehension of Cartesian science. In this way, biodynamic no more than organic farming wishes to go back to "peasants" wisdoms⁷⁵, and is not to be understood as antonymic with modernity. Nevertheless, Steiner argues that conscious farming is to be achieved by reflection and meditation – only this way the farmer can develop his "clair-sentience"⁷⁶, which ultimately enables him to understand the individuality of the farm. From the perspective of biodynamics, the farmer's role is therefore more of a catalyst of natural processes than a manager of the farm.

3.b. Productivity

We asserted that conventional, industrial agriculture has intensive farming practices because of its focus on maximization of the production. It is consequently generally acknowledged to be more productive. Its productivity, meanwhile, is the main argument in its favor, and intensification

⁷² Guet, Chotard and Riman 2011, 32

⁷³ Pfeiffer 1957, 7

⁷⁴ Pollan 2006, 146

⁷⁵ Steiner 1924a

⁷⁶ Steiner 1924f

of production is generally presented as the only option to meet increasing world food needs.

It is a true that conventional crops have an average yield between 10 – 15% higher than organic crops⁷⁷ - the difference can reach 50% for crops like dry beans. Nonetheless, in periods of drought or in regions suffering from water scarcity, the tendency is reversed – organic soils are more permeable to water and thus have a higher water holding capacity⁷⁸. In such cases, organic crops can outyield conventional ones by 70-90%. That is why it was possible to demonstrate, in several studies, that organic agriculture can indeed feed the world: if it would imply lower yields in temperate regions such as Europe, it appears more adapted to less temperate climate patterns, and would increase yield patterns in regions of Asia, Africa.^{79 80} Little organic, furthermore, seems also more prone to address the problem of the “anti-democratic repartition of land and food”⁸¹ at the roots of hunger, notably because it implies the development of small-scale farming and the targeting of local markets, instead of producing animal feed, biofuels and niche products for exportation to more affluent countries.

On the other hand, if instead of considering only crop outputs per unit of land (yields) we consider the ratio of total external inputs to outputs, we would probably reach the conclusion that industrial agriculture – conventional or “big organic” is terribly inefficient; especially the animal industry. This is to say that the benefits that are gained – calorically or energetically speaking – do not outweigh the costs of production, which apart from land include seeds, machines, pesticides, fertilizers; plus grain and antibiotics for animal production. Foremost needed are fresh water and oil in large supplies, and changes in the availability of either of them (globally awaited in a medium-term future) are likely to challenge the profitability of conventional farming. Considering productivity through the balance inputs/outputs, it is thus clear that the most productive farms are the ones which are the most self-sufficient, like small organic and biodynamic farms, which make a more careful use of water, use integrated methods of pest management and create, at least partly, their own fertility.

3.c. Quality

In industrial food systems, high production is achieved through intensification of farming, itself made possible (and acceptable) by standardization⁸². The industrial definition of quality (healthiness included) essentially lies on themes of aestheticism and cleanness. For the consumer,

⁷⁷ Lotter 2006, 1

⁷⁸ Lotter 2006, 10

⁷⁹ Bagdley and Perfecto 2007, 81

⁸⁰ Leu 2003, 10

⁸¹ Lappé and Collins 1997, 405

⁸² Pollan 2006, 178

the assessment of quality of fresh produces is done through visual evaluation of colour, size and shape⁸³ – these aesthetic characteristics are actually at the centre of politics of provision and standardization. In terms of food safety also the cleanness of conventional products in comparison to organic ones is sometimes advanced, taking consideration of the higher of contamination by microbial pathogens (because of both the post-harvest treatment such as ionization and the use of clean, synthetic fertilizers instead of faecal matter)⁸⁴. On the other hand, industrial food systems are often accused to correlate with declining quality, in terms of taste, decrease in produces' nutritional value (due to the mineral depletion of soils)⁸⁵, pesticide residues and their potential relation to contemporary diseases, food-borne illnesses (BCE or other more frequent E. coli and salmonella)⁸⁶.

These changing notions of quality indeed reflect our contemporary dilemma between modernity and tradition. In organic farming, where quality of the product is also the most popular argument, good is good because “natural”. The quality of the production has been suggested above: organic plants have a better resistance to pests⁸⁷, the soil has a better water holding capacity, which means that it needs less irrigation. The work of Sir Howard, which prefigured organic farming, already contained this idea that health of the soil, plant, animal and man are tightly connected and are necessary to each other⁸⁸: that may be why organic products are perceived as healthier and more nutritious. This assumption that healthy organic soils make healthier produces may seem obvious, but it is actually still fiercely debated, and the claim that organic means more nutritious is hardly demonstrated on a scientific basis⁸⁹. What is proven is that dry matter in organic products is higher⁹⁰, that is to say that there is less water contained in the produce in comparison to conventional ones, and that produces have a longer shelf life⁹¹. Some studies also reported a tendency toward a higher concentration of micronutrients: vitamins (mainly vitamin C), minerals; and of non-nutrients such as flavonoids, polyphenols, anti-oxidants^{92 93 94}. More obviously, organic means also no pesticides or veterinary drug residues (or at least in much lesser quantities).

Biodynamics also builds on a very strong emphasis on quality. Here also, quality is understood as the result of enhanced soil and plant vitality, which is transmitted to the products and the eaters. Food quality is therefore primordial, for it is viewed to affect the endocrine and immune

⁸³ Smith 2009, 200

⁸⁴ Magkos, Fontini and Zampelas 2003a, 6

⁸⁵ Marler and Wallin 2006, 6

⁸⁶ Belasco 2008, 84

⁸⁷ Lotter 2003, 20

⁸⁸ Pollan 2006, 181

⁸⁹ Magkos, Fontini and Zampelas 2003b ,358

⁹⁰ Lotter 2003, 9

⁹¹ Lotter 2003, 25

⁹² Pollan 2006, 179

⁹³ Magkos, Fontini and Zampela, 2003b, 366

⁹⁴ Reganold et al. 2010, 2

functions of our regulatory system⁹⁵, and to bring energy to the body that go beyond the product's nutritional values. Although the enhanced healthiness of biodynamic products in comparison to organic foodstuffs is hardly demonstrated on a scientific basis, they tend to benefit from positive criticism in regards to taste, as testify the strong interest in biodynamic wines.

3.d. Price

The intensification of agriculture permitted a sharp decrease in food prices and consequently, a reduction of the part of the consumers' budget that was allocated to food. Still, industrial agriculture is often criticized for externalizing its costs, which means that the low prices it allows for do not cover all the costs induced by production, such as environmental degradation, resource use, pesticide poisoning, deterioration of rural communities, etc⁹⁶. Agriculture in the majority of OCDE countries is also economically supported by governmental subsidies, at rates sometimes up to 60% of the share of farmers' revenue like in Norway or Switzerland⁹⁷. The EU subsidies to agriculture, distributed through the Common Agricultural Policy, are also very consequent: each EU citizen, averagely, participates for about 2 euro a week in supporting EU food production⁹⁸. The availability of agricultural products at such low prices as those allowed by conventional production is thus not only permitted by intensification (itself having extra, non-priced costs), but also largely by government support.

There is often a considerable difference in prices between organic and conventional products. Price is, in fact, the main hurdle to their consumption – in France, it was a reason mentioned by about 80% of the questioned people⁹⁹. This higher cost however seems necessary in regards to the extensive nature of organic farming systems: price premiums compensate the decline of revenues accompanying the diminishing of production volumes. Organic and biodynamic farming, as they do not externalize the costs of production and are much less dependent on public subsidies, are therefore sold at a price closer to the real cost of production¹⁰⁰.

3.e. Sustainability

It is well-known that the intensification of agriculture was however not achieved without tremendous consequences on the environment. We can mention, for example, the running off of

⁹⁵ Smith 2009, 214

⁹⁶ Horrigan, Lawrence and Walker 2002, 446

⁹⁷ OCDE 2010, 7

⁹⁸ European Commission 2004, 10

⁹⁹ Agence Bio 2010, 17

¹⁰⁰ Guet, Chortard and Riman 2011, XIX

nitrates from synthetic fertilizers into soils and rivers¹⁰¹ (causing pollution and disrupting the ecological balance¹⁰²), pesticides intoxications among farmers and animal populations (birds, bees, amphibians, marine mammals...¹⁰³), soil degradation induced by mechanized tillage and intensive irrigation or soil, water and air pollution from factory farming (when measured in equivalent CO₂, livestock production – mainly cattle – generates more greenhouse gas than the transport sector¹⁰⁴). Conventional agriculture is also very dependent upon fossil fuels, because the main products it relies upon for fertility and pest management are derived either from gas or from petroleum, because work on the fields requires heavy mechanization, such as use of tractors, and ultimately because food items are, after production, distributed throughout supply chains themselves embedded in a national or international web of exchanges, meaning that they are often transported over considerably long distances. This dependence is dangerous in regards to both the part of responsibility of the food sector in the greenhouses gas emissions and to the issue of energetic vulnerability.

Organic agriculture seems much less threatened, as it does not need fossil-based chemicals to ensure the production. It is nonetheless reported that, as compared to conventional agriculture, it uses only a third oil less, solely on the farm level. Furthermore, this difference almost disappears if the compost is imported from another place: given its organic nature, its mass is heavier than synthetic fertilizers, and thus more energy is required for its transportation¹⁰⁵. If we move to the supply chain, the picture is similar to conventional agriculture, as organic is embedded in the same globalized food webs. In regards to ecological impact, organic agriculture is without discussion much more environmentally-sound. Still, high tillage, irrigation and mechanization are also present in “Big” organic, which consequently also induces soil degradation, while intensive animal husbandry provokes the same problems of waste than in conventional agriculture.

It therefore appears that the use or non-use of synthetic chemicals is not a reliable marker of sustainable agriculture¹⁰⁶. Rather, sustainability (soil and water conservation, energetic resilience and so forth) depends on the scale of production, on the degree of self-reliance adopted by the farm (on-farm compost production), and of the way irrigation and tillage are managed. From this perspective, “Little” organic and biodynamic-like farming seem to address more coherently the need for environmentally-sound and energetically-resilient agriculture. Of course, beyond the

¹⁰¹ Addiscott 1996, 5

¹⁰² Horrigan, Lawrence and Walker 2002, 446

¹⁰³ Horrigan, Lawrence and Walker 2002, 446

¹⁰⁴ FAO 2006

¹⁰⁵ Pollan 2006, 183

¹⁰⁶ Rigby and Cáceres 2001, 14

production stage, these farms need to be embedded in a local distribution network to be really resilient (and thus sustainable) – this issue will be addressed in the following pages.

4. Supply chains: distribution

It should be considered that agriculture, being part of a food system, can really be called sustainable only when this sustainability encompasses as well the processing and distribution stage, where much of the energetic dependence lays and where many social inequalities are fostered. Neither can the quality of the product be fully evaluated without taking consideration of the way it is stored, processed and distributed. *Tasting food, tasting sustainability*¹⁰⁷ is a study aiming to define the attributes of an ideal sustainable food system. Besides “ecologically sustainable” and “diverse” which obviously refer to the production practices, it included the following features: “knowledgeable/communicative”, “proximate”, “seasonal”, “relational”... These attributes go beyond government/label legislation: they are not rules, but goals. And these goals are more or less integrated in the distribution models of the food systems (industrial/artisanal, globalized/local) whose conventional, organic and biodynamic farming are part of.

4.a. Processing: food quality

The intensification of agriculture, together with the development of food sciences, and other processes such as urbanization and globalization, drastically changed the diet of developed and developing countries. In particular, the processing sector grew much bigger, more complex and above all – more opaque. Food has been processed for centuries – typically milk into dairy products, seeds into oil, grains and spices refined, alcohol fermented and so on. But the development of food science and of conservation and cooking techniques permitted to extend the scope of processing to a tertiary stage; to the production of so-called convenience food. This extension of the processing sector to partially prepared and ready-to-eat food implied a transfer of knowledge from the consumer to the processing industry, sharpening thereby the disconnection between production and consumption. As Pollan remarked, the processing process in industrial food chains “is largely invisible, since it takes place inside a series of sealed vats, pipes, fermentation tanks, and filters”¹⁰⁸ This opacity thus induces a loss of control from the consumer over what he eats. In particular, additives (antioxidants, sweeteners, thickeners, emulsifiers, etc.) are a source of concerns in regards to their widespread use and to their hazardous consequences on human

¹⁰⁷ Kloppenburg et al. 2000

¹⁰⁸ Pollan 2006, 86

health.¹⁰⁹

Beyond production methods, the quality of the product depends on processing, as this process defines both the content of the product and the way it will be consumed. Processing of organic products, as their production, is thus regulated by a legal corpus defining the methods and the range of additives allowed. According to the EU legislation, processing must be such that the most of the ingredients are of agricultural origin and 95% of them should come from organically grown products¹¹⁰. The use of GMOs, ionizing radiation, non-natural flavourings is excluded, and the range of additives restrained^{111 112}. Similarly, non-organic ingredients, micronutrients and processing aids have to be used “to a minimum extent and only in case of essential technological need or for particular nutritional purpose”¹¹³. The question whether organic processing, in comparison to conventional methods, is also a mere substitution of inputs remains however open. On one hand, there is technically nothing that prevents organic processors to produce the same foodstuffs as the conventional sector, even the most emblematic ones like TV dinner sets, ketchup, cola and so forth; but on the other hand, the marketing strategy of organic products is most of the time built on a differentiation of the product which goes beyond the production methods (more natural, healthier, fairer...).

The processing of biodynamic products, beyond organic standards, is framed by Demeter’s requirements, which restrict a further range of additives, limit the storage and congelation and forbids chemical conservators (such as ethylene, allowed under the organic label) as well as microwave radiations. The transparency in composition and traceability is also stipulated as a necessity¹¹⁴, unlike industrial food systems which rely on opacity.

4.b. Globalization and re-localization of food systems

The distance between the producer and the consumer has thus been widened, figuratively speaking, by the development of processing operations. It has been extended also in geographical terms, with the generalization of long-distance transportations. Industrial food systems strongly rely on globalization as a means to reduce the price of the agricultural production. With the availability of cheap oil guarantying cheap transportations, it is often more advantageous to import from places where, for some reasons (workforce price, climate, equipment...), food items can be produced at a

¹⁰⁹ Tuormaa 1994, 228-229

¹¹⁰ European Commission 2007, 2-3

¹¹¹ European Commission 2007, 6

¹¹² Agence Bio 2011b, 4

¹¹³ European Commission 2007, 7

¹¹⁴ Association Demeter France 2011, 4

lesser cost than locally¹¹⁵. Exporting from further regions has obvious energetic implications (dependence and pollution), but also economic and social consequences for importing regions whose production is neglected¹¹⁶. Let alone gustative and nutritional issues, the generalization of long-distance imports from developing countries may rise ethical concerns, as globalized agriculture uses natural resources and degrades local environments for a production targeted to Western countries, neglecting both independent producers and local markets^{117, 118}.

Organic agriculture has widely integrated the conventional food system and as a matter of fact, does not escape this globalization of long-distance food exchanges, the disconnection place/time, and the implications suggested above. Eventually, in the EU, organic distribution is even more subject to importation, because the local offer rarely meets the demand and because, in its process of democratization, it is peculiarly subject to downward price pressures. Nevertheless, there is a trend in organic production and distribution tending to soften the effects of a globalized trade on less-developed, producing countries, at least in the case of local commodities – a trend exemplified by fair trade labels and other forms of ethic approach to commerce. Organic farming is also often thought of at the counterpoint of globalization, and incorporates a local-centred approach, especially in the fruits and vegetables sector. Localization of food systems is, actually, a major feature of alternative food chains and an important growing trend in consumption patterns, as eating locally has become associated with freshness of the product, support of local producers, and insurance about the source of the food consumed (important in a context of defiance toward anonymous food; crucial during sanitary crises). While environmental and health concerns seem secondary factors for shoppers of farmers markets (the most widespread local purchase point), consumers of organic products have nonetheless been found more concerned with buying local (and thus seasonal) food¹¹⁹.

The theory of biodynamics integrates the farm within a community, with whom it has a relation of interdependence and cooperation: in such visions, the local network is a main attribute. From an overview of the distribution of biodynamic production in France, it appears that almost all biodynamic farms actually lead some form(s) of direct (thus local) sale and that most of the distribution is made through local, regional supply chains¹²⁰ - with the exception of wine, destined in almost all biodynamic vineyards for both national and international markets.

¹¹⁵ Of course, we start here from the assumption that the culture of this product is geographically possible in both places; but otherwise it is a matter of lesser distance.

¹¹⁶ FAO 2004, 23

¹¹⁷ Pollan 2006, 175

¹¹⁸ Guet, Chotard and Riman 2011, 240

¹¹⁹ Martinez et al. 2010, 29

¹²⁰ Maison de l'Agriculture Bio-dynamique 2011b

Comparative analysis from the database on the French Demeter website, see part 2

4.c. Supply chains: fairness and responsibility

The rise of the tertiary processing sector and of globalization of food items thus both typified an elongation of the food chain; a distancing and “opacification” necessarily accompanied by a shift in the global model of food distribution. Flourishing in Europe as in the rest of the “developed” and developing world, “conventional” retailers, i.e supermarkets and hypermarkets, have in some fifty years acquired the quasi-monopole of the food sector: in France, they dominate about 95% of the food market¹²¹. The comparison here stays threefold, articulated around industrial long supply chains (supermarkets and hypermarkets), non-supermarkets long supply chains; and short supply chains. However, the boundaries of each of these categories does not coincide with the three food production systems that have been investigated: all conventional products are not all distributed through supermarkets (this dimension is acknowledged, but out of the scope of the present investigation), organic is industrial as well as alternative and biodynamics is not characterized by a specific form of supply chain.

Supermarkets and hypermarkets are appreciated by the consumer for the low prices they offer, the range of choice and the food safety they seem to provide. But they are also pointed out as they are said to put pressure on the producers to “sell ever more cheaply and grow ever bigger”¹²² (as food products are all equal and interchangeable, so are the producers): a margin squeezing which results in the intensification of the production. Social concerns are part of the criticism, since the hegemony of a few firms on the food markets inevitably leads to socio-economic disparities (delocalization, harsh competition for local storekeepers...). Organic distribution is also largely dominated by big retailers: in Europe, the majority of organic products tends to be purchased through conventional supermarkets chains (in 2007, the share was about 80% in the UK and 50-60% in the Czech Republic)¹²³. This centralization of organic food sales is actually at the root of the fracture within the organic movement. Exploiting the economics of scale, supermarkets and hypermarkets tend to trade with large scale production, and organic farmers are pressured to adopt the scale of production to their needs in supplies, necessarily huge: from this perspective, the incorporation of organic within the agri-food industry inevitably implied its industrialization, and thus alienation from its original philosophy. It has also important social implications: in the UK for example, the takeover of supermarkets over the organic market led to the closure of over 10,000 food coops and local shops¹²⁴. The debate is still fierce within the organic movement, whether

¹²¹ Jacquiau 2002

¹²² Pollan 2006, 246

¹²³ Lyons 2007, 1

¹²⁴ Lyons 2001, 3

products should be supplied via big-box stores – it is basically a matter of popularization against integrity. Biodynamics faces the same dilemma: although it is generally associated with alternative supply chains, biodynamic products can, albeit rarely, be found in supermarkets.

The rest of organic sales typically occurs through either short supply chains or specialized stores. The latter is a category quite heterogeneous, which encompasses specialized supermarket chains as well as independent “health” stores or even consumers buying clubs. Their share of national market is also variable – basically, it is between 20 and 50% of organic grocery sales¹²⁵. Their structure and organization is too diverse to be overviewed here, but we can consider that in general, specialized stores are operated via wholesalers and have a range of choice not necessarily limited to the local production. They tend to have a lesser competitiveness than industrial retailers, but aim to have a greater transparency and higher criteria regarding production, processing and distribution, such as local sourcing of the products (at least in the fruits and vegetable sector)¹²⁶.

Short supply chains, accounting for about one third of the French organic market consist mainly in farmers markets or markets sales of fruits and vegetables from local production. Other forms of alternative supply chains have developed, predominantly concerning organic (or biodynamic) products. Direct (or less direct) sales encompass sale at the farm, vegetable box schemes (where consumers can order a personalized box of products on demand), food co-ops, road stands, CSAs...Community Supported Agriculture is a short supply chain in which consumers purchase their share of the harvest at the beginning of the season and in return receive a box with fresh products on a weekly basis (basically products, but sometimes dairy products, meat and eggs). It is an important growing trend, although in urban middles it may be faced with a lack of local supplies – an issue arising in the Paris metropolitan area, for instance¹²⁷. This alternative model of distribution primarily concerns organic (or biodynamic) production, but may eventually include other forms of sustainable, low-input agriculture.

5. Consumption: Food Culture and Food Systems

Food systems are not limited to the production and distribution processes – actually, they are to a great extent shaped by consumption patterns. Apart from the attributes of the purchased

¹²⁵ Guet, Chotard and Rimam 2011, 229

¹²⁶ Guet, Chotard and Rimam 2011, 230

¹²⁷ Kremer 2012

goods, the way to buy, cook and to eat it is definitely a determinant in the character of food systems and it influences as much the production and distribution processes as it is determined by them. There is a plurality of eating behaviours, but for simplification sake, they are integrated in two categories: mainstream and alternative consumer behaviour. Conventional equates purchase in industrial supply chains (supermarkets) and western-type diet; while alternative loosely refer to individuals having opted out from industrial food systems and shifted their dietary patterns. In this section again, the dichotomies drawn by the comparison do not exactly echo the typical categories of conventional agriculture versus organic; and the difference between organic and biodynamic is not clearly assessed. These dichotomies may be at some point, rather facile and idealistic, but foremost they enable to highlight the main discrepancies between industrial and “biodynamic-like” food systems.

5. a. Food purchase: Relational, Communicative & Participatory

Conventional/industrial and alternative food consumption models are investigated in regards to three of their characteristics: the degree of interaction (and thus of exchanged information) between consumers, retailers and producers; the content of the information flowing downward the food chain, and consumers' consequent knowledge and involvement. These characteristics are defined partly by the way supply chains are managed – some are opaque, other transparent and some are distant while others are relational – and by external factors, such as taste issues, health and environmental concerns, advertising, tradition, convenience and so forth...

Supermarket places are characterized by the anonymity they provide both for the producer, the distributor and the client. Information about the origin of the product is reduced to a price and to a list of ingredients. Indeed, the majority of the food items available in supermarket places is marketed upon its ingredient list, on the basis of their nutritional value (rich in vitamins, fibres, low-fat, low-cholesterol): a strategy elaborated by the food industry to answer growing public concerns about the relation between health and diet. There is thus a form of information filtering down to the consumer, but marketing-oriented and from health scientists to consumer. There is also in supermarkets a “parallel development [...] towards a re-differentiation and diversification of the production, particularly in the direction of 'quality foods’”¹²⁸, that is to say an incorporation of the production method as a marketing asset; answering thereby culinary, cultural, environmental, social, ethic concerns. It is the case notably of labels as fair-trade, free-range (for meat and eggs), artisanal, local *terroirs* and of course environmentally friendly and organic products. Labels, being “a mean to commodify knowledge”¹²⁹, bring therefore information about the producer or the production. As

¹²⁸ Scrinis 2007, 118

¹²⁹ Guthman 2002, 302

partial they may be, they constitute a reassurance about the origin - thus quality – of the food, and legitimizes the “willingness to pay” of targeted consumers. This willingness to pay a premium price can be regarded as a politicized action (by changing one's consumption patterns, one can contribute to the solving of environment problems¹³⁰), albeit more symbolic than real when, in supermarkets, participation in the food system is inevitably limited to purchase. Finally, there is a lasting concern about the quality of the information supplied in supermarkets, especially in the realm of organic marketing: from the discrepancy between the actual methods of provision and the consumer's perception (the supermarket pastoral) to widespread confusions between “organic”, “natural” and “healthy”.

Smaller, specialized organic retailers, even privately-owned, have obviously a more important focus on emphasizing of the origins of the products, although they basically stay the only information-provider authorities. The sources of information and the dimensions of social interaction actually undergo a real transformation only outside of the conventional retailing sector. The proximity, transparency and social context of short and alternative food systems permit a more accurate and grounded information to shape consumer's knowledge and simultaneously, and allow the producers to integrate feedback from consumers. They also change the content of the relations between the various actors, shifting to a trust-based relationship and eventually cooperation. Along with this enhanced communication between producers and consumers, the relational aspect of alternative food systems is expressed in a plurality of different ways, such as consumer-consumer (food buying clubs, community gardens), producer-producer (farmers co-ops), or eventually producer-retailer-consumer (vegetable boxes). Some forms of alternative supply chains definitely allow for a greater involvement – financial, personal, political... Community Supported Agriculture schemes illustrate how the consumer, taking the risk together with the producer to have a spare or damaged production, becomes an actor more involved (economically speaking, but also maybe psychologically or physically) and thereby more influent of the food system. It also gives the members the possibility to participate in food production, in the form of non-paid labour on the farm.

5.b. Nutrition: Health, Taste and Sacredness

Could industrial agriculture be assimilated with fast-foods? That would surely be a little bit simplistic, but they can be considered as the uttermost expression of industrial food: that is why Michael Pollan, in his book “the Omnivore dilemma”, chose a McDonald’s take-away meal to end

¹³⁰ Terragni, Torjusen and Vittersø 2009

up the industrial food system he had been following from the corn fields of Iowa¹³¹. Without reducing intensive agriculture to convenient and fast foods, there is a correlation between conventional agriculture, conventional supply chains and conventional (Western and urban) eating behavior. As a matter of fact, the shift in farming resulted in a shift in eating habits, largely due to the increase in consumption of highly processed foods. Our Western-type diets, actually, are characterized by “high intakes of red meat, refined grains, processed meat, high-fat dairy products, desserts, high-sugar drinks, eggs, potatoes”¹³². Conspicuous by their absence are fruits and vegetables which, in spite of government policies aiming at enhancing their consumption, are still widely neglected, like in France¹³³. Industrial diets, because of the large amount of fat, salt and sugar they contain, have proven to be an important factor in the development of contemporary degenerative diseases such as cancer, type II diabetes or cardiovascular diseases¹³⁴. What is less obvious is that heavy doses of fat, salt and sugar present in convenience and fast-foods somehow distort the consumers’ perception of taste, being “the stuff that rides easily on the tongue”¹³⁵; while the real taste of food (or its absence of) is most of the time covered up or enhanced with artificial flavouring. Overall, one has to consider that changes in diet are induced by a general preference of convenience over care: time-saving has become a major added-value and as a consequence, the act of cooking is undergoing devaluation in Western societies. From an anthropologic perspective, the proliferation of processed and packaged foods can be seen to dismiss the cooking process, but also the eating one, as the constant availability of food allows for a de-contextualized consumption (transports, T.V...), outside from the traditional dinner framework .

Mass-taste and convenience of industrial food are antinomic with ideas of taste, care and health defining ideals sustainable food systems: “Quality, whole, nutritious food would be available to all. Cooking would be for both sustenance and pleasure. Freshness and taste would be valued”. Sacredness also, in the meaning that food is “valued beyond its economic exchange value and caloric/nutrient functionality”, and that it is an expression of community; while the dinner is a moment when people “feed spiritually each other and affirm the gift of life flowing both from human community and the rhythms of the Earth”¹³⁶. Alternative food consumption practices thus seem to imply a re-evaluation of the quality of food and different eating behaviours, such as eating further down the food chain, or a greater involvement in the preparation of food¹³⁷. These practices,

¹³¹ Pollan 2006, 109

¹³² Halton et al. 2006, 6

¹³³ Amiot-Carlin 2007,5

¹³⁴ Horrigan et al. 2002, 450

¹³⁵ Guthman 2003, 55

¹³⁶ Kloppenburg et al. 2000, 182

¹³⁷ Scrinis 2007, 125

again, do not coincide with organic production; but organic consumers, compared to conventional, definitely tend to have a distinct system of value and way of life¹³⁸. They appreciate differently health and taste – two main reasons cited as motivating organic purchase – in the meaning that good food is basically fresh, GMO and chemical-free. They have a diet more in line with the dietary recommendations, incorporating more fresh fruits and vegetables and less meat and processed products¹³⁹, while seem more concerned with the vision of “food as a source of pleasure and new experiences”¹⁴⁰. Cooking is an important food habit for organic or alternative consumers, as it can be a form of re-appropriation of knowledge and control (such as gardening), the expression of care over convenience¹⁴¹, an economic strategy or a consequence of the supplying through direct networks, thus in raw products. Indeed, the whole concept of organic production is associated with healthier and more natural diet and way of life: we recall that organic arose within a counter-cuisine challenging food habits; and that still today, most of the specialized shops in which organic products are commercialized still keep the image, dimension or appellation of “health store”.

6. Conclusion

We understood from this brief overview between industrial, organic and biodynamic farming, that biodynamics is on many points incompatible with mainstream food systems. In the first place, like “Little” organic farming, it produces less, focuses more on quality, does not create externalities: it is therefore much less competitive than industrial agriculture. Secondly, biodynamics seems to be easily discredited because its approach to growth processes do not fit within the conventional agronomical approach. At the distribution level, biodynamics is associated with local, short, transparent and eventually participative supply chains. In spite of their development, these alternatives might seem relatively insignificant in regards to the overall hegemony of supermarkets and hypermarkets on the food market, including organic. Finally, it is embedded within a global approach towards food and nutrition that implies a challenging of dietary patterns.

Biodynamics therefore clashes with trends of globalization, productivism, materialism, standardization, commodification, convenience and unreflective taste. It nevertheless seems that, in light of growing consumers' interest in local and organic food, as well as future environmental and

¹³⁸ Lotter 2003, 5

¹³⁹ Terragni, Torjusen and Vittersø 2009

¹⁴⁰ Terragni, Torjusen and Vittersø 2009

¹⁴¹ Guthman 2002, 306

agricultural challenges, biodynamic farming may have some room to develop in European societies. It can, notably for foodstuffs with a strong added-value such as wine, attract the attention of consumers and producers that want to go further than organic. Its spread through conventional supply chains may however be questioned. On the other hand, biodynamics could, in association with kindred, “biodynamic-like” forms of farming, instigate a evolution of European food systems towards sustainability.

II. The Economic and Political Integration of Biodynamics

So far, organic farming has been developing across the world in all sectors of the food systems, at a considerably dynamic rate. Biodynamics, although having been practiced for about seven decades, also met a peak of interest within the past twenty years.

In order to develop in this paper a vision of a further evolution, we highlighted a number of obstacles in the first section, mainly from literary and journalistic sources. The findings are here coupled with the results of a small-scale field work among French biodynamic farmers. Results of both researches are then extended to a reflection over farming, economics and society, after what implications for policy and community action are suggested.

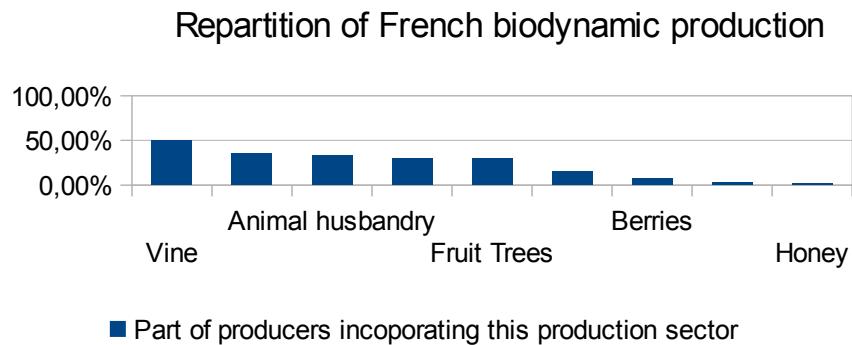
1. Obstacles to a further development: Research Section

1.a. Research Methodology

In order to ground the present research in the contemporary European reality, the obstacles facing biodynamics, the eventual solutions and the wider vision of biodynamics were also defined according to the views of a sample of biodynamic producers from France.

This geographic focus is mainly the result of language and time constraints, but its pertinence lies also in the fact that France is a major agricultural actor (the biggest in the EU) and the first concerned in case of an evolution of the EU farming policies. Its political, cultural, economical or administrative features are somewhat similar to neighbouring regions: this case-study is therefore investigated in the idea that the outcomes of this reflection can be applied to the entire European Union or at least to Western Europe as a whole. France is also the third European country in which biodynamics is most developed, in terms of area of land biodynamically managed (7500

ha, that is, almost 7% of the total EU¹⁴²) and second in terms of number of farmers (340, thus 12%). The agricultural landscape of biodynamics is, however, not representative of the global French agricultural production nor of the global biodynamic production, since vineyards constitute about the half of the total French biodynamic sector: one may therefore hypothesize that there might be a tendency for niche, luxury items (wine, medicinal and aromatic herbs, honey...) to develop quicker in biodynamics than other more trivial products (fruits and vegetables for example), probably because of the focus on quality.



We therefore collected a number of nineteen interviews among French farmers, first by contacting them with the help of the national database¹⁴³. Then, an interview was led with the persons willing to participate in the research project, during a visit of the farm, through phone conversation or more casually with the help of a mail-sent questionnaire. Questionnaires and interviews had the same structure: the first part being centered on farmers' own vision of biodynamics, motivations and personal difficulties in running a biodynamic farm; and the second approaching the wider development of biodynamics: its probability, obstacles and the actors potentially able to tackle them. Some of the interviews were limited to the questionnaire whilst others consisted of an in-depth conversation or were followed by an extended discussion over some of the issues.

Except from vegetable production, which is represented by only one person in the study, the profile of the interviewees is somehow representative of the repartition of French biodynamic production, with the majority being devoted to wine production (10), followed by animal husbandry, (3), thereby cultivating cereals and grassland for the feed), arboriculture (3), medicinal and aromatic herbs (1) and apiculture (1).

The answers overviewed and analyzed here addressed the questions of the future development of biodynamics and the wider societal changes it would imply, the obstacles faced both individually

¹⁴² Demeter International 2012

¹⁴³ Association Demeter France 2010

and globally, and finally, the potential solutions and the actors to implement them.

1. b. Results

- Future development

The interviewed biodynamic farmers, although viewing biodynamics as, ultimately, the best option for both producers and consumers, were overall rather pessimistic about its further development. Many considered that in the current setting, the biodynamic movement would stay limited, stagnate, or even decline. Still, it was a concern that industrial agriculture, including Big organic, is reaching its limits and that numerous farmers will likely turn toward alternatives like biodynamics.

For many interviewees, the unfolding of biodynamics in a “democratic” way can happen only within a wider evolution of the society. That would imply changes in the cultural, political and economic sphere. The farmers evoked notably the areas of medicine and education, the appraising of spirituality, the relation to the “living” (including humans, animals and vegetals), and the extension of the notion of units/organisms to political and economic life.

- Obstacles

As it was found out in the first section, the tension between mainstream and biodynamic agricultural and cultural paradigms is a key obstacle. The conversion to biodynamic requires individual changes, among which the challenging of mainstream agronomical approach. It was an issue highlighted by about one third of the farmers; one of them even explained that some viticulturists (wine-growers) in the Bordeaux region work with biodynamic practices but do not dare to admit it for fear of being discredited in the view of “rationalist” agronomical engineers - their managers.

Biodynamics therefore requires an intense commitment and a personal challenging of the mainstream paradigms – for this reason, several farmers were worried about an eventual lack of conversions or of new farmers motivated to engage. Two persons, however, claimed that biodynamics does have the potential to attract new farmers, because it brings meaning to farming practices. One of them explained that the plans of young people wishing to start up an organic or biodynamic farm were often undermined by the lack of access to land. Simultaneously, this person reported the fact that in France, the number of farmers is steadily declining and that lands made available by the retiring of farmers are integrated to neighboring farms. The loss of farms and of agricultural area (and subsequent difficult land access) is a phenomena that touches the whole

Europe¹⁴⁴ and which extends far beyond biodynamics.

On the other hand, would there be more biodynamic farmers, this form of farming could not develop without greater interest from consumers. As much as seven farmers regretted the lack of information flowing down to consumers, about the existence and assets of biodynamics, but also about conventional agriculture and the true price of agricultural production. The difference of price, indeed, was an issue mentioned several times. Without much surprise, that echoes global trends in organic consumption, where price is often found to be the main hindrance to opt for organic products.

The issue of competitiveness is therefore very present, especially for fruits and vegetables producers: it is hard to integrate in a market where the costs of production are externalized; even more so that more competitive forms of farming tend to be supported by governmental policies. Some producers talked about the lobby of the agribusiness (input and output sectors) which prevents or harnesses effective changes in national and international decision-making in favor of small-scale and especially self-sufficient farming.

Finally, the obstacles relating to the managing of the biodynamic movement were also discussed. It was found that many farmers, very legitimately, fear a potential drift of biodynamics: specialization of farms, negligence of the spiritual dimension, fashion effect, etc. The role and meaning of the Demeter legislation in this regard could also be questioned. One farmer regretted that the biodynamic movement may collapse on the long-run if it does not “open” itself to new practices, while two other advocated another system of certification.

In summary, one can consider that, like we found out in the first chapter, the development of biodynamics is obstructed by both cultural (approach towards spirituality, farming, shopping, eating...) and structural obstacles (price, access to land, difficult marketing, lack of public support).

- Actors and solutions

The societal changes these obstacles would imply, farmers estimated, cannot come from above, but from local actors: citizens (in the view that they could have the possibility to make their own, true choices), producers, distributors and local authorities. National and supranational governments could be helpful mainly by ceasing to support large-scale, industrial farming and eventually by supporting conversion to organic as well as supervising marketing. There was nevertheless a concern that the development of biodynamics cannot be motivated by external support, since it is the outcome of a personal reflection. Finally, farmers acknowledged the role of

¹⁴⁴ European Environment Agency 2010

the media, as both an obstacle when it encourages consumerist and materialist mindsets and as a partner, considering its role in the popularization of organic agriculture.

2. Where is Biodynamics Heading Towards? A new vision of economy and society

2.a. Biodynamics and the Associative Economics

A more detailed plan for action for local actors, Demeter bodies and governmental policies, relying partly on farmers' answers and on related literature will be presented in the upcoming pages. Prior to this, it seems important to deepen the vision of the economic and political dimension of the biodynamic movement, in order to situate it in relation to other economic and political outlooks. Robert Karp, a leading figure of the Sustainable Food and Farming Movement, expressed this necessity in the following terms:

“Our movement currently offers farmers a clear and compelling vision for new ways of farming and stewarding natural resources. We also offer consumers a clear and compelling vision for new ways of shopping, cooking and eating. It seems to me, however, that we are lacking an equally clear and compelling vision for society as a whole and for economic life in particular, a vision that is aligned with the values of the movement, in harmony with our goals, and as sensible and holistic in nature as organic farming and healthy eating”¹⁴⁵

In consequence, Karp develops, in the following pages of his essay, a concrete vision of the wider economic environment in which biodynamic/organic farming would thrive, and which he calls an “Altruistic Stakeholder-Managed Economy”. His outlook, by describing the financial mechanisms that would foster the circulation of capital (Social Finance Organizations) and developing a new ownership model (multi-stakeholder), gives practical expression to the theory of Associative Economics. Associative Economics is a vision of economic life, also articulated by Steiner, which operates under the principle of the “Fundamental Social Law”: “the more the individual works for the benefit of society or the needs of others, and the more that each person is supported by others to lead a dignified existence, the greater the well-being and overall prosperity of a society will be”¹⁴⁶. In this outlook, the state would have only few or none interference in the

¹⁴⁵ Karp 2007, 10

¹⁴⁶ Lamb 2010, 49

economic life, while the latter would be regulated by the actors' "intentional collaboration", while self-interested behaviors, competition, accumulation of capital and maximization of profit would be replaced by altruism, cooperation, healthy capital circulation (that is, fairer distribution of the surplus values) and respect of the common goods. Associative economics, among others, addresses issues of community ownership of the common goods (such as land), decommodification of labor, regulation of supply and demand (through multi-stakeholder associations), consumer-driven production, emphasis on "diverse multi-level trade", etc.¹⁴⁷

The Associative Economics approach can remind of other economic theories meant as alternatives to neo-liberalist, globalized capitalism, such as "capitalism 3.0"¹⁴⁸, "natural capitalism"¹⁴⁹, "local living economies" (notably represented by the Business Alliance for Local Economies)¹⁵⁰, "participatory economics (parecon)"¹⁵¹...or more generally, the third sector of economics, made up of associations, co-operations, mutual companies, SFOs, foundations and so forth, and which is often referred to as the "Solidary Economy". Although the outlooks these models provide challenge the prevailing economic and political orders with varying extents, they all emphasize the role of "the commons", economic equity and solidarity, shared ownership and decision-making power, as well as partial re-localization of the market and can thereby be seen as the emergence of a global alternative to the prevailing economic paradigm of competition and growth.

2.b. Biodynamics and the Threefold Social Organism

Scholars and writers who investigate future prospects for economic life tend to apprehend this evolution within a greater evolution of the society; quite logically since economics interacts with – that is, shapes and is shaped by – other areas of the society. Hence, changes are generally called for in the economic, but also political/legal (strengthening of democracy) and cultural/spiritual (shift in collective awareness) lives^{152, 153, 154}. The vision of Associative Economics also is embedded in a conception of the society called the threefold social organism, in reference to the three spheres of culture, rights and economy. This vision stresses the necessity of the independence of these spheres (administration and government) so that "none should dominate or

¹⁴⁷ Lamb 2010, 63

¹⁴⁸ Barnes 2006

¹⁴⁹ Hawken, Lovins and Lovins 2008, 1-21

¹⁵⁰ BALLE nd

¹⁵¹ VPC nd

¹⁵² Korten 2006, 22

¹⁵³ Scharmer 2008, 3

¹⁵⁴ Lamb 2010, 38

intrude on the other in an inappropriate way”. In most of contemporary societies, however, the economic sphere largely influences the political and cultural ones while political life intrudes both economics and culture (education).

The integration of biodynamics in European society, according to the theories of associative economics and social threefolding, would imply the creation of associations of producers, retailers and consumers that would oversee supply according to demand and define together the “true” price of food products (that is, the actual costs of production and a fair income, so that no externalities are created). As food production can be considered as a life-supporting service, and access to food a basic right, the legal sphere (governments) is therefore entitled to act in this sector, although rather by facilitating access to quality food rather than investing unilaterally into one model of farming. Keeping that in mind, the thesis will now focus on the economic and political integration of biodynamics and on subsequent implications for action at different levels of governmental policy-making (international, European, national and regional), for Demeter bodies and for community action.

3. Implications for Demeter policy-making

In the following sections, biodynamics will be investigated as part of the sustainable food and farming movement, altogether with “biodynamic-like” forms of farming. Prior to this, however, we want to focus on biodynamics as a certified label controlled by the association Demeter. It can be deemed that the latter, through the scope and range of requirements, has the tools to foster the interest and access to biodynamic certification, while could prevent a potential drift of biodynamics. Therefore, farmers were asked their opinion about the recommendation to have livestock on the farm, and some of them were asked additional questions about the role of Demeter requirements. Their answers brought attention to issues of certification systems, farm organism and integration of new techniques.

3.a. Participatory Guarantee Systems

In France, farmers obtain organic certification following an inspection by a third party (private certification bodies) such as Ecocert, which they have to pay for by themselves. The cost of the organic certification procedure is, in France, approximately between 400 and 800 € yearly,

which may be a considerable burden for small producers. That is the one of the reasons why many organic farmers worldwide who market their production directly (and thus rely on consumers' trust) prefer to operate without certification. This decision is taken carefully though, for the absence of official label deprives them from eligibility to public aids targeted at organic production. Biodynamic farmers, which need the additional “Demeter” label are either controlled by the same inspector that provides organic certification (and which not always master adequately biodynamics) or by a specialized “Demeter” inspector, more expensive.

An alternative to third party labelling is “Participatory Guarantee Systems” (PGS), described by the IFOAM as “locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social network and knowledge exchange”¹⁵⁵. That it to say that they function without professional certifiers, and that the tasks of defining the standards and certification procedure are the work of local commissions gathering farmers and consumers¹⁵⁶. PGS therefore would make sense from the perspective of biodynamics, since it relies on trust, cooperation and shared decision-making, prolongates the notion of self-regulating units and could thereby be a motor or the relocalization of organic farming¹⁵⁷. The integration of such practices, be it merely optional, could encourage farmers who make use of biodynamic-like practices to consider biodynamic labeling, whose costs could be thereby cut down.

Participatory Guarantee Systems are used by the French organic label “Nature&Progrès”, the U.S “Certified Naturally Grown” farmer association, and by other organisms in South America (Bolivia, Brasil, Peru and Mexico). In Brasil notably, PGS are integrated as reglemented, official certification systems¹⁵⁸. In the EU, the absence of official recognition of this certification procedure strongly undermines the possibilities to employ Participatory Guarantee Systems while benefitting from the right to use the EU organic logo (and appellation).

3.b. The Farm Organism

In biodynamics, the importance of the farm organism could not be stressed enough: animals, by their digestive process, provide the farm with manure and are the milestone of its self-sufficiency. In an ideal setting, an integrated farm organism would have both vegetal crops (fruits, vegetables, legumes, cereals and so forth) and animal products so that it could meet the basic food needs of the local community. In reality, the specialization of farms, even within biodynamics, tells

¹⁵⁵ IFOAM 2008

¹⁵⁶ Besson 2012, 372

¹⁵⁷ Besse 2012a, 63

¹⁵⁸ Besson 2012, 373

otherwise, for it is very difficult to integrate herds in farms devoted to vegetal production, especially in regards to land availability.

That is because, supposes Groh, a pioneer biodynamic farmer, family farms simply cannot manage the diversity and complexity that would characterize the “farms of tomorrow”. For this purpose, he argues, “two or three families should eventually live and work on the farm.[...] A healthy integrated farm organism needs more than two people, if they do not choose to live a slave-like primitive existence”¹⁵⁹. Having a “team around the farm” would obviously soften some of the core disadvantages of farming; such as the tremendous amounts of work and time required. It can also be seen as the uttermost expression of biodynamics, where the farm is so diversified that it is able to provide the local communities with a wide range of products (beverages, honey, herbs...)

If it is not in the scope of the Demeter requirements to impose the grouping of farmers around farm organisms (or community farms), the representative of the biodynamic movement could nevertheless embed the “multi-family” farms as the ultimate expression of the farm organism, while facilitating association through, for example, unified certification procedure.

3.a. Opening and Networking

Besides staying cohesive, it is also important for a niche like biodynamics to be able to network with outsiders, in order to get feedback and to adapt consequently. Networking with kindred organization could also be a means to reach a wider consistency on the global agricultural stage for, says Richard T. Smith, “is it clear that interest in biodynamics extends far beyond the members of its own Association”¹⁶⁰

Smith notably advocates more research and reflection over the use of homeopathic practices for preparation (that is, diluting the substance to a much greater degree than during standard preparations) and suggest that in non-temperate, exotic countries, the use of indigenous plants for the preparations could be an interesting (if not preferable) option to the importation of these compost preparations¹⁶¹.

Finally, the use of animals in biodynamic farming can also be an issue. The problems encountered by farmers to integrate livestock on their farm could be extended to a wider discussion over the use of animals in biodynamics. As Smith reminds, “cultural pressures in certain countries inhibit the acquisition and use of animal parts in preparation-making”¹⁶². Adapting biodynamics to cultures and spiritual worldviews in these regards could probably facilitate the development of

¹⁵⁹ Groh and McFadden 1997

¹⁶⁰ Smith 2009, 255

¹⁶¹ Ibid

¹⁶² Ibid

biodynamics. One of the farmers interviewed, for her part, emphasized the need to take consideration of the whole animality of the farm – including soil organisms, wildlife, small farm animals, even in reduced numbers...

The biodynamic movement is now in a difficult position. Reaching a certain consistency on the global agricultural stage, it is nevertheless subject to divergent visions and interpretations. Some may, for example, consider that the requirements too limited (since they mainly consist in the correct use of preparations), while others can reckon that they could be even more adaptable. Although it is complicated for national Demeter institutions to impose the grouping in farm organism, integrate Participatory Guarantee Systems or to integrate new techniques, they could engage a discussion over the future of biodynamic on a international and national level.

Still, the development of biodynamics, regardless to cohesion of the movement or the scope of Demeter standards, depends on much wider structures than biodynamic institutions. Hereafter, the integration of biodynamics in European economic and political life is investigated together with biodynamic-like farming, on the assumption that the development of local, sustainable farming will induce a greater number of consumers and producers that, wanting to go further than organic, would turn towards biodynamics.

4. Implications for EU politics: biodynamics and the CAP

4.a. An outlook on the Common Agricultural Policy

Although many biodynamic producers are able to sustain their farm without financial help from governments, the role of public support to agriculture has been brought to attention by several interviewed farmers, who felt handicapped by a system they consider to support industrial, conventional farming. In the European Union, the Common Agricultural Policy (CAP) plays a major role, because, through various means, it encourages certain forms of production, certain farm structures and regulates agricultural import and export. Therefore, would there be a political will to challenge the agricultural paradigm of productivism, the CAP could be an important tool in fostering the development of more sustainable forms of agriculture.

When it came into force in 1962, the CAP primarily aimed at ensuring food sovereignty in the European Community. During the following decades, it tended to encourage high production and thus to favor big, industrial farms, as direct aids were production-related, which eventually would provoke surpluses of major commodity crops. Exportations were subsidized to ensure the

farmers a correct turnover, but it meant that exported foodstuffs were marketed at a price lower than the costs of production, which consequently distorted world food prices¹⁶³. Although these exports subsidies are not officially ceased yet, direct payments have been since 2003 decoupled from production, which means that they have been paid in reference either to historical payments or to the number of hectares, and not anymore to the actual volume of production. It nevertheless implies that payments are still targeted to large-scale farms (mainly cereals and animal husbandry). During the same reform, the notion of cross compliance was introduced, in the meaning that farmers had to respect certain rules relating to animal welfare, food safety or environment-friendly production. A second pillar was also introduced in 2000 in the frame of a Rural Development Programme, whose payments aimed to foster rural employment and activity, while ensuring the support to agro-environmental schemes.

Although this greening can be reckoned to illustrate a global shift of the EU policies towards sustainability, the CAP stays still very inconsistent in its support to small-scale, organic farming. Foremost, funds are extremely unequally distributed: more than 75% of them are distributed throughout the first¹⁶⁴, "productivist" pillar (including export subsidies), and even within this pillar, distribution is quite uneven, since the main recipients are large-scale farms, mainly cereal farms and animal factories. It is reported that out of the 14 million farmers in the EU, 10 million of them receive negligible or no help at all¹⁶⁵, while in France the top beneficiaries of the funding receive annual checks of several dozens of million €. ¹⁶⁶ As a matter of fact, by maintaining payments to large-scale farms and exportations subsidies, the CAP still encourages production-oriented food provision. Its reform for the period 2013-2020 thus bears considerable challenges for the future of European agriculture, be it only in regards to the fostering of small-scale farming, which is better adapted to have environment-friendly practices (i.e. no monocultures).

4.b. The legal proposal for the CAP 2013

The legal proposal issued in October 2011 by the EU Commissioner is, on certain points, greening and balancing the CAP: basically, it proposes a progressive reduction and a capping of direct payments (up to 300 000 € per farm and per year), the strengthening of greening measures schemes which, from 10% would constitute up to 30% of direct payments (to which organic farmers are de facto eligible, if their farm is made up of more than 3 ha¹⁶⁷), which themselves would be

¹⁶³ European Commission 2004, 6

¹⁶⁴ European Commission 2012a

¹⁶⁵ Bové 2011

¹⁶⁶ Lefebvre 2011

¹⁶⁷ Matthews 2011, 7

better targeted (only to “active” farmers, unlike previously when landowners could receive funds). It also includes the support of young, new farmers, the development of direct supply chains and the strengthening of producers' negotiating power through organizations¹⁶⁸...All these measures could have the potential to foster the development of biodynamic-like farming (or at least organic). However, in spite of the will of the European Commission to have a more balanced and sustainable food provision system, the proposal still largely fails to address the new issues faced by agriculture. It aims for instance at encouraging the installation of new farmers, but simultaneously confirms its support to the enlarging of bigger farms¹⁶⁹. It wants to develop direct marketing but maintains export subsidies while, although wishing to support small-scale farming, still unevenly allocates funding (between 500 and 1000 € per year¹⁷⁰ against up to 300 000 € for larger farms).

So, where the global situation of agriculture calls for radical changes (in regards to the occupation of territories, the declining number of farmers, the impact of conventional agriculture on the environment and its dependence upon fuel-based chemicals, but also changing climate patterns and volatility of world food prices) the European Union only “updates” the old mechanisms which had been prevailing since the creation of the CAP. An agricultural policy more in pace with biodynamic or biodynamic-like values would rather strive for the following goals: food sovereignty through re-localization of food systems, priority to organic or agro-ecological farming, small-scale farms, access to quality food...We will investigate, drawing on discussions on the future of the CAP, mainly from French sources, which repartition of the budget and which tools could steer EU policies toward sustainability.

4.c. The “biodynamic proposal” for the CAP 2013

The articulation of this “biodynamic proposal” mainly relies upon the work of the French farmer union “Confédération Paysanne”, which devoted an issue of its monthly edition for a discussion over the role of the CAP¹⁷¹. This labor union gathers practitioners of “Little” organic farming, among which biodynamic producers, under the appellation of “peasant agriculture”, and is a member of the international movement La Via Campesina, which works for sustainable, small-scale farming “as a means to promote social justice and dignity”¹⁷². We also paid particular attention to the propositions¹⁷³ of José Bové, an Euro-MP representative of the French “Europe

¹⁶⁸ European Commission 2012b

¹⁶⁹ Bureau 2011

¹⁷⁰ Berhocoirigoin 2012, XII

¹⁷¹ Confédération Paysanne 2012, I-XVI

¹⁷² Via Campesina 2011

¹⁷³ Bové nd

Ecology” Party, who is also known as an organic farmer, alter-globalization¹⁷⁴ activist and spokesman for La Via Campesina.

First of all, there seems to be a consensus among “Little” organic farmers that direct payments should not be annexed on production levels (since it encourages intensification) as they currently are, and neither, as it is proposed, on the agricultural surface (since that encourages large-scale farming). Rather, they should be related to the working individuals, with, ideally, a maximum of individuals per farm and adapted to the cost of living of the member states. That would avoid disparities in distribution and encourage the development of independent, small-scale and non-mechanized farming. Green payments, to be efficient, should constitute a larger part of the budget of the first pillar and have a wider consistency- that is, standards should be higher. For instance, the EU imposes a diversification of crops to the number of three, which implies that farms can still have more than 70% of their surface under monoculture while benefitting from green payments. The integration of legume production (both for environmental and food sovereignty sake), the consideration of the “link to the soil” in animal husbandry, measures meant to save water or energy-saving practices, for example, could be additional conditions for the access to green payments.

The second pillar, Rural development, should rather focus on the re-vitalization of local food economies and of the communities farms are embedded in. It should particularly concentrate on support to the installation of young and new farmers, prevention of farmland loss, development of direct supply chains, creation of tools for farmers, both individuals and collective (slaughter facilities)...The distinction between small-scale and industrial processing facilities in regards to sanitary norms is also a crucial issue that should be addressed by EU policies¹⁷⁵. Industrial-based sanitary norms indeed undermine the unfolding of small-scale, independent processing plants by adding administrative requirements, whose relevance may be much lesser in food systems that rely on transparency and proximity¹⁷⁶.

In the frame of the Rural Development Programme, it is also mandatory to develop tools to regulate production so to achieve a better organization of the market. The setting-up of regional, national and European cadasters and calendars, for example, could help producers to coordinate their production and avoid overproduction. An insightful proposition of José Bové, in this perspective, was the creation of European observatory of food prices in order to ensure a better match between supply and demand. Throughout this observatory, associations of producers and

¹⁷⁴ Alter-globalization, unlike “anti-globalization“, does not oppose economic globalization per se, but promotes an alternative, ethical approach to this process.

¹⁷⁵ Savigny et al. 2011

¹⁷⁶ Pollan 2006, 229

consumers could discuss and decide together of the “true price” of agricultural products¹⁷⁷, that would rightly reflect the costs of production. In the case of organic provision, that would be an useful educational tool to show consumers how justified is the difference in price between organic and conventional product. From the perspective of Associative Economics, it could also be seen as the beginning of a process that re-empowers with the ability to participate in the economic decision-making, on the basis of discussion and cooperation. Such observatories could have their equivalent, in the form of internet-based forums, at the national¹⁷⁸, regional and local level. And where the difference between the price consumers can pay and producers can ask for cannot be softened, mechanisms could allow CAP payments to be targeted at these gaps.

Besides the strengthening of environmental measures, support to new farmers and to small-scale farming, the re-thinking of the EU Common Agricultural Policy necessary implies changes in the economic relations between the EU and third countries. It indeed means nothing less than the change of the paradigm of globalization into the one of local preference and therefore, major shift in policies regulating exports and imports. Besides the ending of export subsidies, accused of distorting world food prices, re-orienting European markets towards local production and distribution also implies a partial shutting of EU borders to crops that coincide with or are concurrent to local crops. The development of self-sufficient European animal husbandry would also mean a drastic cutting down of grain imports (about 75% of vegetal proteins used for feed in intensive animal husbandry is imported, mainly from South America)¹⁷⁹. The question of the EU's market restrictions as a burden for the economy of developing countries, of course, is not unproblematic. It is assumed here that “food security is best achieved by growing diverse crops locally for local consumption, instead of relying on food imports”¹⁸⁰ and that globalization of the agricultural markets, on a global scale, fails to address the needs of local communities in developing countries. European agricultural policies answering to today's social, environmental and energetic imperatives would not, obviously, retire from the international food market, but would rather differentiate basic food production, targeted at the local level (regional/national/European), from niche products which have specific areas of production and are traded internationally. The production of niche products should be regulated worldwide so that it does not undermine the

¹⁷⁷ Bové, nd

¹⁷⁸ Ministère de l'Agriculture, de l'Alimentation, de la Pêche, de la Ruralité et de l'Aménagement du Territoire

¹⁷⁹ Fabrégat 2010

More generally, an extension of animal husbandry, more than wishful for environmental reasons, however raises the question about the capacity of EU agriculture to meet the demand of EU consumers in animal products (meat and dairy). Generalized grass-fed animal husbandry would probably require a diminution in the consumption of animal proteins.

¹⁸⁰ Parker 2007, 17

production of basic food commodities.

However, the re-instauraton of protectionist barriers does not really fit in the agenda of the World Trade Organization, which has been working for the liberalization of world markets since its inception. The evolution of European food systems would therefore imply to tackle this tension between the necessity to re-localize production and the liberal model of the WTO, eventually by disengaging farming from the areas of competences of the WTO, as proposed by La Via Campesina, the French union Confédération Paysanne and other experts¹⁸¹.

Globally, although EU and international policies are to a greater extent influenced by pro-environmental groups and public concerns about agriculture, it seems that a major shift in government policies in favor of “Little” organic farming is rather unlikely. The vast majority of farmers interviewed estimated that the development of biodynamics can be fostered in the first place by local actors: farmers, independent retailers, local governments, NGOs, individuals and so forth.

5. Implications for Community action: Alternative supply chains

5.a. French Biodynamic Production and Alternative Supply Chains

Because of the higher price of production and of the eventual lack of public support, one of the greatest difficulties for biodynamic farmers is to market their products. Even more difficult is how to market their products in the manner they consider to most appropriate to their ethical standards.

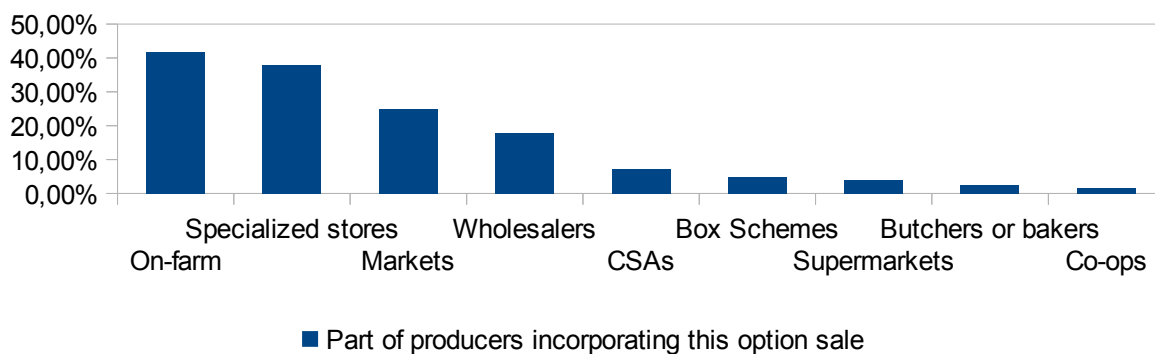
Most of the biodynamic farmers interviewed agreed on the fact that ideally, biodynamic products should be supplied through chains that guarantee transparency and fairness, that is, direct or short supply chains. These models of food distribution have the advantages of rightly emphasizing the quality and assets of the products, providing consumers with transparent and complete information, and complying with ethical principles (such as fairness, social justice, animal welfare). The shortness of supply chains (either direct or with one intermediary) also guarantees higher quality products (freshness), and, for the farmer, a better remunerating price. Pretty much all short supply chains, characterized by direct marketing and re-localization, are currently developing throughout the industrialized world, particularly in the organic sector. Although they are referred to as alternatives, many of them were in use before the unfolding of supermarkets, and only within the

¹⁸¹ Rosset, 2008

global interest in local food have they been emerging anew.

A quantitative study of database of French biodynamic farmers from 2010, available on the national webpage for biodynamics¹⁸², enables to draw a picture of the reality of distribution (table 2). Supply chains are very varied, even within the farms, and greatly differ, depending if the farm is a vineyard or not. It appears that the most widespread supply chain for biodynamic products in France is on-farm sale, which is incorporated by more than half of the whole French biodynamic farms. Except for wine which is marketed through specialized chains (exports, wine merchants, restaurants), most biodynamic farmers market their products through one or many short supply chains: food markets, CSAs, box schemes, co-ops or local bakers and butchers. The rest of the production is supplied through specialized organic stores, wholesalers, or, more marginally, supermarkets.

Table 2: Repartition of Biodynamic (non-wine) Distribution



5.b. Alternative Supply Chains

- Markets and farmers markets

In a French context, food markets typically refer to markets traditionally occurring once a week, attended by various craftsmen, producers or retailers. It can also include periodic markets such as fairs. Approximately one fifth of French biodynamic members use this supply chain, which is however insufficient to market the whole production, because of the low volumes involved. In the context of the sustainable food movement, another form of food markets, more targeted, are being developed under the appellation of “farmers markets”. These markets are composed only of local producers (some accept intermediaries) that use organic, biodynamic or other sustainable farming

¹⁸² Association Demeter France 2010

methods¹⁸³. Because the criteria of farmers markets aim to address environmental issues and to re-embed farmers within communities, their unfolding in various countries, such as the US, the UK¹⁸⁴ or Norway¹⁸⁵, are, more than traditional markets, markers of the conscious evolution of food systems towards re-localization.

- Community Supported Agriculture

The principles of Community Supported Agriculture are already familiar to the reader: consumers purchase their share for the upcoming season (spring/summer or autumn/winter), in exchange for which they get a box of vegetable each week, to be picked up at the farm or at another drop-off in town. Through their membership, they also have the possibility to become involved in decision-making and in farm activities. CSA was pioneered by Trauger Groh, who viewed this model supply chain as the adequate expression of principles of Associative Economics and of the Threefold Social Organism¹⁸⁶, which led him to qualify them as “farms of tomorrow”. In its original setting, CSA notably addresses the issue of the “true” price, since ideally, the amount of the consumers' shares should be equal to the total yearly financial inputs in the farm, including farmers' income.

In France, CSA has been adapted into the notion of “AMAP”, which literally means “Association for the Sustaining of Peasant Agriculture”¹⁸⁷. Unlike CSAs, the relation of the producers and consumers within the AMAP is less exclusive, for the goal is rarely to finance the whole farm, since often only a part of the production is distributed through AMAPs (which was also the case for French biodynamic farmers that were working with an AMAP).

- Co-ops

Food co-ops traditionally refer to a group of consumers that draw together in order to buy foodstuffs and ensure joint distribution. It typically features a group of stakeholders who share ownership and are involved in the functioning and decision-making. This concept was well-spread, notably in the UK in the years 60-70, but co-ops were overwhelmed by the development of supermarkets. Only recently they have emerged anew, and their form and orientation have somewhat evolved to become more adapted to contemporary issues, like a more direct, local sourcing (without the intermediary of wholesaler) and a more sustainable, often organic production¹⁸⁸. Again, this concept takes in practice a plurality of forms, as co-ops are changing in

¹⁸³ Pinkerton and Hopkins 2009, 114

¹⁸⁴ Pinkerton and Hopkins 2009, 114

¹⁸⁵ Vittersø and Jervel 2010, 55

¹⁸⁶ Groh and McFadden 1997, 34-42

¹⁸⁷ Besse 2012b, 263

¹⁸⁸ Pinkerton and Hopkins 2009, 123-124

size, priorities and functioning.

- Vegetable box schemes:

Vegetable box schemes, which are also a recurrent trend in organic distribution, also consist of a box of fresh, local, and most of the time organic produces, which are ordered by the consumer (eventually on-line) and retailed individually. Boxes are then delivered either at customers' home or at a convenience point. Surely inspired by CSAs, box schemes do not imply direct marketing (since retailing and supplying are often the task of middlemen), and may have a varying commitment to local and organic criteria. Their commercialization, like the UK where “the market is now dominated by a few large companies that distribute nationally and include imported organic products in their range”¹⁸⁹, may therefore imply that this supply chain is not always short neither transparent.

- Organic Stores

Specialized stores, finally, are an important client for biodynamic farmers. They can be considered as a short supply chain, although several specialized structures have grown so big that they challenge the ideals of localness, fairness and transparency they were built on¹⁹⁰. They nevertheless are a precious alternative to conventional retailing structures.

This overview focused on the main alternative supply chains used by French biodynamic farmers. It did not encompass all the initiatives in direct marketing that are flourishing in Europe and elsewhere, such as food-vending machines (notably for raw milk), internet marketing or road stands. From a global perspective, direct or short supply chains are a powerful countertrend to supermarkets, and it can be deemed that there are many possibilities ahead for the development of biodynamics, especially through cooperative initiatives such as co-ops or CSAs.

Obviously, the spread of alternative supply chains foremost depends on the readiness of producers and foremost consumers to engage. Still, local NGOs and governments can have a role to play in their unfolding, in connecting, supervising, initiating or funding these ventures. In the hypothesis of a consequent development of local food markets, they could also create or provide tools for coordinating and regulating production.

¹⁸⁹ Brown, Dury and Holdsworth 2009, 183

¹⁹⁰ Baqué 2012, 208

6. Implications for community Action: Land Tenure

6.a. *The issue: Land Tenure*

In his advocating for a new Common Agricultural Policy, José Bové also mentioned the issue of land speculation¹⁹¹. The latter is, in the current setting of the CAP, de facto encouraged by hectare-based direct payments. Although according to the legal proposal, this issue should be somehow addressed, since payments will be targeted only to “working” farmers, the access to affordable land for new farmers is still problematic, in and outside of the EU. “Here”, underlines Richard T. Smith, “a veritable tapestry of social and political traditions confronts community farming”¹⁹². The issue of land tenure goes actually beyond speculation: in France, as highlighted one of the interviewed biodynamic farmers, the majority of lands freed by the departure of old farmers is used to the enlargement of existing farms, and land tenure becomes gradually concentrated in fewer hands¹⁹³. At the same time, in most European countries, the agricultural area dramatically declines, mainly as a result of the abandonment of less productive plots and the conversion of farmland into infrastructures, e.g. urban sprawl¹⁹⁴.

In the view of many biodynamic practitioners, land is intrinsically not a tradable good – it cannot be produced, its quantity is limited and, obviously, it is a necessity of life to every human being, in regards to both housing and food production¹⁹⁵. Therefore, says Groh, “the farms of tomorrow must be based on a new approach to land. The land can no longer be used as a collateral for debt...”.¹⁹⁶

6.b. *The solution: Land Trusts*

The solution proposed by the representatives of the sustainable food and farming movement is the creation of land trusts: basically, altruistic, non-profit financial entities, or “social finance organizations”¹⁹⁷ invested in by local communities which would purchase the lands and go into partnership with entrepreneurs – in this case farmers, but it could concern also persons aiming to set up small processing facilities, organic stores, or any venture in the interest of the community – by

¹⁹¹ Bové n.d

¹⁹² Smith 2009, 256

¹⁹³ Desjeux, Guyomard and Latruffe 2007, 9

¹⁹⁴ Pointereau and Coulon 2009, 109

¹⁹⁵ Groh and McFadden 1997, 15

¹⁹⁶ Groh and McFadden 1997, 17

¹⁹⁷ Karp 2007, 23

providing them with an affordable long-term lease for the farmland, under the condition that this entrepreneur stays committed to sustainable farming practices. In this approach, individuals are empowered with the possibility to steward – either through donation or investment – the management of lands otherwise than through private purchase, and for the benefit of the local communities and the environment. The core goal of this strategy being to conserve farmlands and to get them out of the speculation scheme, that is, of their profit-oriented use, they ought not to be sold again: “Every piece of farmland has to be purchased for the last time, and then, out of the free initiative of local people, be placed into forms of trusts...”¹⁹⁸

Also popular in the housing sector, this approach has been developed under the name of Community Land Trusts¹⁹⁹, which are to be found in various countries, notably Scotland, the USA, and are being pioneered in England ^{200,201}. In France, the mission of securing farmland has been taken up by the association “Terre de Liens” which set up an association, a foundation and a land trust committed both to solidarity saving and to land conservation²⁰². Unlike Community Land Trusts, “Terre de Liens” is operating country-wide, because of the difficulty to gather sufficient funds within communities. Investors or donators have nevertheless the possibility to choose a specific project or region they want to support. Besides individual investments, the work of “Terre de Liens” is also financed by social credit unions, regional agricultural structures or local government. Sometimes also, land and farms are given or sold at low price by retiring farmers who wish to see their land sustainably farmed after themselves. Since its inception in 2006, the land trust permitted the installation of 20 organic farms, and is currently collecting funds for more than 50 other projects²⁰³. Of course, we are far from the aim stated by Groh, since the surface of land thereby “secured” might appear insignificant, in light of the rapidity of land loss in France – about one department each decade. But the goal of “Terre de Liens” is not, at least in a foreseeable future, to purchase every piece of land in the French territory, but rather to show that another approach toward common property is possible.

Land trusts are therefore a substantial rupture with centuries of privately-owned estate or state control over the land. Even though their scope may stay limited, both community-based and nation-wide land trusts can be important partners for new farmers wanting to start an organic farm,

¹⁹⁸ Groh and McFadden 1997, 17

¹⁹⁹ Karp 2007, 34

²⁰⁰ Biodynamic Farming and Gardening Association, nd, c

²⁰¹ Stroud Common Wealth Co Ltd, nd

²⁰² Terre de Liens, nd, a

²⁰³ Terre de Liens nd,b

or for conventional farmers that would give their land in exchange of support and assistance for their conversion to organic farming. Maybe, considering the upcoming mass retirement among European farmers, the development of such mechanisms of social finance in order to facilitate the process of handing on farmland to new, organic farmers has an important role to play ahead.

To achieve these purposes, land trusts need consequent financial resources and their success depends on the investment of individuals committed to the securing of farmland. Like in the spread of alternative supply chains, the choice of individuals finally appears the greatest factor influencing their development.

7. Implications for local powers

The development of biodynamics or organic farming in local supply chains depends on the institutional environment in which they thrive. It is influenced by the orientation of national and supranational policies; but in the perspective of a re-localization of food chains, initiatives could and should be supported foremost by local governments – even more so that the expansion of both organic farming and local supply chains often echo public policy goals, such as town and country planning, employment or social cohesion²⁰⁴. Moreover, the capacity for action from local powers, generally through regional development agencies, can be understood in a variety of tools and in all the production and distribution stages of the food chains.

7.a. Production

In the realm of production, local governments can in the first place facilitate the access to land for the setting-up of organic farms, mainly by securing land through public purchase and leasing it at low cost to new farmers. It happens that initiatives with both substantial environmental (organic production) and social (democratic access to organic food, employment) dimensions are supported to the point that local governments provide the plots of land for an organic farm²⁰⁵. Local authorities, such as city councils, have also the capacity to counter urban sprawl through urban policies, saving thereby agricultural land from construction (in France notably, agricultural land is much more accessible financially than building land, and its downgrading lies in the mayor's prerogatives)²⁰⁶. They can also, finally, work in partnership with other organizations, such as land trusts, in order to help the installation of organic farmers²⁰⁷. Many of the projects of “Terre de

²⁰⁴ Touret, Fournier and Labriet 2011, 12

²⁰⁵ Touret, Fournier and Labriet 2011, 12

²⁰⁶ Terre de Liens nd,c

²⁰⁷ Haegelin and Labriet nd

Liens”, for example, were supported by local powers, either through funding or logistic support²⁰⁸.

Local governments can, obviously, provide financial support, generally within the Rural Development Programme of the CAP, in order to help the installation or conversion to organic farming, through a well-orchestrated mobilization of the funds. Their role is, however, not limited to funding. It can extend to information, by assisting conventional farmers to explore the advantages of conversion”²⁰⁹ and increasing public awareness through an active promotion of the role of organic farming for local communities. Local powers can also federate the region or commune around organic farming, notably by catalyzing rural development through the creation and support of networks meant to foster exchanges and knowledge circulation, while instigating themselves partnerships or ballot measures²¹⁰.

Finally, regional governments could as well participate in the setting up of cadasters, calendars, regional food price observatories, or support the creation of commissions gathering producers and consumers, in order to coordinate production.

7.b. Supplying

At the distribution level, local authorities can assist the initiatives of joint marketing between producers and the coordination of production, also by supervising a network of contacts. In other initiatives, local powers also engaged in order to enhance the access to organic food by lower-income households. For example, in the “Biocabas” and “Terreau” initiatives, reported in a “collection of innovative experiences” by the National Federation of Organic Agriculture (FNAB), local councils would co-finance weekly food baskets (with fresh, organic produces) for single-parent families, retired and unemployed persons or poor workers²¹¹. Local governments can also support local and short supply chains by providing a venue for CSAs and co-ops drop-offs points, or provide funding if the creation of one or more full-time jobs is needed to sustain the initiative²¹². Finally, support can also be understood by the creation of partnerships mainly aimed at promoting organic and local food consumption among citizens: classes, workshops, events...

Local governments can themselves be an worthy client for local organic producers, since they can work in partnership with the latter in order to supply public caterings: mostly schools, but also hospitals, administrations and so forth. The introduction of organic products, particularly in school meals, is relevant to public goals, such as health and food education (as it is generally

²⁰⁸ Terre de Liens, nd,b

²⁰⁹ Midmore, Foster and Schermer 2004, 225

²¹⁰ Haegelin and Labriet, nd

²¹¹ Touret, Fournier and Labriet 2011

²¹² Touret, Fournier and Labriet 2011, 11

embedded in a whole meal approach), and is therefore focused on by many countries, such as Germany, Finland, Italy or France. Introducing expensive organic products in collective catering may lose much of its benefits if food is imported and makes more sense to be managed together with a re-localization of the sourcing. Still, it is often problematic for mass catering to comply with “tight organizational, logistical, time and budget limits”²¹³ : in France notably, partnerships with local farmers are undermined by a legislation inhibiting preferential choice on the basis of geographical criteria is forbidden²¹⁴. The integration of local and organic food in school meals would therefore probably imply a revising of national legislation in order to facilitate direct sourcing.

Local governments, either municipal, sub-regional or regional, have several tools in hand that permit them to support (or even initiate) the unfolding of biodynamic-like farm ventures: land tenure, funding, logistic and technical support, etc. Foremost, it is their task to coordinate synergistically the actions so that their benefits are more obvious (i.e it may make more sense to provide a plot of land for an organic farm if its production will be devoted for school meals), and to embed the development of local organic farming in the wider regional project.

8. Conclusion

In this chapter, we investigated the economic and political dimension of biodynamics and of the sustainable food movement. The latter, emphasizing values such as fairness or local sourcing, echoes the principles of social economics or alternatives such as associative economics. We also suggested several leverage points in the public support for agriculture, the installation process for new farmers and in distribution. Meanwhile, any possibility of integration throughout conventional supply chains – supermarkets – was purposely avoided, for the core principles of their functioning (centralization of distribution, economies of scale, thus specialization and large-scale production, downward price pressures on producers) are hardly compatible with the localized, sustainable and socially equitable food systems in which biodynamics would thrive otherwise than as a commercial niche.

The development of biodynamics and little organic through alternative supply chains can be fostered by governmental policies. However, their unfolding foremost depends on the readiness of individuals to opt out of industrial food systems: subsequently, the further developing of local and

²¹³ Løes and Nölting 2011, 94

²¹⁴ Haegelin and Labriet, nd

short supply chains requires the mobilization of a greater number of actors which would engage in alternative production, distribution or consumption.

This mobilization is nevertheless undermined by many factors which often tend to be more cultural than financial or structural. On one hand, farmers may be less willing to engage in a form of production that not only rejects the agricultural paradigm based on growth, intensification and industrialization, but also the whole materialist scientific approach toward agriculture and life – which, we remember, constitute the fundamentals of contemporary farming. On the other hand, consumers are not always aware of the benefits of organic production or not sensible to the values it aims to spread. They may be as a consequence less willing to pay the often inevitable premium price of quality products, let alone to engage in food chains further than purchase or to challenge their food behavior. More generally, globalized markets, economic and cultural neoliberalism as well as wild consumerism, can be seen as forces counteracting the development of less lucrative – though more sustainable – initiatives.

One could thus assume that the major issue for biodynamics today is that it does not fully fit societal preferences and priorities and that thence, it would thrive only inasmuch the cultural assumptions underpinning consumer society themselves evolve.

IV. Cultural and Spiritual Integration

In this section, we therefore understand that the cultural integration of biodynamics does not lay in, for example, the spreading of the cultural and spiritual dimensions of Steiner's anthroposophy, but in the wider evolution of mindsets at the benefit of values and behaviors that would create a cultural environment favorable to sustainable food consumption. This chapter aims to define and point out at the emergence of the cultural values and subsequent behaviors that would foster, directly or indirectly, public interest in biodynamic and biodynamic-like production. It then focuses on several cultural issues on which the actors striving for an evolution of the agriculture and nutrition paradigms could concentrate their action.

1. Biodynamic social and cultural principles

1. a. Sustainable production and Fair Economics:

Agro-ecological, Little organic, biodynamic farming and so forth prefer quality over quantity, resist intensification and strive for self-sufficiency – in this way, they can be described as post-productivist forms of farming. The notion of post-productivism still lacks precise definition, but generally, it refers to the slowdown or moving away of intensification, together with a diversification of the functions of agriculture – leisure, environmental services, emphasis on food quality...²¹⁵ Some see it as “related with the transformation of paradigm of growth into paradigm of sustainable development”²¹⁶, as epitomized by the growth of organic agriculture, of local supply chains, or even the greening of the CAP itself. Although it is here considered that the agricultural sector did not undergo yet a shift of its paradigm (EU policy-making, notably in regards to the CAP reform, stays embedded in productivist modes of thinking), it is self-evident that post-productivism, in the meaning of a reappraising of the role of farming in reaction to sustainability concerns, is a major emerging trend in Western societies: EU public, for instance, ranks food quality, environmental protection and fair standard of living for farmers in the top four priorities for the CAP (together with “reasonable food prices”)²¹⁷.

Beyond agriculture, the future of alternative farming lies in the solidity and the viability of the economic vision it imagined to distribute the products accordingly with its environmental-friendly, ethic and fair philosophy. It also lies in the ability of the actors involved to engage in the shaping of another economics, through shopping, marketing, investing and so forth. From this perspective, the growing sector of Solidary Economy can be seen as the expression of the principles of Associative Economics (and reminiscent alternatives to neoliberalist capitalism), because it builds on the same principles: recognition of the common goods, solidarity, cooperation, eventually democratic leadership, non-profit orientation and so forth. The EU Solidary Economy is quite significant, since it today employs about 6% of the EU working population, let alone volunteer workers²¹⁸, is made up of more than 130,000 enterprises (cooperatives, mutual societies and other similar form) and approximately one million associations and foundations²¹⁹. Of course, there is a wide difference between considering a small “third” sector that would balance the effects of the business sectors by re-allocating capital and the shift of the whole business economies to an Associative Economics-based model. But since what is now investigated is the emergence of new

²¹⁵ Knudsen 2007, 25

²¹⁶ Treinys and Vinciuniene 2007, 215

²¹⁷ European Commission 2010a, 5

²¹⁸ Chaves and Monzón 2005, 44

²¹⁹ Chaves and Monzón 2005, 59-67

values, maybe this discrepancy does not matter *yet*.

1.b. Responsible consumption

Like alternatives to economic neoliberalism, in the realm of consumption, non-consumerist behaviors illustrate an evolution of societies toward sustainability and thus, biodynamic values. At the individual level, opposition to consumerism is generally expressed by voluntary simplicity; a form of conscious shopping behavior that emphasizes limited financial expenses and material consumption as a way to minimize one's ecological impact and to reach a higher quality of life, by concentrating on non-material consumption: spiritual life, social relations, arts, personal development, osmosis with nature and so forth. Although, because of the varying commitments, it is hard to give an estimate of the number of persons who are consciously and willingly engaged in a simpler living, it can be reckoned that in 2011, about 20% of the population in the industrialized world are part of the informal "voluntary simplicity movement"²²⁰. As far as food is concerned, voluntary simplicity implies "eating locally, eating organically, eating out in moderation, eating less or no meat²²¹, eating simply²²², lightly and creatively, and, as far as possible, growing one's own fruits and vegetables."²²³ In spite of a context of globalized Western-type diets, these trends are emerging throughout Europe: it is estimated that vegetarianism (more or less strict) concerns a small but nevertheless consistent part of the European population (it can be estimated, averagely, between 2 and 6% of the population²²⁴); organic retail sales in the EU-15 in 2006 made up nearly 2% of total household food expenses²²⁵, while more than 15% of EU organic farmers sell more than half products locally²²⁶.

The limitation of material consumption reminds a crucial principle in biodynamic farming: that of the farm organism, which consists in viewing the farm as a self-contained and self-sufficient entity. One can transpose this biodynamic farming principle to society life by regarding social units (individual, family) as entities that should limit their material outputs and inputs, sourcing the latter as far as possible from their close environment. Thence self-sustaining activities such as foraging, gardening, home food processing (canning, drying) or cooking are in line with the biodynamic principle of self-sufficiency. Gardening notably, like the previous trends, seems to enjoy a growing

²²⁰ Alexander and Ussher 2011, 15

²²¹ Extensive farming basically requires a lesser consumption of animal products.

²²² Lesser consumption of highly processed foodstuffs

²²³ Alexander 2011, 142

²²⁴ European Vegetarian Union 2007

²²⁵ European Commission 2010b, 40

²²⁶ Ciolos, Dacian 2012

interest in various regions of the world²²⁷.

1.c. Embeddedness

The notion of units, central to the biodynamic philosophy, can also be extended to local communities whose members would be connected by local food networks. More generally, from the perspective of ground-up food or environment-related initiatives, cultural and social embeddedness appears to be an important factor of determining consumers' commitment. It can be hypothesized, for example, that the valuing of local agricultural production, culinary traditions, attachment to local landscapes is more likely to trigger involvement in direct action aiming at sustaining the local food sector. Meanwhile, it has been found that the community networks and stocks of trust, reciprocity, shared values, as well as the actors' ability to cooperate greatly determine the success of local actions.

In biodynamic farming, the farm organism, although striving for self-sufficiency, is anyway inevitably influenced by external factors such as cosmic rhythms. Likewise, the consideration of individuals or communities as units does not exclude connectedness with wider wholes, such as Humanity or Nature. Concern for fellow humans, especially in terms of access to food and support of small farmers is an important dimension of the organic ethics: solidarity with independent, faraway producers along fair-trade models is a widespread practice, while re-localization and self-sufficiency are seen as a means towards worldwide food sovereignty. Therefore, if local food systems may in some cases integrate chauvinistic features²²⁸, it can be postulated that biodynamics draws on values of fairness, solidarity and connectivity with faraway producers and eaters, as well as cultural diversity and inclusiveness.

Embeddedness within nature is also, obviously, a major issue for a form of farming that underlines the interconnectedness of the units with the wider Earthly organism. In this sense, it is in line with the crystallization of holistic visions in the field of environmental ethics, such as Deep Ecology. Deep ecology understands biosphere as whole, complex system which “does not consist of discrete entities but rather internally related individuals that make up an ontologically unbroken whole”²²⁹. It rests on a non-anthropocentric approach which considers that “all organisms in the ecosphere, as parts of the interrelated whole, are equal in intrinsic worth”. This comprehension and appreciation of Nature therefore goes much beyond traditional worldviews, even in

²²⁷ Pinkerton and Hopkins 2009, 47

²²⁸ Winter 2003, 23

²²⁹ Keller 2008, 207

environmentalism, where nature is typically valued in relation to its assets for human activity – resources, favorable environment for living, leisure places, aesthetic landscapes, etc.

1.d. Spirituality

However, this holistic approach towards life and science, i.e the interconnectedness of the organism with the wider Earth and Cosmos is at the core of biodynamics : “biodynamic agriculture builds on a spiritual understanding of nature and the human being. This means that living processes and their interactions are considered, not just material substances.”²³⁰ As a consequence, biodynamics is often described as a spiritual form of farming, sometimes even metaphysic. This tension, we remember, discouraged some farmers from admitting that they were using biodynamic preparations. It can be also supposed that it prevents many practitioners to get a closer look at biodynamics, as it does not fit within the mainstream agronomical stance: tackling this tension therefore appears the main specifically biodynamic-related obstacle for the wider sustainable food movement.

From a more general point of view, it seems that biodynamics allows for a broader understanding of spirituality – which tends, in a Western context, to be tightly associated with religion. One could therefore extend this notion to refer to a general interest in metaphysic issues (meaning of life, etc.), within a process of personal development. The impression of feelings (love, beauty, connectivity and unity...), values (justice), practices (meditation, arts...) and attitudes that are part of personal development process can be used, in consumers society, as a countering force to consumerism. The work of the sociologists Ray and Anderson, “The Cultural Creatives: How 50 Million People are changing the World”²³¹ somehow confirms this vision. They presented a growing segment of the population (estimated at 80 to 90 million people in the EU in 2000) which is “embracing a new culture” characterized by a deep commitment to social and environmental values, and whose core group, the “core Cultural Creatives” (approximately one half of the CC) also embrace spiritual practices.²³²

1.e. Methodology

Overall, it appears that the unfolding of local, biodynamic-like food systems would have to be embedded in a wider cultural revolution that would challenge mainstream views about

²³⁰ Jarman, Bernard 2009, 25

²³¹ Ray and Anderson 2001

²³² Korten 2006, 79

agriculture, economy, food purchase and consumption, communities, societies and the environment. As we tried to point out at, most of these counter-trends are already flourishing in European societal and cultural landscapes. At this point, it is hard to figure out another way of participation to this unfolding than education – media, campaigns, schools and universities programs, marketing, etc.

In the rest of this section, we therefore concentrate on several key, “leverage points” on which the actors aiming at changing the agricultural and nutrition paradigms could focus. To approach individual's behavior, we refer to several behavior models meant to explain individual's pro-environmental behavior, which are overviewed and developed by Kollmuss and Agyeman²³³. In the first place, we consider the role of information and knowledge in shaping environmental awareness and propose solutions to foster the access to production-related information in conventional supply chains and to make information more effective in the promotion of organic or biodynamic products. The needs in action skills and knowledge of action strategies are also addressed, and education is then investigated in relation to local communities. Finally, we also investigate changes in cultural perceptions of farming, alternative science, human organizations and the environment.

Action on the eight points detailed below would to a great extent contribute to the evolution of alternative food systems but also, eventually, instigate other changes in parallels areas (such as renewal of democracy, energetic resilience, cultural prosperity...), for what is at stake is ultimately the “moving of cultures from consumerism to sustainability”. Actors committed to the development of biodynamic-based food systems cannot engage in this process alone, and need to network actively with institutions (government, businesses, media, education) and with the civic society (NGOs, communities, citizens).

2. Increasing the transparency of food systems.

2.a. Opacity and consumer choice

Michael Pollan, who investigated U.S industrial food systems, concluded that "forgetting, or not knowing in the first place, is what the industrial food chain is all about, the principal reason why it is so opaque, for if we could see what lies on the far side of the increasingly high wall of our industrial agriculture, we would surely change the way we eat." It is a fact that the degree of information about food production processes, or food's origins and quality, sometimes under the

²³³ Kollmuss and Agyeman 2002, 239-260

form of eco-labels, is a determining factor in consumers' food choices²³⁴. But in industrial food systems, where the reality of food provision is kept hidden, the various claims pointing at the externalities (environmental degradation, waste, etc.) are either absent of conventional retailing structures, or taken up in order to promote niche products (the eco-labelled ones, then), sometimes even through a process of "greenwashing"²³⁵. Labels, which are generally used to fulfill the role of knowledge-carriers, often prove inadequate to picture the reality of food provision, as they reflect a chosen aspect of food production (or processing) and tend to occult others. Their multiplication can also be confusing for consumers – the challenge is to find a way between clear and exhaustive information.

The empowering of citizens with the right information about food provision is thus faced with the constant drive of the system towards opacity. Thence, it seems that only a re-integration of the externalities (financial, social, ethical, environment, etc.) into mainstream labeling and pricing would be effective in bringing back external costs in the core of consumers' awareness. A progressive withdraw or a more targeted payment of agricultural subsidies would be a form of internalization of costs, albeit partial, since it merely concerns financial inputs. It is easy to believe that it would drastically change the parameters of competitiveness: without public support, industrialized agriculture may not be anymore much more lucrative than Little organic. But apart from subsidies and rising oil prices, for example, most of the externalities of industrialized agriculture are not expressible in financial terms.

2.b. Reintegrating externalities

An interesting initiative would consist of an alternative pricing of products; an eco-price that would internalize the external costs of production into a parallel price. A somewhat similar idea, the carbon footprint has been taken up, among others, by the French ministry of Ecology and is in process of evaluation by the European Commission. The most developed measure in this regards, however, is an initiative of the firm Casino, which implemented in 2008 a "carbon index" that expresses the total amount of Co₂ produced during the various stages of production, processing and distribution of a given product²³⁶. This measure was meant to help consumers to have a more eco-conscious shopping behavior by being empowered with knowledge about the impact of their food choices on the global phenomena of climate change. This focus on global warming, nevertheless, constitutes one of the limitations of the measure: it considers only the environmental dimension of

²³⁴ Maniates 2010, 147

²³⁵ Dahl 2010, 2

We understand greenwashing as "the practice of making unwarranted or overblown claims of sustainability or environmental friendliness in an attempt to gain market share"

²³⁶ Groupe Casino, nd

externalities (overlooking thereby social or ethical implications) and out of this global, complex issue, it only refers to the Co2 emissions. The second problem of this pricing is that it is, in this case, limited to the products of the brand Casino: therefore, although there is the possibility to find information about the carbon footprint, it is rarely possible to compare similar products of different brands.

This initiative, although limited in its scope, still provides us a model for the reintegration of externalities. It does not, like labels, refer to the respect of a certain set of practices, but to the result of a lifecycle assessment that encompasses all the greenhouse gases emission produced during all the stages of the product's life. Considering the necessity of allowing consumers to compare different brands and of encompassing all environmental externalities, two considerations may be formulated. In the first place, as an eco-pricing is meant to increase transparency and allow comparison, its implementation should probably not depend, ultimately, upon the willingness of the firms to engage in such measure. That suggests that probably, the environmental eco-price should be implemented on a binding basis among all actors, in a process similar to the recent implementation of nutritional facts²³⁷. On the other hand, it is important to stress that the eco-price proposed is not, although similar, equal to the carbon footprint, as it does not reflect only greenhouse emissions, but incorporate all quantifiable externalities: water and energy use, impact on biodiversity, animal treatment or fair commercial relations. It should be expressed under the form of one unique eco-pricing, parallel to the market price, which would be identifiable and understandable at first sight.

The eco-pricing is only one of the measures that would empower individuals with the right knowledge about food provision. One could also evoke, for example, greenwashing watching, media literacy, food education, legal distinction between short and mainstream supply chains, emphasis on local consequences...

3. Grounding Information

Indeed, one of the problems with influencing consumers through greater information, together with the complexity of the decision, is the varying commitment they have to the issues tackled. One can identify two weak points of the organic promotion. On one hand, it tends to focus on the environmental and health consequences and consequently can concern only a part of the

²³⁷ European Union 2011

population already environmental or health conscious. On the other hand, the issues on which it focuses (environmental crisis, pesticide poisoning) refer to global phenomena, whose awareness and comprehension may be limited by their non-immediacy, their slow pace and their intricacy²³⁸. The postulate of this section is therefore that the promotion of alternative consumption should underline the direct consequences, i.e the correlation between food choices and degradation of one's environment (natural or social).

There is a wide range of local phenomena that are directly induced by industrialized agriculture and already perceptible in European environments. Although concerns may differ according to the regions, there are several issues that are likely generalized throughout the industrialized world, and whose bringing into the dialectics of organic promotion could possibly greatly foster the interest in supporting local, community agriculture. One can cite, for example, the loss of agricultural surfaces (from 1963 onwards, the European Union has been losing averagely 770,000 ha of agricultural land each year²³⁹ - more than the surface of Slovakia), the decrease of biodiversity (especially striking among birds populations – the population of several common bird species felt down by 70%^{240,241}), the consequent use of water resources (80% in Southern Europe)²⁴², or the loss of soil's microbiological activity (90% in France)²⁴³...The danger of pesticides on farmers' health is also a reality, acknowledged recently with the condemnation of the firm Monsanto for the poisoning of a French agriculturist²⁴⁴, which was notably followed by the broadcasting of a documentary film reporting the dreading numbers of degenerative diseases among French farmers (cancers, Parkinson diseases, leukemia...) as a result of pesticide intoxication²⁴⁵. This documentary notably showed farmers who, once aware of the noxiousness of the products they were using, were interested in converting to organic farming – although conversion often represents a too important financial investment for farmers that are generally already bankrupt. Beyond health and environmental issues, the industrialization of food systems has therefore also social and economic consequences, such as farmers' dependence, overwhelming of local food economies or impoverishing of local food heritages.

Such information tends to remind individuals of their shared responsibility and their share of the consequence, but also, of the relatively easy solutions to counter this phenomena, at the

²³⁸ Kollmuss and Agyeman 2008, 253,254

²³⁹ Pointereau and Coulon 2009, 109

²⁴⁰ McKie 2012

²⁴¹ Europa 2004

²⁴² European Commission 2012c

²⁴³ Bourguignon 2006,1

²⁴⁴ Seelow 2020

²⁴⁵ Guéret 2012

individual scale. From this perspective, the promotion of organic and local consumption should also focus on the successes of the sustainable food movement, such as the “saving” of land through land trusts, the development of local food economies, the shift to self-sufficiency to some communities (eco-villages or transition towns), the numbers of conversions to organic in the region, the improvement in soil activity after organic use and regenerative practices, etc. Altogether, these facts give a bright and positive vision for the future of local farming and may be, at least to some extent, seen as good incentives for action.

Because this part of organic promotion focuses on local consequences and local action, it gives a good opportunity for the actors of the sustainable food movement to target their networking to the local actors that are most concerned in the issues addressed by sustainable agriculture – teachers, doctors, local powers, NGOs, local businesses or nature-lovers, in order to disseminate information about industrial food systems and the ways to support local farming.

4. Re-skilling consumers – Towards the eater-cooker-gardener

4.a. Encouraging sustainable dietary patterns

As was previously explained, the evolution of food systems requires great changes in consumption and nutrition habits; it needs the “intentional cultivation of sustainable dietary patterns”²⁴⁶, in line with the features already explained. One of the points on which education should focus is therefore the encouragement of sustainable dietary alternatives: gardening, local eating, low-meat diets, home-cooking and so forth. Although it can be planned globally (media discourse, educational policies), it seems that re-skilling consumers is more easily achievable through horizontal networking, on a local level.

It can be assumed that the intention of individuals to take pro-environmental action, such as engaging in self-sustaining food initiatives, is determined by at least three external factors²⁴⁷: knowledge of issues and of action strategies as well as action skills and cultural perception of the initiative.

Normative influence (i.e social norms, cultural traditions and family customs²⁴⁸) appears to have a crucial role, for it shapes people’s attitudes and perception about the consequences of their actions. We start here from the assumption that gardening and homemade cooking enjoy a sufficient cultural recognition, as they are globally associated, in industrialized countries, with values of care,

²⁴⁶ Bates and Hemenway 2010, 49

²⁴⁷ Kollmus and Agyeman 2008, 244

²⁴⁸ Kollmuss and Agyeman 2008, 242

quality and healthiness²⁴⁹. Still, the creation of social norms and examples, notably through media, could be part of the promotion of shifting one's dietary patterns (and not just the sourcing).

The benefits of sustainable food alternatives will not be exhaustively overviewed here, but let us just remind that they have the advantage to combine both individual and common benefits. Gardening, home cooking have the obvious assets of providing growers with cheap, fresh, tasty and clean food, often from organic or biodynamic farming, since small, diversified plots a priori do not need much technical or chemical inputs. Simple and light diets, poor in processed food and animal products have been correlated with greater health (notably lesser coincidence of cardio-vascular diseases). Benefits for the community, local or global, are, for example, greater food sovereignty and energetic resilience (in Cuba notably, it is reported that the “gardening revolution” permitted the production of 90% of the fruits and vegetables within the city, in urban gardens²⁵⁰), diminution of the demand pressure in local products from local producers in urban middles or, in the case of cutting out of meat consumption, lesser animal abuse.

4.b. Re-skilling individuals

Still, all these alternatives, from gardening to processing, including vegetarian cooking, require knowledge and skills that, if they were well-spread during the past century, are found to lack among Westerners²⁵¹. What could therefore actors aiming at the development of biodynamics do in the first place could be to participate in the organization of workshops. These workshops would teach basics in gardening, processing (bread making, canning, freezing, dehydrating), foraging (gathering of wild food) and sustainable cooking, and would be organized for local communities, professionals and schools. The workshops organized by the member of the “Transition Movement”²⁵², a movement striving for energetic resilience, and could be adapted to the strategy of many environmental NGO who lead similar projects (although not always participative nor food-related). Related NGOs, local businesses (seed, farmers, co-ops, markets, bakeries...) and local powers can be useful partners, notably in terms of funding or sponsoring. Local governments especially can contribute by providing venue and logistic support and in the case of gardening, participating in the creation of public gardening plots²⁵³.

Ultimately, let alone the issue of mindsets (and therefore interest and readiness to engage), it is clear that the societal landscapes through Europe greatly differ from each other and that the success of education alternatives – as well as supply chains is also determined by the communities’

²⁴⁹ Guthman 2002, 302

²⁵⁰ Pinkerton and Hopkins 2009, 47

²⁵¹ Pinkerton and Hopkins 2009, 35

²⁵² Pinkerton and Hopkins 2009 37-46

²⁵³ Pinkerton and Hopkins 2009, 59

economic, cultural, human and, foremost, social capital.

5. Strengthening local communities

5.a. Of the importance of social capital

The latter term, social capital, is defined by Putnam as the “features of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit”²⁵⁴. It encompasses both formal and informal canals of communication and cooperation; institutions, values, practices of engagement²⁵⁵. Its enhancement – eventually creation – appears to be a key strategy in sustainable development and for future food systems, for the reasons explained below.

In the first place, the norms and networks that are part of the communities’ social capital, influence the quality of public life and the performance of social institutions²⁵⁶. Therefore, all kinds of educational measures have more chances to be successful (attendance, participation, involvement) in the presence of great stocks of social capital. Secondly, evidence tends to show that communities’ formal (institutional) and informal networks determine to a great extent the viability of alternative in food supplying, be it between consumers, producers or all²⁵⁷. Finally, social capital often correlates with greater civic engagement²⁵⁸, such as volunteering, charity, vote or membership in organizations and eventually political life, for it promotes a shift of governance from individual to community’s interests. In light of growing disinterest and distrust in politics throughout Europe (this argument can be supported by the globally rather low rates of interest in politics and confidence displayed to political parties or in national governments, as reflected in the Atlas of European Values^{259, 260, 261}), it can be supposed that increasing social capital can be a step towards renewal of local dialogue and cooperation and eventually, of democracy.

In other words, social capital makes a more favorable middle for the development of initiatives, through greater dialogue, trust, and exchange and so forth – it is therefore an important factor for local mobilization and an important theme for sustainable development²⁶². Because

²⁵⁴ Putnam 1995, 67

²⁵⁵ Tisenkopfs et al. 2010, 71

²⁵⁶ Putnam 1995, 65

²⁵⁷ Tisenkops et al. 2010, 70

²⁵⁸ Uslaner 1999, 123

²⁵⁹ Atlas of European Values 2008

²⁶⁰ Atlas of European Values 2008b

²⁶¹ Atlas of European Values 2008c

²⁶² Kronenberg and Bergier 2010, 24

ground-up initiatives relying on local mobilization operate within a societal project that goes beyond the limits of the communities (in line with the motto “think global, act local”), one can assume that they deal with bridging social capital which, according to the distinction made by Putnam, refers to “solidarity in wider society”²⁶³ and is identifiable by its openness and the integration of people of various social backgrounds (unlike bounding social capital, which implies an exclusive character of these communities towards incomers)²⁶⁴.

5.b. Building social capital

Building social capital is nevertheless a problematic issue, for it is self-productive (it generally testifies of a tradition of civic engagement) and cannot be created out of external resources.²⁶⁵ Although the methods for building social capital may considerably vary from one community to another, one can estimate that it appears when a group “learns to know itself”²⁶⁶. Local actors that would like to build or enhance social capital could therefore work to foster the creation of social spaces and networks, food-based or not, among the community.

Physical spaces, such as town parks, cafés, libraries, schools, universities, playgrounds or markets are all factors of social capital, for they provide citizens with opportunities for interaction. The creation – or vitalization, through the organization of events, such as street, neighborhood-based, fests, fairs, parades or else, of public social and cultural spaces can participate in fostering encounters and exchanges. One could even envision, in a context of “ecological transition”, the creation in communities of centers that would be devoted to gathering local pro-environmental initiatives (notably in recycling), and would also provide access, for exemple, CSA or co-op pick-up points.

Social capital is also characterized by the set of networks, linkages within communities. It is defendable that the informal networks created between individuals by geographical proximity can be enhanced notably by the use of information and communication technologies, through the creation of neighborhood-based social networks. It is the case of several initiatives, such as the French website “la peuplade”, which connect virtually dwellers of the same districts or buildings. One could imagine as well community-based forums, of food networks, that would gather information and bring the communities together around one theme (food, environment, district renovations, etc.), while bridging also ties with other communities. From the perspective of food,

²⁶³ Tisenkopfs et al. 2010, 71

²⁶⁴ Kronenberg and Bergier 2010, 370

²⁶⁵ Putnam 1993, 38

²⁶⁶ Feenstra 2002, 102

across-community networks could involve the trade of niche products in order to complete the local food offer.

6. Reappraising farming and the farmer's role.

6.a. Farming in European societies

Beyond consumption issues, French farmers estimated the lack of young and motivated farmers to be one of the main obstacles for biodynamics. Of course, part of this issue is the biodynamic approach to science, and another part lies in the technical difficulties facing the implementation and long-term viability of small-scale agricultural enterprises (lack of opportunities and difficult access to land and market). Still, as was also pointed out previously, the attractiveness of farming as a professional activity may also be questioned.

The lack of farmers is not a problem for biodynamics only, but for the whole agricultural sector in Europe and abroad, because of the ageing of farmers: more than half of EU farmers are above age 55²⁶⁷. Attracting new and young farmers is therefore a crucial issue; especially in the scenario of a greater development of little organic, agro-ecological farming which would require more human labor (it could be estimated that about 10 to 15% of the working population should be devoted to food production²⁶⁸, against 3% today²⁶⁹). For Dr Herren, an international development expert, “people [...] would return to land if farming became a better and more rewarding job through greater investment, better food prices and a reappraisal of farmers' importance.”²⁷⁰

In the EU scale, the evolution of agriculture from productivist to agro-ecological model would consequently require several million of persons more to engage in farming. Such a shift, even partial, would likely imply higher food prices, to support farmers both quantitatively and qualitatively. The role of public support in order not to undermine Europeans' food purchasing power as a consequence of agricultural extensification is therefore primordial. The issues of food prices, public support and investment, as well as farmers' bargaining power were discussed in the previous chapter. Still, the evolution of the CAP towards sustainability would require a strong political will to change the agricultural paradigm and encourage small-scale and organic farming, which is unlikely to happen without a wider reconsideration of sustainability, farming and of the farmer's role.

²⁶⁷ European Commission 2011, 4

²⁶⁸ Delamarre,nd

²⁶⁹ European Commission 2010, 12

²⁷⁰ Driver 2011

6.b. A new agricultural paradigm

Prior to orienting CAP policies to sustainable agriculture, it is thus mandatory to come to an agreement over the sustainability that needs to be promoted. It is regrettable that, although the concern of sustainability integrated all spheres of policy-making, it stays embedded in a logic of intensification and growth. Trends of greening of industrialized agriculture and industrialization of organic farming are seen as a threat for “little organic” farming, for it leads to a confusion among consumers, while maintains the same model of provision. The evolution of public agriculture policies would therefore need to be embedded within a global public discussion over the role of agriculture – should it sustain or repair landscapes? Should it be supported for its role in the European economic sector or should it aim primarily at producing high quality food for EU citizens?

By reappraising farmer's importance, Herren probably meant strengthening their negotiating power through associations (as requested by the European Parliament²⁷¹), integrating farmers in decision-making, either through local agricultural bodies (in France, Chambers of Agriculture) or at the national or European level, with figures similar to the French Euro-MP José Bové. That would also imply the need of strengthening recent participatory research models that give an important role to farmers, as well as shifting education and employment policies so that they would foster the interest in biodynamic-like agriculture.

Finally, the promotion of farming as a professional activity may also require a shift in public discourse and vision of farming, that is, in its normative vision. It was already noticed in the first chapter, that public views of agriculture may be quite negative, as it may be associated either with industrial, destructive and exploitive agriculture or with subsistence farming, backward rural areas and lower quality of life. On the other hand, the agents of the new agricultural paradigm enjoy a more positive vision, sometimes embedded within a century-long tradition of rural idyll. Emphasizing the role of the farmers as a steward of the land or, eventually, a healer of the soil, would probably, in this regards, participate in fostering vocational interest in farming. As biodynamics itself builds on an romanticized vision of agriculture where “farming is not in the first place an economic activity” but rather “labor, craft and art”²⁷²; it can be hypothesized that its approach to farming can in itself be an attractive factors for practitioners. Many of the farmers interviewed during the research work indeed turned towards biodynamics as they estimated that it brings meaning to their job.

²⁷¹ Lefebvre 2012

²⁷² Groh and McFadden 1997, 31

7. Reappraising holistic science.

As repeated, spiritual science's approach proved to be a major obstacle for the development of biodynamics, because it is at odds with the agricultural and agronomical paradigms, even in organic farming. In societies where spirituality and science are typically seen at the opposite ends of a spectrum, this tension obviously prevents a greater recognition and integration of biodynamics. It can be hypothesized, however, that it could be partially solved by the reattachment of biodynamics to wider advances that have been pushing toward a "new science", notably in medicine.

We remember that the "spirituality" of biodynamic farming lies in the acknowledgement of a system of energies underlying the life process. Although largely ignored in chemical and industrial farming, holistic practices such as the use of cosmic calendars have been employed in traditional farming for thousands of years²⁷³. The principles of biodynamics also recall very much alternative approaches to medicine. Many of them, such as Chinese medicine, acknowledge the vitalist view of life forces and the interrelation between mind and body, in opposition with the mechanistic scientific view²⁷⁴. The use of plants is the basis of herbalist remedies, while homeopathy, in a process similar to that of the biodynamic farmers, "potentizes" the plant substance, through dilution and stirring²⁷⁵. It is noteworthy that alternative medicines are, like biodynamics, widely decried by mainstream science, but nevertheless enjoy a widespread recognition among European public, since it is estimated that 100 million EU citizens make use of alternative medicines in their ongoing health care decision²⁷⁶.

The mainstream scientific view, based on rationalism and materialism (empiric experience), has been approached in farming, medicine, but also education and other scientific areas such as physics. It led to the rise of a new scientific paradigm, the so-called "New Science": " 'New science' is embracing quantum theory and broad conceptions of interconnected universal activity, represents a departure from the atomized, fragmented, mechanistic theories of Descartes and Newton. These changes have been facilitated by the rise of postmodernist thought, suggesting that scientific paradigm itself is dependent upon the contexts of human observation so that it is difficult to distinguish theory from observation, fact from value."²⁷⁷ Holistic science therefore considers that the whole of the system is wider than the addition of its parts, and that acknowledges the

²⁷³ Smith 2009, 5

²⁷⁴ Micozzi 2002, 399

²⁷⁵ Degele 2005, 115-116

²⁷⁶ EFCAM 2012

²⁷⁷ Crossman 2003, 506

uncontrollable “observer-measurement” relation. In medicine particularly, holism refers notably to the interrelation between mind and body, between materiality and spirituality.

The similarities of worldviews and practices between biodynamics and alternative medicine suggest that networking and joint research could participate in fostering the recognition of biodynamics as an alternative approach to agricultural science. Even on an informal basis, connecting biodynamics with the wider “New Science” could be a means to disseminate information on biodynamics, exchange worldviews and get feedback (and adapting in consequence). In its higher form, cooperation between biodynamic and other scientific actors could take the form of think-thanks, foundations, or associations that would bring together scientists such as nutritionists, biodynamic agronomists, “new” physicians and mathematicians, and would be able to bring a new framework of thinking about quality or efficiency assessment.

Moving forward?

Informing and re-skilling consumers are important issues which answer the necessities of knowing and being able to take action. Still, they only refer to cognitive awareness of problems and solutions, and do not address the individuals’ scale of values, personal emotions or even, feeling of responsibility. If the evolution of food systems is not embedded in a wider cultural awakening, it may stay limited, in its scope, long-term viability and efficiency. Education of consumers must therefore empower individuals with the “right information”, but also with the “right philosophy”. From the perspective of biodynamics and alternative food systems, this right philosophy could consist of bringing back Human and Nature at the core of all concerns. We therefore finish the investigation of the cultural integration of biodynamics around two concluding points. On one hand, notably in economics, the moving of societies towards sustainability requires altruistic attitudes, fairness and cooperation, which appear to contrast with trends of individualism characteristic of consumers society. On the other hand, we suggest that in order to foster pro-environmental attitudes and behaviors, educational education could focus on the individual's emotional involvement towards nature.

8. Countering the atomization of individuals

8.a. Individualism and consumer society

Declining or low social capital, emphasis of the self, quest for individual profit and

disembeddedness are all, it is arguable, features of modern consumers society. They have been shaped notably by cultural and commercial trends such as neo-liberalist thinking, individualization of leisure and commodification of the group relation through display of products. Although neither hedonism nor individualism is created by consumers society, one must perforce acknowledge the powerful influence of views emphasizing the importance of the self, from science (Darwinian approach) to economics (neoliberalist model), including culture (rise of psychoanalysis, quest for material possessions...). We can refer to all these different – but interconnected – trends of individualism as “the atomization of individuals”. The moving of societies towards sustainability should necessarily include a counterprocess bringing cooperation and solidarity into mainstream consciousness.

David Korten, an economist and prominent anti-globalization author, estimates that to engage in global cultural, economic and political turnings, an essential aspect of the work is “to recognize the narratives” and to “change these stories”. This performative vision implies that neoliberalism, Newtonian physics and social Darwinism (among others) are only some of the narratives possible: “We hear these stories in so many different contexts that we come simply to accept them as statements of reality.”²⁷⁸

8.b. Changing the economic paradigm

Neoliberalism, or what Korten calls “the imperial prosperity story”²⁷⁹, emphasizes the role of individual freedom and free market to steer investments and economic growth, while maintaining that interventions from government should be kept at their minimum in order not to undermine this supposedly autonomous process. This story, it is argued, not only overlooks the non-formal dimension of economics (scavenging, households, collective economies)²⁸⁰, but also assumes that competitive behavior is ultimately rewarding for the successful individuals and, to a wider extent, to societies. This stance is apparently the result of the transposition of Darwinian scientific principles (“survival of the fittest”) onto social life and implies that social inequalities are a painful but necessary evil. Here also, Korten emphasizes, that is only one version of the story, and the Darwin theory is outdated for it “ignores the findings of the new biology (...) that life is at its core a cooperative enterprise and that species survive by finding their place of service to the whole”.²⁸¹ The new “prosperity story” that could be proposed, on the model of Associative Economics, would focus on the role of individual responsibility to address creatively and sustainably the needs of human communities, in a system where the circulation of capital would be ensured through the

²⁷⁸ Korten 2006, 238

²⁷⁹ Korten 2006, 238

²⁸⁰ Miller 2005, 5

²⁸¹ Korten 2006, 348

means of community social funds and distributed so to provide each individual with means of dignified livelihood. In this story, says Korten, “prosperity is measured by the quality of our lives and the realization by each person of the creative potential of their humanity”²⁸².

8.c. Changing the consumption paradigm

In the realm of consumption, meanwhile, consumerism can be viewed as the expression of the myth of happiness that, argued Baudrillard²⁸³, is built on egalitarian principles and therefore implies a visibility and measurability. The myth of consumption, therefore, posits “material gratification through the accumulation of wealth and power” as a means to achieve well-being and happiness. The alternative story is, obviously, voluntary simplicity, which assumes that simpler material living (less possessions, less money, less paid work) is more able to bring happiness for it frees time for personal development activities, or, notably, social relationships. It is indeed proved that once basic needs are met, well-being is generally rather achieved thanks to satisfaction at work and social relationships than level of income²⁸⁴.

Bringing Human at the center of societies is, obviously, a tremendous task that would imply challenging education models, economics, politics and so forth. It can happen only ground-up, through the development of altruistic-oriented businesses cohesive, the strengthening of local communities or according to Korten's strategy, through the connecting of “communities of congruence” all over the world that would engage in shaping and telling new “Earth Community” stories.²⁸⁵ Apart from that, integrating economic and social altruism would require the mobilization of media, education, and governments: it is time, says the Worlwatch Report “Moving Cultures from Consumerism to Sustainability”, “to move to a greater advocacy of public policy change. In order to enable all to live simply, society needs public policies that provide health care, vacations, parental leave, and reduced work hours”.²⁸⁶

9. Towards another environmental education?

9.a. Environmental education in European societies

The second pillar of tomorrow societies is, naturally, the environment. A sense of connectedness with the larger, natural whole is important firstly because it shapes values of caring towards nature and subsequent pro-environmental behaviors. Although natural environment is also culturally precious in terms of leisure and aesthetic assets, in tomorrow societies where the narrative

²⁸² Korten 2006, 303

²⁸³ Baudrillard 1998, 50

²⁸⁴ Dierner and Seligman 2004, 1

²⁸⁵ Korten 2006, 84

²⁸⁶ Andrews and Urbanska 2010, 179

of consumption would have been wiped off, connectivity with the environment could as well be viewed as a source of meaning and spirituality.

Environmental education appears to be a major tool in bringing the reality of the environmental crisis into public consciousness and creating incentives for action. In the EU, environment-related education has consequently been integrated by all member states into their educational programme, in primary and lower secondary education, most often embedded in other subjects (such as biology or science)²⁸⁷. While most of the curriculums focused on areas such as geography, sciences or technologies, only a few integrated the pupils' relation with their immediate environment. Often, education therefore seems to rely on a model of pro-environmental behavior that assumes that “educating people about environmental issues would automatically result in more pro-environmental behavior”²⁸⁸ and which is consequently faced with two common problems, “that is, either having the audience unmoved, or, struck by the information and the analysis, but without emotional support or positive experience, full of even more despair, cynicism and numbness than when they began”²⁸⁹. One can posit that information about the environmental crisis is always distressful in itself, because it brings the pupil to an awakening about his position as both responsible and victim. But if feelings of guilt, injustice, anger or fear can trigger pro-environmental behaviors²⁹⁰, in many cases the secondary responses (denial, rational distancing, apathy or delegation²⁹¹) can be counter-productive.

9.b. Spirituality and Nature

Facing this situation, Gottlieb, a teacher in Environmental Philosophy, stated that “meeting the emotional challenge of the environmental crisis requires spiritual resources”, which he defines as calm, openness or connection²⁹². We can therefore use the definition of spirituality that was formulated in the beginning of the section to argue that it is time for environmental education to integrate spirituality as a means to . In the first place, Gottlieb assesses the importance of expressing one's feelings, acknowledging thereby the importance of the problem for each individual. Then, he tries to integrate “spiritual practices”, which he broadly understands as “quieting the mind in meditation; using intuitive resources in visualization, invoking ritualized forms of compassion, repentance and joy as ways to connect to other people and to the ‘more than Human’”. Exercises and work involved both inner and outer experiences, such as meditation and visualization

²⁸⁷ Stokes et al., 2001, 10

²⁸⁸ Kollmuss and Agyeman 2008, 242

²⁸⁹ Gottlieb 2004, 377

²⁹⁰ Schmuck and Schultz 2002, 316

²⁹¹ Kollmuss and Agyeman 2008, 255

²⁹² Gottlieb 2004, 382

exercices (of a “safe” place in nature), contrasting on the natural and commercial environment or keeping a “plant journal”.

Although exploring new models of environmental education is not in the scope of the thesis, it seems important, from the point of view of biodynamics, to stress the importance of integrating the notion of embeddedness and connectivity with Nature in environmental education as a means to “re-connect” and tie emotionally individuals to their natural environment.

10. Summing-up

The development of biodynamics would require, in the first place, the bringing back of externalities into the core of consumers awareness. In this idea, we notably proposed the implementation of an eco-price in industrial retailing structures and the emphasis on direct consequences and experience of industrial agriculture. Considering that biodynamic does not only imply a shift in the product itself (from conventional to organic) but also in a shift in consumption and eating patterns, its development would therefore need sustainable dietary habits: lesser consumption of animal products and highly processed food and, as far as possible, the cultivation of self-sustaining food activities, such as gardening, foraging, cooking, home-processing, etc. The organization of food workshops in local communities could therefore be a way to encourage individuals to have a sustainable food behavior. Generally, the evolution of food systems should occur through a strengthening of communities that would make a favorable middle for the unfolding of cooperative initiatives aiming at moving societies towards sustainability. We also consider that the development of biodynamics depends on the visions it offers on farming and science and that reappraising both of these visions would contribute to a greater interest in biodynamics, for farmers, consumers, policy-makers, media and so forth. Finally, it was estimated that all of the points above are finally determined by the valuing and perception of human unity and nature and that to be effective, the re-localization of food systems, would have to be embedded within a wider awakening of consciences.

V. Conclusion

1. Synthesis

1.a. What is biodynamics?

Biodynamics is a form of organic farming that seems able to deal with the agricultural, environmental and energetic challenges induced by mainstream agriculture. Built on the ideal of the

farm organism, biodynamics strives for self-sufficiency, which implies that the minimization of inputs, including energetic, is one of its key characteristics. It also pays particular attention to topsoil preservation and enhancement of its microbiological activity, which can suppose that it can address, at least partially, the drastic soil degradation occurring in European farmlands. Its outlooks on plant growth and life processes, i.e the consideration of energies, carried by carbon and silica, can bring new perspectives for the future of European farming. Beyond a set of farming practices, biodynamics is also embedded within a wider societal vision, since it is part of the Anthroposophy movement (i.e the philosophy about Human organization developed by Steiner). It is therefore connected with various alternative outlooks, on food distribution (CSA), on economics (Associative Economics), on social life (Social Threefolding) and so forth.

Still, investigating the economic and political dimension of biodynamics, it does not really make sense to consider biodynamics distinctly from the broader “sustainable food and farming movement”. We therefore extended the scope of the investigation to what we refer to as “biodynamic-like” farming. Biodynamic-like farming, then, tends to be associated with direct, eventually participative supply chains, solidarity-based approaches to economics (such as the “third sector”), community-based land tenure, community farming...As for the political dimension, the interests of biodynamic farming seem, in France, globally echoed by “peasant” farmers unions and Green Parties, which also defend small-scale, self-sufficient and sustainable farming. In the cultural realm, biodynamics was even more difficult to define. We did not, in this thesis, engage in a reflection over the spiritual integration of anthroposophy (notably in the education sector). Rather, biodynamics was understood by the cultural features that determine or undermine the interest in opting for organic, local and short supply chains, such as “fairness”, “responsible consumption”, “embeddedness” and “spirituality”.

1.b. Obstacles facing Biodynamics

In spite of a growing interest in local and sustainable farming, industrial agriculture still largely dominates European food markets. And if the main obstacle to biodynamics may seem to be its approach towards farming (cosmic rhythms, for instance, are not acknowledged to have an influence on plant growth in conventional agronomy), it was found that structural obstacles, such as access to the market, have an equivalent, if not greater influence on the unfolding of biodynamic-like forms of farming.

Biodynamics is at odds with productivism and economic neoliberalism, because it resists

intensification, globalization, standardization and externalization of costs. That implies that it is financially less competitive: the higher price of biodynamic products (or more generally organic products) is undoubtedly the main hurdle to their consumption. Thence, biodynamics is also incompatible with consumerist mindsets, or consumers' societies, which, in terms of food, tend to emphasize quantity over quality and are characterized by unreflective eating (Western diets) and shopping. The apparent atomization of individuals from their communities, the sources of food and from Nature seems to prevent the re-development of community-based supply chains and farming that would be in adequacy to biodynamic principles.

Finally, consumerism can be associated with economic materialism, understood as the focus on material consumption (i.e having a good pay rather than a satisfying job). Economic materialism, meanwhile, is interrelated with philosophical materialism, or the consideration that reality consists in matter, which itself shapes contemporary Cartesian science. In both regards, materialist mindsets therefore hinder the development of biodynamic, either because they under-value farming, food and human relationships, or because they deny the comprehension of the "life energies" on which biodynamics lies.

Because it contrast with contemporary values of science, growth, materialism, neoliberalism, biodynamics therefore seems able to develop only under the condition that the cultural patterns underlying consumers society themselves evolve.

2.Findings: the Economic and Cultural Integration of Biodynamics

2a. Biodynamics within the Sustainable Food and Farming movement

The first assumption is that biodynamics can integrate only within the sustainable food movement. In other words, the more will local and organic food systems develop throughout Europe, the more individuals will turn towards biodynamic-like forms of farming which seem to offer a deeper understanding of farming and life processes. In this sense, the alternative outlook of biodynamics is even an asset, for it brings meaning to the job and embeds the farmer in both communities and Nature. Thence, although the opening of biodynamic practices, as well as connecting with other unconventional scientific outlooks, such as holistic medicines, could also participate in fostering the interest in biodynamics, the fact that it requires a strong spiritual commitment may imply that it will likely stay an alternative to organic farming, itself an alternative to conventional farming. Its future is therefore intrinsically tied to the growth of organic production

and the re-localization of food systems.

2.b. Local Communities

The re-localization of food systems, meanwhile, requires a strong support to local organic farming, the development of cooperative food enterprises and the enhancement of community's social capital. Local governments, NGOs and communities (understood as geographic groups of individuals that could be organized around local short supply chains) could therefore focus on access to land, eventually through land trusts, integration of organic products in school meals, food education, financial and logistic support to local food ventures, etc. In order to facilitate the opting to local food chains, we also proposed the organization of workshops (cooking, gardening, canning, foraging...), the creation of community "eco-centers" organized more globally around local sustainable development, and of virtual food networks in and between communities. Local food was eventually viewed as a medium towards greater community cohesion, democracy, local economies or sustainable development.

2.c. Moving cultures

Although purchasing local biodynamic production has substantial assets for the individuals (freshness, healthiness...), its attributes are not always sufficient to outweigh the additional amounts of time and money that the opting out of industrial food systems often require. Likewise, although the re-localization of food systems does need a reappraising of local food heritage, local environment or local culture, it should not be built on an exclusive, chauvinist basis, but be the expression of the motto "think global, act local". The evolution of consumers societies, more than a shift to biodynamic food, thus requires a re-evaluation of priorities, adequately to a value scale that places Human and Nature at the top of all concerns. It needs, some would say, "a spiritual revolution grounded in an awakening consciousness of our connection to one another and the living body of Earth"²⁹³. The creation of communities of congruence and the fostering, through media and education, of the circulation of "new stories" that emphasize the role of cooperation and connectivity could bring a new framework of thinking about societal life and spirituality.

2.d. Favorable institutional environment

If the striving of biodynamic farming towards self-sufficiency also includes independence from government subsidies, the development of biodynamic-like farming is hindered by

²⁹³ Korten 2006, 18

government agricultural policies in that that they foster the difference of competitiveness between industrial and biodynamic-like farming. In the EU, the integration of biodynamics would therefore require a re-thinking of the Common Agricultural Policy with, notably, the strengthening of green payments and agro-environmental measures, limitations of imports and eventually exports, better organization of the market...The integration of a legal distinction between industrial and artisanal processing could also facilitate the unfolding of short supply chains. Finally, European and national governments can act through education and employment policies, in order to increase the transparency of food systems and to reappraise the status of the farmer.

3. Limitations of the research

Although globally the thesis met its goals of giving a cohesive vision of biodynamics and the sustainable food movement, gathering relevant issues for biodynamic food systems and investigating patterns of societal and social change for the evolution of consumer societies, many issues would have deserved greater attention.

3.a. Research section

The main limitation of the thesis is the small scope of the fieldwork. Beyond the focus on France, which itself much limited the scope of the research, the very small fraction of respondents and their specific professional background (more than half were viticulturalists) were probably two of the main biases. A sample of interviewees more representative of the European biodynamic farmers would have been more pertinent for the investigation of European food systems.

3.b. Geographic focus

This loose geographic focus was also one of the limitations of the thesis. For time and language reasons, the research section merely concerned the French biodynamic movement. By extension, the discussion often focused on concrete initiatives undertaken in France (land trusts, CSAs, proposals for the CAP etc.), overlooking the situation in other European contexts. On the other hand, the purposed European dimension given to the thesis prevented from an in-depth investigation of specifically national policies, such as environmental education, rural development, urbanization, food labeling...

It did not therefore pay attention to the various agricultural politics in other member states,

nor on how alternative food systems are unfolding in other regions of Europe. It could be completed, notably, by research on biodynamics and alternative food systems in Eastern Europe, where the structural, agricultural, institutional and cultural features are probably different to the point that the development of biodynamic or biodynamic-like farming would be require other strategies. On the other hand, other regions of Western Europe, such as Germany or the Netherlands, which are characterized by a greater environmental awareness than France, could prove even more innovative in terms of alternative food systems than the propositions emitted.

3.c. Implications for action

Globally speaking, the thesis highlighted the main issues for action for the development of biodynamics. Since the obstacles were numerous, implications for action could be tackled only superficially. Many points would have however deserved greater discussion, such as the “biodynamic proposal” for the CAP, the integration of biodynamics in the international peasant movement Via Campesina and the role of the latter in lobbying international decision-making, parameters of the eco-pricing, organization of workshops, community organizing, alternative methodologies in environmental education, etc.

4. Need for further research

4.a. Can Biodynamics feed Europe?

These limitations suggest the need for further research in the areas cited above. Additionally, the investigation of the re-localization of European food systems is also limited by the fact that, as of today, there lacks agronomic research about the European agricultural capacity to sustain communities with organic or biodynamic methods of provision. It was not possible for this thesis to find reliable research, nor to gather some data in order to give a global picture of the need in land and workers to sustain a community, on a biodynamic production model (that is, grassland shall also be included). The implications of a generalization of biodynamic-like production throughout Europe, in terms of farmers needed, in also largely unknown. This issue is however important because, if it has been already shown that organic farming can feed the world, whether and how biodynamics can feed Europe is less clear. What it seems that that the biodynamic movement needs, at this point, is a compilation of studies that would investigate the capacity of biodynamic-like farming to sustain Europe. Since it is likely that contemporary dietary patterns could not be sustained, alternative consumption scenarios, such as partial or total replacement of animal proteins, may probably also need to be explored. This work may be very difficult to achieve, because of the

variability of parameters between regions and farms (animal or vegetal species used, soil quality, climate patterns) and may require a focus on one or several sample, geographic regions.

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Appendices

List of interviewees

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Sample Questionnaire

QUESTIONNAIRE POUR PRODUCTEURS EN BIO-DYNAMIE

Dans le cadre de mon mémoire «*Agriculture bio-dynamique et évolution de la société de consommation*», j'aimerais prendre connaissance de la manière dont les producteurs perçoivent et vivent la bio-dynamie. Le questionnaire est articulé en deux parties, l'une dédiée à votre propre expérience avec la bio-dynamie, et l'autre à votre vision quant à son évolution. Vous êtes invités à répondre à la dizaine de questions qui suit, de manière concise ou plus développée mais toujours personnelle; il est bien sûr possible de sauter certaines questions. Les réponses sont privées et ne seront pas communiquées ou retranscrites individuellement.

La Bio-dynamie et vous :

Votre vision de la biodynamie ?

Pourquoi avez-vous décidé de passer/ vous lancer en bio-dynamie ? Quelles améliorations après la conversion ?

Rencontrez-vous des difficultés particulières liées à l'agriculture biodynamique ?

Qu'est-ce que vous pensez de la recommandation d'avoir des animaux sur la ferme ? En avez-vous ?

La Bio-dynamie dans le futur :

Quel développement imaginez-vous pour la bio-dynamie, concernant la viticulture et/ou le reste (maraîchage, arboriculture, élevage etc) ?

Quels seraient les principaux obstacles au développement de la bio-dynamie (ou d'autres formes d'agriculture biologique), dans la production et éventuellement distribution et consommation ?

Quels seraient les acteurs (nationaux, locaux) capables de résoudre ces obstacles, et comment ?

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