Providing grounds for agricultural ethics: the wider philosophical significance of plant life integrity

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Abstract

Growing and breeding plants is pivotal to agriculture including also animal keeping. To understand what agricultural ethics implies, the significance of plant life ought to be given new attention. So far, little literature has been devoted to plant ethics and granting a moral standing to plants remains a difficult endeavour at this stage. One difficulty may be that, due to the unification of biology as a scientific discipline based on the theory of evolution, plants are granted the same theoretical standing as animals. Yet, for common sense plants and animals belong to different fields of perception and experience, a difference that used to be captured by the notion of kingdom. To make sense of common sense, a framework inspired by pragmatism and aesthetics is used to assess on novel grounds the specificity of plants. By considering morphogenetic forces embodied in biophysical forms and organic performances, it is shown that plants exhibit completely original features that make them incommensurable with animals. Because of their unique ontology, plants appear to be 'non-*topos*', i.e. non-centred, unlimited, indeterminate, unsplit (having neither inside nor outside) entities. They are, along with algae, the only living beings able to directly convert sun energy into chemical energy and store it within organic matter. This matter does not represent food but their very body gradually coming to existence. Hence, although this may sound quite thought provoking, one has to realise that plant physical integrity actually encompasses soil, environment, living beings, and the cosmos. Here, the notion of integrity proves especially interesting because it captures both descriptive and normative contents. Because of their – literally – outstanding nature, plants require a completely new ethical approach. It is proposed that this is embedded to some degree in organic agriculture and agroecology. Indeed, the emergence of organic agriculture about a century ago was prompted by the advent of chemical fertilizers that caused disruption of crop life integrity at soil level. This emergence was not only an implicit call to respect plant life integrity but also a first step towards a comprehensive philosophy of agriculture, a philosophy that is clearly centred on the fertilisation of the world by plants. The recent development of farm seed and participatory plant breeding networks might represent a second step in the mental revolution that brings the plant, besides land and soil, to the forefront of agricultural concerns.

Keywords: 'non-*topos*', organic agriculture, ontogenetic performance, plant kingdom, theoretical standing

Introduction

The choices made for plant domestication have definitely changed the face of the world and led to wide adoption of steppic, i.e. open-field, agroecosystems. Agriculture is primarily about growing and breeding plants. Of course, animal breeding also plays an important role in agriculture but the development of communities based only on animal keeping cannot outrun the capacity of natural ecosystems and is thus intrinsically limited. In contrast, plant mastery allows transgression of ecosystemic capacities because it involves the harnessing of solar power via photosynthesis. Through crop production it is possible to scale up the total energy available for both humans and animals. This allows enormous increases in population sizes and urban areas in the world, as observed during the last two or three centuries. At the same time this also leads to enormous environmental damage.

There may be various reasons for addressing the issue of plant ethics. But if one agrees that in the first place most major ecosystemic changes have been caused by the advent of agriculture, one has to conclude that at least for this reason the significance of plant life ought to be given new attention. Whilst plant life is a most obvious component of everyday life and has been extensively studied by plant biologists, there is currently little literature devoted to plant ethics. This paper explores why the significance of plant life defies a solely atomistic perspective and requires a specific approach that differs radically from common approaches used for animals. By considering the wider ontological nature of plants, this paper then examines how the ethical issue has to be re-defined on novel grounds and how it finally merges with the agricultural issue as a whole (for further details, see Pouteau, 2011).

A strange evidence: a plant is not an animal

The issue of plant ethics hangs far behind animal ethics and granting a moral status to plants remains a difficult endeavour at this stage. One may assume that this is due to a lack of obvious moral intuitions but such an assumption would deserve further anthropological and sociological scrutiny. Alternatively, it is possible that the issue has not yet been addressed in adequate terms, in which case it first needs to acquire a proper philosophical standing. So far, there has been one major exception to the lack of interest in plant ethics. This is due to an article in the Swiss Constitution which stipulates that 'the dignity of creatures' should be considered in the case of animal, plant and microorganism life. Since the first adoption of this article by a referendum in 1992, a number of attempts have been made to examine what the dignity of plants could signify and how to deal with it. In 2008 the publication of a report on this subject by the Federal Ethics Committee on Non-Human Biotechnology (ECNH) was awarded a peace Ig Nobel prize, an American parody of the Nobel Prizes that celebrates improbable research. One feature of the humorous notes that bloomed on the internet was an animalisation or personification of plants (e.g. 'the silent scream of the asparagus' or 'the silent sobbing of the salad'). In other words, granting plants a moral standing was equated with plants being treated as animals (or human beings).

The Swiss experience is especially instructive because it launches the plant ethics issue in the public arena and leads to identifying a check-point that had been overlooked so far, i.e. the discrepancy between the theoretical standing of plants and common sense. The establishment of a plant science in the eighteenth century was achieved through granting plants the same theoretical standing as animals (Delaporte, 1979). This standing has been further enforced by the unification of biology as a scientific discipline based on the theory of evolution. Plants belong to the community of living beings: they share a common ancestor with animals and are made of the same components, e.g. cells and genes. Yet, for common sense plants and animals belong to different fields of perception and experience, a difference that used to be conveyed by the notion of 'kingdom'. In this context, the animal seems to stand more as a theoretical block than a reference for a moral consideration of plants (Pouteau, 2011; unpublished data). By considering that common sense captures wider significations than scientific analysis alone, it is concluded that in order to make sense of common sense the statement 'a plant is not an animal' needs to be thoroughly assessed. To this end, it is important to question what makes plants obvious and mysterious at the same time and to develop a hermeneutics of plant specific ontology.

On what it means to be a plant: a 'plastician' approach

So far, plant sensitivity and ethology remain subject to debate (ECNH, 2008). In any case, the debate itself may be misleading since it lends support to the preconceived view that a moral standing for plants should be theoretically referred to the animal. Yet, to value something on the basis of external references represents a form of fetishism. In other words, the granting of a moral standing needs to be defended by means of internal references. This means that it is crucial to assess what makes plants radically and unconditionally different from animals. Analytical comparisons that establish a theoretical continuum

between different living beings, and also between matter and living beings, can only support a nominal notion of kingdom. If one has in view a realist approach of the plant kingdom, then global, systemic descriptions anchored in concrete perception and experience need to be considered.

According to Pierre Hadot (2004), Johann Wolfgang von Goethe's scientific approach, captured by his statement that 'nature is mysterious in the light of day', represented a radical transformation of the notion of nature's secret. Nature is mysterious because it does not hide and exhibits its secrets in any of its productions. In other words, every form is performed and brings formative forces on display. To some degree, Jacob von Uexküll (1934) reached a similar conclusion when he considered that organic significations are embedded in performances. But von Uexküll's main interest was in animal performances and these are to a large extent behavioural. In contrast, Goethe's most important contribution to biology was in the field of plant morphogenesis where performances are mainly ontogenetic and unceasingly registered in plant bodily features (Goethe, 1790). To address plant significations, one does not need to speculate on putative plant purposes and teleological interests but can rather consider that these significations (information) are embodied in morphogenetic performances. This interpretation has provided the basis for a descriptive, 'plastician' approach that draws on pragmatism and aesthetics by combining experimental botany, developmental biology and biophysics of morphogenesis (Pouteau, 2011; unpublished data).

Describing plant life integrity: a 'realist' assessment

The hermeneutic approach adopted may be described as a 'new realism'. It provides grounds to voice a fact that is usually overlooked because it is so obvious: plants override the limits of purely newtonian objects and possess a more complex ontology. To be a non-newtonian entity, i.e. more than an object only submitted to external forces, one does not need to be granted reason or sensitivity, or life. From a pragmatic perspective, one only has to express an ontology that is consubstantial with others and embark these others with it through its own history. This is probably true of any entity in the world. But more than any other entity, the plant exhibits in a radical way its mundane, existential belonging through all its most concrete properties.

Plants are non-centred, unlimited, indeterminate, unsplit (having neither inside nor outside) entities. They are, along with algae, the only living beings able to capture sun energy and to convert it to chemical energy, which is stored within organic matter via carbon dioxide assimilation (Gest, 2002). This matter is in no way analogous to food for animals: it is the very plant being coming to existence and shaping itself. This gradual embodying is a form of embryogenesis that takes place in the open world. It is highly contingent on environmental conditions (a property called phenotypic plasticity) and also concomitant with continuous decaying and passing over of plant body parts. Altogether, it may be concluded that plants exhibit completely original features that make them incommensurable with animals. Whilst the animal fits the definition of a *topos*, the plant sketches a counter-image that qualifies as a non-*topos*, i.e. a 'proliferous, non-centred open-endedness' (Pouteau, 2011; unpublished data).

Here, the notion of integrity appears especially interesting for at least two reasons. First, it incorporates both descriptive and normative contents and lends support to the pragmatic notion (and aesthetic experience) that ethical evaluations and positive (f)acts are constitutively intertwined (Hache and Latour, 2009). Second, it refers to completeness, besides other descriptive properties such as wholeness and coherence. Completeness usually seems to be a bottom line for the definition of integrity but here it proves especially suited to elaborate on the specificity of plants. Because of their indeterminate ontology, plant entities do not have clear spatial and temporal boundaries and can never be conceived as complete. Hence, plant physical integrity necessarily encompasses also soil, environment, different

kinds of living beings including humans, and the cosmos (at least the sun). Once this wider ontological nature of plants is recognised, the ethical issue also changes radically.

Respecting plant life integrity: an agricultural issue?

Plant conservation policy for the protection of biodiversity is but one aspect of plant ethical issues. Because of their – literally – outstanding nature, plants require a completely new ethical approach that needs to incorporate an ecosystemic evaluation process. Plants may 'suffer' from any change in their local and global environment even if they are not directly affected by partial or total destruction. The notion of plant life integrity points to the agricultural issue as a whole, i.e. crop culture itself but also all activities allowed by the mastery of sun energy, e.g. massive urban development, deforestation, animal rearing, tourism, etc. This global issue may be covered to some extent by ecocentrism, a field of environmental philosophy that builds up on ecosystemic and holistic premices (Rolston III, 1994; Callicot, 1995). Yet, too often it is assumed that agriculture is but a degraded state of nature and this tends to hide the fact that most fundamental environmental issues arise from choices that were made primarily for and by agriculture. These choices include the plant species bred for food and their specific ecosystems, the way these species are bred and modelled to fit human needs (or greed), and the practices used to grow, harvest, store and distribute plant productions.

In the first place, world-wide adoption of cereals and other crops relying on high-light input in open fields has had tremendous impacts on ecosystem and climate transformations. These impacts have risen in intensity after the advent of chemical fertilizers about a century ago. This advent may be equated with 'soil-free' culture since it allows to partially bypass a major regulatory feed-back of carbon fixation *via* nitrogen availability and to uncouple the harnessing of sun power from soil and environment self-regulation capacities. 'Soil-free' culture meant a disruption of crop life integrity at soil level and eventually affected the whole of plant life. As in a vicious circle, metabolic and morphogenetic disorders – a form of obesity – arose and called for more chemical inputs (stalk-shorteners and various sorts of pesticides). At the same time, the industrial investment in breeding crops able to sustain the race for excellence gradually imposed a block at the level of seed dissemination by the enforcement of property rights and this further disrupted plants ability to circulate seeds through environmental and cultural means (Pimbert, 2011).

Once the wider significance of 'soil-free' culture is recognised, the emergence of organic agriculture after World War I appears in a new light as a response to the dismantling of plant life integrity. Organic agriculture provided a first articulate discourse in environmental ethics although this remained mostly outside academic concerns (see below). In contrast to the field of environmental ethics that arose mainly in Northern America in the 1970s, organic agriculture was born in Europe, a world area with a long past agricultural history. Its primary concern was not wilderness and a quest for pristine nature as in the New World but soil fertility, i.e. restoring and invigorating plant life integrity at soil level. An emblematic illustration of this was the creation of the Soil Association in the United Kingdom in 1946. During the last decade, less than a century later, an even more important issue related to the free access to seed stocks has been taking off and participatory plant breeding social networks have started to flourish in France and other countries (Pimbert, 2011). The chief concern is not only soil anymore, but clearly also the plant itself and the way it centralises the various issues for an ecologically and socially respectful agriculture (Anonymous, 2011). In turn, the issue of plant ethics sheds new light on the wider significance of organic agriculture.

On the virtue of crisis: the emergence of agricultural philosophy and ethics

One may wonder why academic institutions have quite overtly ignored organic agriculture for a large part of the twentieth century. The situation might have been more or less radical in different European countries. Yet, apart from technical issues, it seems that the wider philosophical implications of organic agriculture (and more recently agroecology) movements has been largely overlooked. One explanation may be that agriculture as a whole lacks firm philosophical grounds. Hub Zwart (2009) recalls that ancient Greek (and Chinese) philosophy was little concerned by the worries of mundane and daily life and that the practical nature of farmers' knowledge never became a subject for philosophical thought. Only the contemplative issue of temperance with respect to food consumption received attention but agricultural activity in itself never reached a philosophical standing. In this context, the claim for an articulate discourse by the founders of organic farming (e.g. Rudolf Steiner and Albert Howard) and their followers could only be interpreted as mere nonsense and a jumble of unscientific, animistic and ideological slogans with no sound cognitive basis. As a matter of fact, organic agriculture elaborated on a philosophy that was never born and hence could not be defended by philosophical means (Besson, 2009).

In such a context, recognition had to come first from social grounds. In spite of widespread distrust and lack of political support, organic agriculture has gradually attracted more interest in society and it is now one debated factor in prospectives for a sustainable agriculture. To appreciate the significance of this evolution, it is important to re-consider what happened in the initial steps after World War I. The first meaning of *crisis* in ancient Greek was judgement or decision. Other meanings were choice, debate and, of course, crisis or happening. Crisis is an event in a radical sense. It is not only a challenge but also an opportunity to question what used to be obvious or even unspoken and to bring philosophical thought in what had never received a cognitive standing. The invention of 'soil-less' culture was an event in that it meant a dualistic fission in the remains of the ancient vision of nature as a life circle or wheel. Most strikingly, the plant suddenly appeared split up into a linear chain of production with external(ised) inputs and outputs, just like a car factory. This event not only disintegrated the integrity of one entity of the natural world but, because of the plant constitutively unsplit nature, it also affected the entire course of the world.

To depict this event as a major departure from natural and social life integrity implied a judgement, a debate and a choice. It was a happening in that it brought philosophical and scientific thought into what used to be a mythic narrative of the origins and a social *ethos*. For the first time, philosophical and ethical thought was conveyed into the organic activities of agriculture. The emergence of organic agriculture was not only an implicit call to respect plant life integrity but also a first step towards a comprehensive philosophy of agriculture. This philosophy is clearly centred on the fertilisation of the world by plants. It is part of a global anthropological project that is closely linked to 'our agricultural fate'. In other words, the birth of organic agriculture may be seen as the foundation of a philosophy of agriculture, an event that started no less than 2,500 years after the invention of philosophy and 10,000 years after the original act of agricultural foundation! The creation of farm seed networks might represent an even more radical step toward a comprehensive vision of agriculture in that it points quite clearly to the central role of plants in this happening (Anonymous, 2011). Finally, history seems to be making a feed-back loop: plant domestication was the foundation act of agriculture and moral consideration of plants is now making this (unconscious or intuitive) foundation act a matter of cognitive, conscious comprehensiveness. For this reason, it is proposed that, as a mirror image, the moral consideration of plants may involve a mental revolution potentially as paramount as the 'Neolithic revolution', i.e. the origin of agriculture in the words of Vere Gordon Childe.

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