Working with nature, but how? Moving beyond agroecology and ecomodernism in pest management

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Abstract

Concerns about biodiversity loss and stricter legislation on chemical crop protection products make crop protection a controversial and urgent topic in the EU. Differing opinions on what choices should be made to reduce the environmental pressure of agriculture while ensuring food security cause heated political and societal debates. Agroecology and ecomodernism represent two approaches with distinct (normative) ideas on agriculture, including pest management. Both aim to make agriculture less dependent on chemical pesticides, but methods and philosophy differ. In this paper we present work of George Monbiot and Chris Smaje, two key figures in the current agricultural sustainability debate, to illustrate the differences and tensions between ecomodernism and agroecology, respectively. In the second part, we propose a third way, based on some key insights of the philosophy of Dooyeweerd. We conclude that Dooyeweerd's approach can help to elucidate the normative aspects at stake in pest management practices and what this means for human responsibility.

Keywords: Dooyeweerd, ecosystems, practice, rationalization, subsumption model

Introduction

The use of pesticides has become subject of heated discussions in recent years. An example is the herbicide glyphosate, which is controversial because of potential adverse effects on biodiversity and human health (Bloem *et al.*, 2024). The EU recently extended the permit of glyphosate for another 10 years (Casassus, 2023), although a proposal has been adopted by the European Commission (EC) to reduce the use of chemical crop protection products with 50% by 2030. This proposal however aroused fierce objection and no majority in the European Parliament was found for legislation to cut down the use of pesticides. The example illustrates three points. First, the urgency to look for alternative solutions to reduce the use of pesticides becomes clear. Second, the resistance against the EC proposal shows how difficult it is to change existing (agricultural) practices, in which pesticides still play a major role. (Especially in the production of field crops and fruits the use of chemicals is very common). Third, it shows that the transition towards environmentally friendly agriculture requires more than setting a target or taking single measures, like prohibiting the use of certain chemicals. Without providing alternative solutions or taking into account the wider context in which the farmer operates, efforts to make agriculture more sustainable by phasing out chemicals are likely to fail.

Crop protection can thus not be dealt with as a stand-alone topic. It is always related to other factors, like the local conditions on the farm (e.g. availability of water, type of soil, climate), the (labour) market, the farmer's sense of entrepreneurship, the wider economy, etc. The interconnectedness of these topics means that a systems perspective is needed in which all subjects are taken into consideration simultaneously. Bringing them together and weighing interests against each other should lead to a broad and coherent vision on how to combine food production with the protection of human health and the environment, which can then be used as the basis for (political) choices. Failure to take such a broader approach runs

the risk of ignoring crucial factors, resulting in inadequate policies, unworkable practices and scepsis or even anger among growers.

Crop protection is not only a complex topic, but also different presuppositions exist on what a good practice looks like. These differing views are often diametrically opposed and therefore create tensions, not only among farmers, but also more broadly in society. We believe that, in the core, many of the controversies can be traced back to different philosophical ideas on what nature is and what human's place in and role towards the natural world should be. In order to create support for policies, it is therefore important to not only consider empirical facts, but also underlying philosophies. In this paper we analyze two movements which are both influential in debates about pest management: agroecology and ecomodernism. Both approaches aim to move away from chemical pesticides but, as we will see, their underlying philosophy and methods differ. The aim of our paper is twofold. First, we analyze work of George Monbiot and Chris Smaje as an illustration of the ecomodernist and agroecologist positions, respectively. Both authors have explicit ideas on nature, the human person and how we are supposed to work with nature. We aim to investigate the consequences of their ideas for pest management. Second, we introduce a third perspective, based on the philosophy of Dooyeweerd, and show how it may change the way we think about the debate between agroecology and ecomodernism. We end with discussing the implications of Dooyeweerd's view for (our thinking about) sustainable pest management.

Monbiot and Smaje: similar concerns, different solutions

Monbiot and Smaje, two British authors, have become well-known voices in the (public) debate about the future of our food system. Both writers maintain a website (www.monbiot.com; chrissmaje.com) where they regularly write about their ideas and react to each other. Despite having similar concerns about the (un)sustainability of global food systems and the state of nature, the question of what a sustainable agriculture is and how it can be achieved is answered in a completely opposite way by both authors. In fact, it is surprising to see that two scientists who agree on many things (both think our current food system is unsustainable, both think we should find alternative ways of feeding ourselves within the limits of the earth) are in such a dispute with each other. Apparently, depending on one's philosophy, the same scientific facts can lead to completely opposite conclusions. We first discuss Monbiot in relation to ecomodernism and then Smaje and the agroecologist view.

Monbiot and ecomodernism

Ecomodernism is a movement which aims to provide material prosperity for everyone while minimizing harm to the biosphere (Breewood and Garnett, 2022). The idea is that human well-being can be 'decoupled' from environmental impacts through the intensification of agriculture (Asafu-Adjaye *et al*., 2015). By producing more on less land humans can free up space for nature, thereby 're-wilding' and 're-greening' the earth. According to this view, scientific knowledge and technological progress will allow humanity to flourish while minimizing its impacts on the environment (Boersma, 2021). In his book 'Regenesis: how to feed the world without devouring the planet' Monbiot (2022) argues, along similar lines, that as humanity we have all the scientific knowledge and technological tools available to produce sufficient food while at the same time protecting the environment. Nature can and should be protected by developing high-yielding farming systems with low environmental impact. The production and consumption of food should be organized in an efficient and rational way by stopping agricultural sprawl and rewilding the land released from farming. The farming of animals should come to an end and the sources of protein and fat replaced with microbial proteins produced using fermentation technologies.

What is Monbiot's view of the human-nature relationship? A first point is that humans are seen as being dependent on nature. Agriculture needs to change to 'secure our own survival' *and* 'protect the rest of

life on Earth' (Monbiot, 2022: p. 26), implying a dependency between human beings and nature. At the same time, there appears to be a gap between humans and the 'rest of life' (Monbiot, 2022: p. 229). Nature tends to be looked at as something external, as an object or system, which we can control or manage (at least to the extent that we know it). Humans are connected to nature but at the same time separate from it. Second, Monbiot emphasizes that, even though nature is often negatively affected by humans, human activities *can* also result in the protection of nature. For example, by improving our knowledge of the soil we can develop better agricultural practices and by creating flower banks we can stimulate insect life and biological control. As human beings we can let nature go extinct *or* we can regenerate it. The choice is up to us, we are in control. Rather than stepping back, we should use our scientific and technical knowledge to address the challenges lying ahead. Human responsibility is thus connected with knowing, with being in control. In line with this, the question of how to work with nature is seen as a predominantly scientific-technical question; cf. p. 226 where he writes: 'the heroes our crisis demands are pioneering a new science of soil ecology, discovering new ways of working with the life of the soil, developing crops that can deliver large yields with small impacts, igniting a farmfree revolution'. With their help we can 'avert our looming environmental catastrophe and reverse much of the damage we have inflicted on the living world, while ensuring that healthy diets are available for everyone. We can make peace with the planet.'

Pests are likely to interfere with the maximalization of production and therefore control should take place, albeit with environmentally friendly methods. One of the methods recommended by Monbiot is the '(burgeoning science of) biological control: using predators to manage pests' (Monbiot, 2022: p. 227). Monbiot is also positive about agroecology, as it makes use of the (ecological) relationships between the soil, (crop) plants, bacteria, fungi and insects, thereby reducing the need for fertilizers and pesticides (Monbiot, 2022: Chapter 4). A problem he sees with agroecology though is that it will be impossible to generate enough food using only local production (especially when it comes to cereals). He emphasizes that to combine agroecological (pest control) methods with high yields, more knowledge of soil biology and plant-insect interactions is required. Scientific research should lead to more insight in the interactions playing a role in agroecosystems. The obtained knowledge can then be applied to achieve a higher production.

Smaje and agroecology

Agroecology is a broad term carrying multiple meanings. A full analysis of the concept of agroecology is beyond the scope of this paper but, briefly, it is used to indicate a science, a (set of) practice(s), a movement (Carlile and Garnett, 2021) and a philosophy (James *et al.*, 2023). As a scientific discipline, agroecology studies the ecological interactions between organisms in agroecosystems. As a practice, agroecology aims to generate sustainable and resilient agricultural systems, based on ecological concepts and principles and with minimal external inputs. To achieve this, techniques like crop rotations, cover crops, polycultures, crop-livestock integration and agroforestry are applied. As a movement, agroecology strives for a just and equitable food system, based on the principles of food sovereignty and in which smallholder farms are important. Besides that, agroecology is also referred to as a 'philosophy of life', a way of life that promotes human and environmental well-being (James *et al*., 2023).

Like Monbiot, Smaje is convinced that agriculture is a major contributor to environmental problems and therefore should change to become more sustainable. In his book 'A small farm future' (2020, see also Smaje, 2023) he argues that human societies should shift to small-scale, local, agroecological farming systems. They offer the best chance to address the economic, political and environmental crises of our times. In order to prove that local farming is able to generate sufficient food for the growing world population, he pictures a scenario in which the entire British population is self-sufficient in the year 2050. Smaje's use of the concept agroecology shifts, depending on the topic he is discussing. In part 2

he describes the ecological aspects of agroecology (agroecology as a practice), while in part 3 and 4 the economic and political implications of agroecology are discussed (agroecology as a movement). In part 3 he also shares his ideas on what a small farm future could mean for people personally, i.e. a way to connect again, with ourselves, with other people, with other organisms and with the earth (agroecology as philosophy).

Rather than nature, Smaje speaks about ecology, which is referred to as the whole 'matrix of relationships between numerous organisms and the geophysical systems sustaining them' (Smaje, 2023: p. 99). As humanity we are not only dependent on nature/ecology (cf. Monbiot, 2022) but part of it ('…the local soils make us who we are'; Smaje, 2023: p. 145). This has implications for his view of the human person: 'people may have to embrace the old human essences of being biological, labouring, suffering creatures after all' (Smaje, 2020: p. 79). Elsewhere, humans are referred to as a keystone species (note the ecological terminology) with a 'disproportionately' large impact upon others (Smaje, 2023: p. 148). As humans it's in our nature to be 'habitat disturbers and engineers' (Smaje, 2023: p. 149). The challenge is to become a 'better' keystone species, following the model of the beaver (Smaje, 2023: p. 149). Technical skills are required for this task, but we will probably need more our social and spiritual skills. Future farming in Smaje's view will be 'biointensive, using low-impact biological inputs to ensure adequate farm outputs', with human labor 'probably' being 'the key biointensive input' (Smaje, 2020: p. 129). Although Smaje advocates agroecological practices, he is wary to call this type of farming more 'natural' than conventional farming. Ecosystems and agricultures have different aims, meaning that almost all agricultures work against nature ('the ecological tendency to revert to a low-disturbance, low-input, low-productivity state' (Smaje, 2020: pp. 118–119). This said, there are strong reasons to support agroecological practices, such as the use of polycultures, which support wild biodiversity and provide security against the failure of single crops (more benefits are mentioned; Smaje, 2020: p. 121).

Smaje's view of agriculture implies that we should not let pests go uncontrolled. The smaller scale and crop diversity may support wild biodiversity, and thereby allow for natural pest control, but additional measures will be necessary as well, such as actively releasing natural predators (Smaje, 2020: p. 118) or the planting of trees and shrubs which can provide food or shelter for natural enemies (Smaje, 2020: p. 143). These approaches are referred to as 'biointensification', i.e. the replacement of high-environmental impact methods (such as the use of chemical pesticides) with lower-impact biological ones. The main form of intensification however will be the application of more human labour per acre of land (Smaje, 2020: p. 118). Human intervention is thus necessary but it should have an 'ecological logic and based on biological dynamics' (Smaje, 2020: p. 122). Pest management should be facilitated by the smaller scale of farms and inspired by the principles of nature.

Towards an alternative perspective based on the work of Dooyeweerd

Sofar we have seen that where Monbiot emphasizes the rational-technical capabilities of human beings, Smaje puts emphasis on the fact that human beings are biological creatures. Where Monbiot hopes for scientific and technological progress which should make the transition towards a more sustainable agriculture possible, Smaje's vision is that of a small farm future where people live in close connection with plants and animals. However, one may ask, should we really choose for the one or the other? In what follows I will argue for a third way, thereby using work of the Dutch philosopher Herman Dooyeweerd (1894–1977). Dooyeweerd was one of the founders of the movement of Reformational philosophy, which over the years has gained international attention and is still actively practiced today (https://www.reformationalphilosophy.org/). Dooyeweerd's philosophy — more specifically his theory of aspects — shows that every phenomenon in reality can be approached/questioned from a multitude of different perspectives (e.g. from an ecological, an economic, a social or a political point of view). Each

of these aspects is important and should therefore receive attention. This is relevant for the debate about agriculture, food and nature where the tendency sometimes exists to absolutize certain aspects at the expense of others. By making these different aspects/questions explicit Dooyeweerd's philosophy can help to get a better understanding of complex topics, such as pest management in agriculture.

Dooyeweerd made a fundamental distinction between the 'concrete' or 'full' experience of reality and the 'theoretical' reflection of reality, as carried out in the sciences (Dooyeweerd, 1953–1958). According to Dooyeweerd, scientific knowledge is the result of isolating and analysing a particular part of the complex whole of reality in order to get a more detailed understanding of it. The specific sciences are seen as different 'angles' from which reality can be studied. These angles are not arbitrary but they correspond to 'aspects' or 'modes of being' in reality. In total, Dooyeweerd came up with 15 of such distinct ways of being. In order of sequence these are: the numerical, the spatial, the kinetic, the physical, the biotic, the sensory, the analytical, the technical, the lingual, the social, the economic, the aesthetic, the jural, the ethical and the religious aspect. (The exact number, character and order of the aspects is a question of empirical analysis and therefore open to correction.) All the aspects have their own unique character and are irreducible to each other. At the same time, they are also related to each other. According to Dooyeweerd, all things function, in an active or passive sense, in all the aspects. Things, but also structures and practices, are not neutral but exist in response to the laws or norms that hold for them. We as human beings are also part of this complex reality. In our actions, decisions and practices we have the responsibility to ensure that justice is being done to all the different aspects simultaneously.

It is at this point of our discussion that Dooyeweerd may prove to be relevant. As we have seen, for Monbiot agriculture should generate high yields with low impact. In order to achieve this, existing agricultural practices should be professionalized/rationalized, that is improved using scientific knowledge and methods. Following Jochemsen and Glas (1997) we will refer to this view of practices as the subsumption model. (Subsumption means arranging the individual case under a general category). Two problems are however identified with this model. A first problem is that it detaches one aspect of human acting (in this case the analytical or technical-scientific) from its other aspects (like the social, the aesthetic, etc.). The consequence is that these other aspects are easily seen as standing in the way of continuing professionalization. They should however not be seen as secondary, but as constitutive for (agricultural) practices as well. Together the different aspects define the identity of the practice (for an example see Rademaker *et al*., 2017). A second problem with the subsumption model concerns the relation between theory and practice. Translating the results of science to the concrete farming practice is in fact a very complex process in which the local conditions, the economic and social circumstances as well as the experience and craftmanship of the farmer play a major role. Smaje shows he is aware of the importance of the local context, as he criticizes organic agriculture and regenerative agriculture exactly on this point ('in agriculture, there are no universal rules. The same goes for no-till and regenerative agriculture, which isn't optimal in every possible situation' (Smaje, 2020: p. 123) (cf. also Giller *et al*., 2021). Also traditional agricultures should not be considered as 'a panacea' (Smaje, 2020: p. 99). Yet, given his own recurring emphasis on a future of small farms, one may wonder whether Smaje himself fully escapes this critique. For Smaje, human beings are ultimately 'farming people' (Smaje, 2020: p. 8) which is a reason why he believes in a future of small farms. Yet, as human beings we are more than farmers. We do not only exist in ecological relations but also in social and economic relations, for instance. Both Monbiot and Smaje tend to ignore the complexity of reality by emphasizing certain aspects of it (i.e. the rational-technical and the biotic), resulting in the suggestion of a universal approach that can 'fix' our food system. The point is that elements of agroecology (e.g. local production) as well as ecomodernism (e.g. the use of new scientific technologies) are very relevant but taking the broader context into account and not as a panacea.

What does working with nature look like from the perspective of Reformational philosophy? Dooyeweerd would agree with Smaje that human beings are biological creatures and therefore part of nature, rather than being above or against it. At the same, he wants to acknowledge that there are distinct differences between plants, animals and humans, which has consequences for human responsibility. From a Reformational philosophical perspective human beings have a sense of good and evil, an awareness of normativity. Consider the word 'pest'. Only from a human point of view it makes sense to speak about pests and diseases. They are experienced as something anti-normative. As human beings we experience a calling 'to better the world', which implies a sense of responsibility. Working with nature from this perspective is characterized by an attitude of caretaking, aimed at the flourishing of life. In relation to pest management this means that biological methods should be preferred over chemicals. Following Smaje, this could indeed require diversification and/or downscaling of farms (think of field crops where large monoculture fields make pest management a challenge). At the same time, we should not be hesitant to make use of scientific knowledge and technologies in pest management. Think for example of new strategies for supplying natural enemies or the use of resistant varieties. A responsible development of pest management implies that these methods are implemented while taking the local agronomic conditions, the farmer and his knowledge, as well as the wider social and economic context of the farm as much as possible into account.

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