Plant Ethics: An Introduction

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Large parts of our world are filled with plants. Plants inhabit the great outdoors, our gardens, hectares of cultivated fields, our mythologies and imagination, and the vases on our dinner tables. The existence and persistence of almost all life on Earth is premised on some central functions of plants. Every living being interacts with, affects, and is affected by plant life in various ways. Yet, plant life has traditionally been marginalized in Western philosophy. Besides rankings according to a presumed *Scala Naturae*, the philosophical marginalization of plants may also result from lacking many of the properties that attract human attention, both perceptually and morally. Plants do not make noises, they speak no language of sounds, they seemingly do not move, they do not cry when damaged, they apparently do not make conscious decisions. This leads us to think of plants as silent, passive, static background entities – but we actually should know better.

New plant research shows that plants do move, display a range of sophisticated defense mechanisms when exposed to stress and parasites, have unparalleled adaptive capacities, and communicate in various ways. Even though in many ways different from humans and from human animals plants are not only particularly complex living beings. They are appreciated and enjoyed by humans and provide the most basic resources that humans need in order to

survive. Plants transform light into energy and store this energy, they synthesize products that mammals need for survival, they produce fruit and vegetables and deliver food.

In environmental ethics, plants have been discussed, but are often swiftly subsumed under the categories of "all living things" and rarely considered thematically. This is much too coarse-grained a categorization: it misses, with no deep philosophical justification, the peculiarity of a form of life – the vegetal – that displays unique features whose complexity we are only just beginning to understand. Plants are vertiginously diverse and of unparalleled importance to ecosystems and all their animal inhabitants, be those human or non-human.

Yet, it seems difficult to construe plants as morally considerable. Most environmental philosophers would say that strategies to include plants within the moral universe by extensionist routes do not succeed. To our best understanding, plants are not sentient and lack self-awareness and conscious agency. Biocentric philosophers have argued that plant life is morally relevant, but there are good reasons why plant ethics would want to avoid being considered a mere implication of biocentrism. First, because biocentrism argues for the intrinsic value and moral considerability of all living beings, with no dedicated interest to plants: if there is anything that is peculiarly valuable about plant life, biocentrism is in no privileged position to acknowledge it. Second, biocentrism is far from being a mainstream position in environmental ethics. Comparable normative qualms trouble ecocentric views that accord moral status to plants as parts of morally valuable wholes.

The case of plants in environmental ethics is really peculiar. Plants are necessary, useful, beautiful, complex, diverse, and tell stories about peoples, times and places – yet no publishers or readers seem to have a problem if environmental ethics textbooks include no chapter on plant ethics. This book aims at opening a philosophical discussion that may begin to fill that gap. It opens and investigates issues in plants ontology, ethics, and the role of plants and their cultivation in various fields of application. The central aim of this book is to

shape and frame plants-related philosophical questions accurately and develop new ideas of how to address moral questions when confronted with concrete scenarios, including new breeding technologies and robotics in agriculture.

When doing plant ethics, we begin with an acknowledgement that the otherness of plant life inhibits a fully convincing application of extensionist strategies to the identification of plants' values and the establishment of plants' moral significance. But there are alternatives to extensionism. The alternatives proposed in this book are versions of three broad approaches to plant ethics: a *non-moral yet inclusive approach* of plant life; a *relational approach*; and a *value-in-nature approach*. Each of these approaches provides a normative framework for plant ethics but does not lose sight of the fact that plants differ radically from other life-forms, including humans and other animals.

A *non-moral yet inclusive approach* starts with the insight that plant life is distinctively important for the life of humans as well as non-human animals. On this view, plants have value and moral importance because they are irreplaceable elements of the good life of the sentient beings that inhabit planet Earth. This approach is ecumenical with regards to the reasons that make plants valuable and morally important (to sentient beings): it welcomes aesthetic, prudential, narrative, and scientific reasons for valuing and respecting plants, and couples these with moral reasons that refer to the good of humans and other animals. Protecting forests, botanical biodiversity, plants populations, and individual plants is typically a way of being fair with all those humans and non-human animals that can in various ways benefit from the vegetal world today and in the future.

A *relational approach* has it that the value and moral importance of plants do not descend from plants' ontological and moral status but rather emerge from within human practices that relate to plants. Relational approaches do not typically speak the language of

duties and obligations, but of care and virtue; and they are particularly apt to the exploration of the normative criteria and reasons at work in practices of plant cultivation.

A *value-in-nature approach* emphasizes not our reasons to value plants, but rather the value of plants themselves. This approach should not be confused with a search for the intrinsic value of plants (a search that has been attempted before, with less than fully persuasive results): it is rather an exploration of concrete, empirically tested values in plant life, including integrity and flourishing. It also includes proposals to re-adjust value talk in plant ethics so that it is not premised on an individualistic ontology of entities.

These approaches can be developed in various ways, creatively combined, and channeled in many different directions. The otherness of plants inspires philosophical attempts that are other than mainstream, and it is one of the aims of this book to show that, just off the beaten paths, a rich conceptual and normative repertoire is available to us for reflecting on plant ethics.

However, this book is not the very first step in plant ethics. Two important explorations of the topic have come from the German-speaking world in the early 2000s. In 2001, Werner Ingensiep delivered a voluminous study on plant life that investigated the interpretation of the "plant soul" in the history of philosophy (Ingensiep 2001). A more specifically ethical treatment of plant life, Angela Kallhoff's *Principles of Plant Ethics: the Evaluation of Plant Life in Biology and Philosophy*, offered an articulated Neo-Aristotelian perspective on plant ethics, and opened the field as it is now developed in this volume (Kallhoff 2002). As noted earlier, in the English-speaking world philosophical interest in plants has been a feature of biocentric and some ecocentric perspectives in environmental ethics. Indeed biocentrism has often referred to plants as model entities of its concern (Attfield 1981; Attfield 1991), and spurred discussions on plants in other fields of philosophy. In legal philosophy, for example,

Christopher Stone (1996) has built on biocentric grounds to argue for the legal standing of trees, and flamboyantly defended legal rights that would protect plant life. More recently, other works have contributed to a reassessment of plant life from non-biocentric perspectives and various angles in philosophy. Among these are Michael Marder (2013), Matthew Hall (2011), Stefano Mancuso and Alessandra Viola (2015), and Richard Mabey (2015). Plants have also received, and are still receiving, great attention in food ethics and agricultural ethics.

Content of the Book

What sets this book apart from most other works in environmental ethics is that it presents and explores plant ethics as a field of inquiry that has its own argumentative resources at both a theoretical and a more applied level. The book is divided into two main parts: the first part presents concepts and approaches to plant ethics, while the second considers some applications.

The first three chapters introduce the reader to the meanders and strictures of plant ethics by considering core issues in axiology and reflecting on the applicability of fundamental ethical concepts such as welfare and interests. We begin with a discussion on the value of plants authored by *Gianfranco Pellegrino*, who provides an overview of the main axiological issues that plant ethics should take on. He then defends a specific thesis whereby individual plants have final value, with the source of this value being what nature or humans, or possibly both, have "invested" so that these particular individual plants may come to be.

Tatjana Višak considers plant ethics from a utilitarian point of view. She asks two important questions: first, is there such a thing as plant welfare? And second, how does our treatment of plants affect welfare? Višak argues that plants have no welfare and that our treatment of plants affects the welfare of animals only, including humans. According to

utilitarianism, a plant ethics must be indirect and derivative from animal and human ethics; we have reason to protect plants in order to promote the welfare of humans and animals.

Ronald Sandler argues that plants have inherent worth: that they have interests that moral agents ought to care about for the sake of plants themselves. This claim is supported by a teleological account of interests and an etiological account of teleology: plants do have interests because they are teleologically organized as a result of natural selection. Yet, this position also implies that bacteria and artifacts have interests, since they too have a selection etiology and are teleologically organized. Opponents of the idea that plants have inherent worth often present these implications as absurd. Sandler discusses possible responses to this fundamental "absurdity" objection to plant ethics.

Chapters Four and Five consider two concepts that may prove central to plants ethics: flourishing and dignity. In Chapter Four, *Angela Kallhoff* presents a neo-Aristotelian approach to the evaluation of plant life. She argues that the concept of plant "flourishing" provides a yardstick in reference to which we can objectively judge whether plants are harmed or benefited, and thanks to which we can build an ethics of plants that takes its main cues from scientific botany rather than philosophical axiology. In addition, Kallhoff underlines how the notion of flourishing helps to define moral claims in various spheres of human-nature interaction, including wild nature, cultivated nature and used nature.

In Chapter Five, *Sabine Odparlik* articulates a concept that has made its way through legislation in a number of German-speaking countries and propels an attempt to give legal status and recognition to plants: the Kantian concept of dignity, a notion that Kant referred to human beings. Because Kant believed that human beings have dignity primarily as and because they are rational moral agents, the extension of the notion of dignity to plants may sound quite strained. Odparlik explains how conceptual and practical complications with the

notion of dignity as applied to plants can be defused or qualified. In doing so, she also illuminates some of the fundamental difficulties in plant ethics – like its need to refer to ethical concepts constructed for kingdoms very different from the kingdom of plants.

Chapters Six and Seven give us a taste of postmodern plant ethics. Both insist that our very ways to think about plants proceed by false analogies with the animal world, and that this is a burden that plant ethics should shake off its back. In Chapter Six, *Karen Houle* argues that the concepts that we use should be described as the body of our thought: much like bodies, these concepts are inherited, undergo morphogenesis, and in turn give rise to a patterned "being-of-thought". She explains how the normative conceptual systems that we currently employ in philosophy are dominated by binaries much in the same way that the human animal body is strongly marked by "left-right" bi-laterality. Our "becoming-ethical" requires different ways of being and thinking than those promoted by our entrenched "left-right", "either-or" patterns. The development of formal symmetries in plant cells, bodies and parts runs through a different sequence than does the development of animal bodies and parts, with notable differences in the distribution of bi-laterality in the whole. Houle suggests that plants' bodily nature inspires non-binary thinking in us, and such thinking is both necessary for plant ethics and a gift that plant ethics can make to philosophy more generally.

Sylvie Pouteau provides further crucial insights on how plants should be conceptualized for plant ethics to be both ontologically accurate and philosophically distinct. She argues that in contrast to human beings and animals, plants are open, non-self-centered subjects, whose form inhabits a non-Euclidian space. Pouteau analyzes how the open character of plants is modified in the process of domestication and examines various ways in which moral concern towards plants can be expressed. She further suggests that interdisciplinary art-science-philosophical research could play a vital role in enabling more participatory approaches to the design of plant-human forms in agriculture and landscape management. Again the suggestion

is offered that plant ethics harbors philosophical potential that goes beyond plants themselves, as the notion of an open being can be a cornerstone for developing more general alternative ontologies, epistemologies, and ethical perspectives.

Chapters Eight and Nine explore relational approaches to plant ethics. *Mark Coeckelbergh* questions approaches that fixate on the metaphysics or ontology of the object as unpromising ways to think about an ethics for non-human, non-sentient entities. These approaches are inadequate to plant ethics as much as they are inadequate to other emerging fields such as robot ethics. An alternative, relational approach would proceed in three steps, Coeckelbergh suggests: the exploration of the first-person (human) perspective; the opening to a second-person perspective that takes in the needs of plants (or robots); and the establishment of an active relation to the entity from which an ethics of practice can emerge. In this way questions about how particular plants, robots and other non-human, non-sentient entities should be treated turn into questions about the skills and know-how necessary to a good performance of a relational practice.

Maria Schörgenhumer explores what caring for plants means in a relational perspective, and takes gardening as the model practice of plants care. She argues that care, sometimes framed as a virtue (and often described as a virtue of gardening in particular), should rather be understood as a relational practice that demands specific virtues. Her chapter analyzes the caring relation between persons and plants and highlights its evaluative and normative aspects that turn out to be closely linked to an aesthetic account of plant flourishing. It further explains how care can fail, and which virtues are required for good plants care.

Chapter Ten inaugurates the second part of the volume, which is dedicated to appreciations of plant life and applications of plant ethics to real-world questions. The first contribution is by *Robin Attfield*, who delineates the field of forest ethics, its scope, the

justification for studying it, and the kind of arguments that are salient within it. Attfield notes that forest ethics is in some respects a branch of plant ethics, but it includes topics that lie beyond that field such as the ethics of forestry. He also vindicates biocentrism as preferable to other value-systems when it comes to plant and forest ethics, and explains how biocentrism articulates the central insight that human needs, including future human needs, have to be weighed up alongside the interests of trees and of other forest creatures including future trees and forest creatures. Attfield argues that forest ethics incorporates some of the themes of sustainable development and of ecological restoration, and gives examples of practices of reforestation and of how some of the causes of deforestation can and should be combated.

Chapters Eleven and Twelve focus on aesthetic appreciations of nature. These chapters have a general scope but address flora-rich landscapes in particular. *Paolo D'Angelo* explores the relationship between human culture and the agricultural landscape. He reconstructs the evolution of landscape perception, showing how the modern era has gradually downgraded the aesthetics of cultivated landscapes. The typically romantic idea that important and beautiful landscapes are "exceptional", on the one hand, and the prejudice in favor of the "wild" and "natural", on the other hand, have conjured up a marginalization of the aesthetics of the cultivated landscapes that humans inhabit and transform. D'Angelo, however, also sees a reverse trend at work. He notes how recognition that all kinds of landscapes deserve appreciation and protection is growing, while the cultivated land is increasingly being perceived as a rare and valuable commodity, fueling aspirations to new – or better old and now re-discovered – lifestyles.

Angelika Krebs explores the aesthetic case for landscape conservation. She explains the concept of a landscape and distinguishes various ways in which we can experience a landscape's "atmosphere". Her central claim is that the experience of beautiful landscapes is not just an enriching option, much less a merely subjective preference, but an essential part of

human flourishing. The great and irreplaceable value of beautiful landscapes is that they can make us feel at home in the world. This aesthetic argument provides a metaphysically innocent understanding of our feeling that we are part of nature and should try to fit in rather than stand out. It also explains, in a thoroughly humanistic mood, why most of us feel a taste of sadness, indignation, and sometimes even horror when witnessing the loss of natural landscapes to human development and activities. Many, if not all of these landscapes include flora.

But it is not just beauty that is lost when human developments and activities swallow nature and its plants: we also lose what *Paul Thompson*, in his contribution, calls "cultural services". While mainstream environmental risk assessment recognizes a large category of potential hazards that can be associated with the cultivation of plants – including impacts on biodiversity, food safety and unintended impacts on water and microclimates – more recent literature on ecosystem services acknowledges that both cultivated and uncultivated ecosystems can be crucial for generating or providing cultural goods. These include a sense of place, cultural identity, and social capital associated with community solidarity. Thompson argues that accommodating the cultural significance of plants within a risk assessment and public engagement framework may require scientists and policy makers to revise their views on the ontology of plants themselves.

Chapter Fourteen and Fifteen focus on gardens. *Christian Dürnberger* argues that utopian thinking, often thought to be bankrupt or even dead these days, is in fact very much alive particularly with respect to ecological questions. Utopian as well as dystopian content can be found in current disputes on the human-nature relation, agriculture, and food. What is new is that utopian thinking seems to be less focused on public policy and the design of ideal societies, and more on the lifestyle of individuals. One way of describing the latter trend is to say that utopian thinking withdrew from public places and moved into the garden: to the

definition of manageable practices that might give individuals a sense of purpose in the face of vast ecological changes and challenges and of the vast, globalized, systemically interconnected human systems that have brought them about.

David Cooper explores this search for meaning in and through gardening. He focuses on food gardening and asks whether and how "growing your own" can contribute to the good life. Cooper argues that good gardening is a practice that calls upon, cultivates and exercises various virtues. In doing so, it invokes and manifests a live, practical understanding of important truths about the living world and the relation of that world to human culture. To that extent, Cooper concludes, good gardeners are both virtuous and "in the truth". These are excellent personal reasons for people to grow their own.

The last four chapters of the volume deal with novel human technologies involving plants in various ways. *Nicole Karafyllis* discusses the complex philosophical and normative implications of seed banks – organizations that store and preserve plant seeds, especially of varieties that are rare, have fallen out of commercial use, or may have unique desirable genetic characteristics. This raises questions about whether a seed in long-term storage should be regarded as a plant, about the nexus of plant generation and proliferation that is interrupted by seed banking, compromising plants' "wildness", and about the normative aims of seed banking, from banking future breeding options to conserving the "common heritage of mankind". Karafyllis argues that reflecting philosophically on seed banking may lead us to challenge approaches in plant ethics that take "wild(er)ness" as a criterion of value, or that assume individual plants to be the one unit of moral concern. She claims that even plants that are shaped by humans into "bio-facts" – techno-natural entities that respect no distinctions between the natural and the artificial – deserve ethical consideration.

Frauke Pirscher discusses CRISPR/Cas in crop breeding: a genome editing technique that transfers genes mainly within species boundaries. Thus, resulting plants can be identical

to the outcomes of conventional breeding techniques or their wild relatives. This triggers societal debates over the acceptability of CRISPR/Cas in organic farming, and more generally over whether the plants obtained through CRISPR/Cas should or should not count as genetically modified, particularly for the purposes of regulation. Pirscher analyzes how different concepts of naturalness lead to different moral judgments about the acceptability of CRISPR/Cas techniques. She argues that even though plants obtained through CRISPR/Cas techniques may be indistinguishable from those obtained through traditional breeding techniques or even their wild relatives, natural identity is not enough to make CRISPR/Cas ethically uncontroversial.

Vincent Blok and *Bart Gremmen* discuss another momentous innovation in plants manipulation and cultivation, namely precision agriculture. Precision agriculture technologies can be conceived as creating "digital" plants by integrating various kinds and huge amounts of data. At first sight, this looks like the next step towards the total instrumentalization of crop plants. Using Kallhoff's notion of plant flourishing as an evaluative yardstick, however, Blok and Gremmen scrutinize, from the perspective of plant ethics, the acceptability of various technologies that are key to precision farming, including sensing technologies, data processing and utilization, and control technologies. The authors also provide guidelines for what should count as "responsible" precision farming of crop plants.

The volume closes with what is perhaps the most futuristic application of plant studies: the case of the Plantoid, a robot replica of an organic plant root that mimics root adaptive behaviors and strategies for soil exploration. Its inventors, *Barbara Mazzolai* and *Pericle Salvini*, explain how the artificial roots are able to grow and penetrate the soil, and how the robot "perceives" and responds to its environment. They then go on to discuss the ethical implications of robotic plants. Could plant robots, for example, destabilize the relationship between humans and plants in significant ways? If so, would that necessarily be for the

worse? For centuries, plants have been wrongly thought to be inferior to other living entities, incapable of moving, without intelligence and sensorial and perceiving capacities. Mazzolai and Salvini suggest that plantoids could improve human relations to plants by raising awareness of plants' complex behaviors, adaptive strategies, and unobvious and not yet fully understood capacities.

These nineteen contributions make up for the first volume thematically dedicated to plant ethics. They paint an intentionally mosaic picture whose aim is to give readers a sense of just how complex and multi-faceted is the role of plants in our lives. The book is not meant to set any truth in stone: it is a seed that we plant in the field of environmental ethics, in other fields of applied ethics, and of philosophy more generally. We hope that it will branch to expand our philosophical imagination in new directions.

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