Routledge Environmental Humanities

PLANT ETHICS

CONCEPTS AND APPLICATIONS

Edited by
Angela Kallhoff, Marcello Di Paola and
Maria Schörgenhumer

ROUTLEDGE

Plant Ethics

Large parts of our world are filled with plants, and human life depends on, interacts with, affects and is affected by plant life in various ways. Yet plants have not received nearly as much attention from philosophers and ethicists as they deserve. In environmental philosophy, plants are often swiftly subsumed under the categories of "all living things" and rarely considered thematically. There is a need for developing a more sophisticated theoretical understanding of plants and their practical role in human experience.

Plant Ethics: Concepts and Applications aims at opening a philosophical discussion that may begin to fill that gap. The book investigates issues in plants ontology, ethics and the role of plants and their cultivation in various fields of application. It explores and develops important concepts to shape and frame plants-related philosophical questions accurately, including new ideas of how to address moral questions when confronted with plants in concrete scenarios.

This edited volume brings together for the first time, and in an interdisciplinary spirit, contemporary approaches to plant ethics by international scholars of established reputation. It will be of great interest to students and scholars of Philosophy and Ethics.

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A neo-Aristotelian approach to plant ethics

Angela Kallhoff

Plants have a range of specific characteristics. They grow throughout their life. They have a big surface and they are territorial creatures. They only need water, chemicals, and sunlight to survive (Larcher 2001). Plants are also useful resources for humans. They are the basis of the food chain. In addition, plants are also very beautiful. Plant life delivers a rich diversity of forms and of colors. Processes of plant self-development and the ever changing forms are elements of an extraordinary aesthetic experience (Böhme 1989).

In this chapter, I wish to combine these insights into the value of plant life with another perspective on plant life. Under non-detrimental circumstances, each single plant has the capacity to flourish. The concept of "flourishing" has gained momentum in the re-interpretation of Aristotle's notion of the good life of beings (Cooper 1986, 89). Following Aristotle, the concept of flourishing is the measure of the good life of all beings that have a soul, where a "soul" is the principle of life. Living beings as diverse as humans, animals, and also plants have souls, and each of these beings possesses a distinct range of innate capacities. All living beings that have souls are also capable of flourishing: of developing their own good life according to a set of innate capacities.

Sorabji explains this Aristotelian extension of the concept of a soul to plants:

> But how, then, does he [Aristotle] justify continuing to attribute a soul to plants? By extending the concept of soul, so that the non-conscious processes of nutrition and growth will now count as an activity of the soul. This extension may sound strange to us. But appeal to a (non-conscious) soul is needed, Aristotle thinks, to do justice to such facts as that a plant does not expand haphazardly, but preserves, or develops, a certain distinctive organization.
>
> (Sorabji 1975, 44)

New findings in contemporary botany contribute to the insight that plants have innate capacities and develop what might be called a "distinctive organization". In particular, in taking into account these findings, a two-sided account of the "good life" of plants can be established (Kallhoff 2002; 2014a). On the one hand, flourishing has an empirical side: a plant that flourishes fulfills its

particular life-cycle; it is vital and copes successfully with episodes of external stress throughout the life-cycle; and it realizes a set of species-specific capacities also visibly expressed in a specific morphology. On the other hand, flourishing has an evaluative side: it is a concept that indicates the "good life" of a plant. Although this "good" is a pre-moral notion (Frankena 1979, 1–10), it is in important respects comparable to notions of welfare in other living beings. At a minimum, effects on plants that support flourishing or are detrimental to flourishing can be categorized as "beneficial" versus "harmful", whereas "beneficial" is preferable, when not outweighed by other, more important considerations.

A good life is the best situation that a single living being can realize. As for plants, this does not amount to a life without episodes of stress or duress, as plants need stress in order to develop strength (Larcher 2001). A plant's flourishing makes for a good life of a plant, in that the plant succeeds to accomplish its life-cycle and thereby realizes a full range of capacities, including proliferation, without suffering life-impeding harm. In short, flourishing is an empirical-cum-evaluative concept of plant life.

The concept of flourishing is helpful in plant ethics for three reasons. First, this concept has a distinct empirical content, so that it provides a yardstick for assessing which causal effects are harmful to a plant and which ones are beneficial. Authors who argue against plant ethics usually also presuppose that plants cannot experience harm. This reservation can now be rejected: even though plants do not feel pain, flourishing provides a theoretical frame for assessing harm to plants.

Second, even though flourishing is a pre-moral notion of the good life of a being, such notion carries evaluative weight. Plant ethics argues that humans have an interest in the flourishing of plants. Yet, besides this, it also matters to the single plant whether or not it succeeds in flourishing. In order to avoid anthropomorphism from the beginning, I do not wish to frame this in terms of "concern" or "interest" of the plant. In my best understanding of plant life, plants do not feel pain, nor are they conscious in any way comparable to animals and humans (Larcher 2001). But since plants invest in their flourishing, it apparently matters to them whether or not they flourish.

Third, neo-Aristotelianism helps to discuss plant ethics anew in one further respect. Neo-Aristotelians are not only interested in a concept of the good life that is closer to the characteristics of the living organism than are preference-based and desire-based accounts of the good life. Neo-Aristotelians also discuss concepts of a good life as part of at least a temporary vision of peaceful co-existence of a variety of different types of living beings. A neo-Aristotelian plant ethics thus provides not only new ways to generate a more comprehensive vision of the good life than one reserved to humans and non-human animals alone. It also underscores the possibility of peaceful and fruitful co-existence among different beings, as it sees the flourishing of one entity as not necessarily detrimental to that of other living beings that flourish according to their capacities. Instead, a "temporary cosmos" is envisioned: a scenario in which all living beings succeed in mutually supportive, at least non-destructive co-evolution.

This chapter unfolds as follows: the first section outlines the concept of flourishing in its application to plant life. The second section argues that the flourishing of plants matters in ethics, and provides a short sketch of the background of what I labeled "plant ethics" in an investigation of the concept of "flourishing" and principles of moral concern that relate to that insight (Kallhoff 2002). The third section proposes to distinguish various types of human–nature relationships. In each of these spheres, flourishing has a different moral meaning. The conclusion highlights further perspectives in plant ethics that work with a neo-Aristotelian approach.

Plant flourishing

Plants differ radically from humans and non-human animals. In order to give an empirically correct assessment of plant life a first, obligatory step is to consult botany (Larcher 2001). Plants react in a multitude of different ways to their environments. As sedentary organisms and due to a particularly big surface, they are confronted with what botany classifies as "stressors" of all kinds (Hirt 2009). Studying the reaction to stress in plant life helps us to understand what plants do and how they live. In particular, capacities to discern effects that result from different surroundings, and capacities to eject chemicals that serve as signals to other plants, have been studied (Heil and Karban 2010).

Three central aspects of plant life are remarkable. *First*, plants are units that respond systematically to stimuli. In this context, botanists also employ the concept of a "strategy": in order to survive in an ever changing environment, plants employ strategies that guarantee the continuation of this functional unit. *Second*, plants organize themselves in ways that support not only their long-term survival, but also the completion of a life-cycle and the continued exercise of a multitude of metabolic activities, leading to proliferation at least once in a lifetime. *Third*, plants strive to realize morphological and functional structures that are characteristic of the species and of members of the kingdom of plants. In short, a plant flourishes when it realizes a full life-cycle, when it develops its characteristics during this process, and when its vitality (its continued stress-responsiveness without loss of capacities to react strategically and without illness) is kept intact.

In this interpretation, a plant is still a unit that develops through time by transforming energy and chemicals into new materials. But instead of interpreting plants exclusively as functional units, as "survival-machines", an Aristotelian interpretation states that each plant has a set of plant-capacities, including nutrition, growth, and proliferation. These capacities are innate and a plant thrives when realizing them in specific ways, which include a distinct morphology.[1] Throughout the life-cycle, a plant struggles with aversive external stressors in order to fully realize the shape and the basic functional units that can express its innate capacities in various phases of its life-cycle. The evaluative side is provided by assessing these processes with reference to a description of what deserves respect in a moral framework. An argument for the moral significance of flourishing in a moral framework is given in the next section.

The assessment of damage and harm to plant life

The first important advantage of placing emphasis on flourishing is that this notion offers ways to define "harm" to single plants. When it comes to plants, harm indicates causal effects providing obstacles to flourishing. By poisoning a plant or sabotaging its habitat, we make it difficult (or at least more difficult) for a plant to flourish. Yet, we cannot conclude from this that harming a plant is morally wrong: we must also address the question of why harm to a plant or the opposite matter and if so in which way they matter. A first insight is provided by discussing the meaning of "good" in the context of harmful or beneficial causal effects on living beings.

Georg Henrik von Wright (1972, 9) explains that there is a special meaning of "harmful" when applied to the life of living beings: it is the opposite of effects on living beings that are termed "good for" that being. Calling something "good for" or "beneficial to" the life of a being does not only presuppose that the being is capable of doing better or worse, but also that it is doing better or worse has an axiological component. By calling something "good for" that being we do not only mean that there is a certain effect on that being, but we also evaluate that effect as being positively correlated with the good of the being. Von Wright states that there necessarily is an axiological component involved when addressing a beneficial causal effect on a living being:

> The other component . . . concerns the relations of these effects [useful or beneficial effects] to that which we have termed the good of a being. This is not a causal relation. It is more like a relationship of belonging.
>
> (Von Wright 1972, 49)

Note that this is a different way to explore the meaning of "good" than proposed by biocentric authors who relate the good of the being directly to the capacity of that entity to live (see e.g. Attfield 1981; Taylor 1986). In particular, I do not employ the concept of a "value", as the application of that concept to natural beings is difficult and controversial (see Pellegrino in this volume). Instead, the common usage of "beneficial" and "harmful" reveal that in generating effects on plant life, is it not only their well-being that is at stake. Instead, the assessment of these effects already implies that beneficial effects are "good for" that being in terms of enhancing something that should be taken into account, namely its flourishing; and harmful effects are "bad for" that being in providing obstacles to flourishing. This also proposes that beneficial actions are prima facie unproblematic, perhaps even desirable, whereas harmful actions need to be assessed in a framework in which "harm" needs to be debated anew.

Today, we know that plants are much more complex and responsive beings than generally presupposed. It has been argued that plants are particularly intelligent beings that build intelligent networks with their roots (Mancuso and Viola 2015). It has also been argued that plants can communicate via airborne signals (Heil and Karban 2010) and via intelligent root systems (Johnson and Gilbert 2015). Some have even argued that plants have mnemonic and learning

capacities (Affifi 2013). Even granting all that, though, it remains true that plants differ significantly from humans and animals. Yet, the argument from a lack of complexity is fruitless. Moreover, respect regarding the flourishing of individual plants means attention to the distinction between harmful and beneficial effects on the lives of plants. Different from a value-model and different from a status-model in ethics, the main reason for claiming moral attention to flourishing is not that plants are welfare subjects, even though this assessment can be right when "welfare" is explicated in terms that fit the life of plants. Instead, what matters is whether or not actions and their consequences turn out to be harmful or beneficial.

My proposal to profit from a neo-Aristotelian interpretation of plants gives space for various types of harm to plants. In particular, supporting and respecting the flourishing of plants is in many ways not only desirable but also in the deep interest of humans. It is flourishing apple trees that provide the apples! Since the flourishing of plants is coupled with a full life-cycle of plants and with proliferation, humans who live from fruits, vegetables, and parts of plants need plants that flourish.

Philosophers usually also ask another question: They want to know whether or not causal effects matter to the plant itself. This question does not have to be decided in a neo-Aristotelian framework. There is, however, some evidence that even this might be the case: *First*, even though we do not know what it is like to be a plant,[2] it might matter to a single plant whether or not it flourishes. Plants show signs of suffering from stress; when confronted with overwhelming stress and harm they die. Even though this does not hurt them, it is bad to the plant. *Second*, the crucial question in plant ethics is whether or not we or certain other actors should care about the effects of actions on the flourishing of plants. This is the choice of constructive behavior regarding plants as opposed to destructive behavior. Even though it is not the space here to outline the underlying moral framework in detail (see Kallhoff 2002), it can be argued that constructive behavior is choice-worthy and morally recommended. Introducing this insight in the assessment of effects of actions and processes on nature is an important first step in arguing an environmental ethics that includes respect for plant life.

Areas of concern: wild nature, cultivated nature, utilized nature

Persons interfere with plant life in many ways. In the age of climate change and systemic ecological crises, the anthropogenic effects on vegetative nature are even deeper and more comprehensive than they used to be. In order to make plant ethics concrete, it is helpful to divide attention to plant life according to what spheres of the human–nature relationship they are encountered in.

Following Taylor (1986), nature can be divided into different spheres according to different relationships between humans and nature. The first sphere is *wild nature*, which is nature largely untouched by intentional human designs and processes. Even though wild nature may not exist in the literal sense – as

significant and long-lasting anthropogenic influence is at work in all corners of the planet – there still are areas of nature that are not excessively disturbed by human infrastructures and development, some of these areas have been given the status of "national parks". Wild nature in this non-literal sense also exists in cities and in the midst of cultivated nature. In all these cases, respect for the flourishing of plants claims leaving nature alone. If we want plant life to keep on unfolding evolutionary processes undisturbed by humans, we need to leave and make space for "wild" nature. Plants need space to which they have been adapted and which they can use for developing new species.[3]

The second sphere is that of *cultivated nature*. Part of what makes for a civilization is precisely this cultivation of nature, and particularly the breeding of plants. Cultivated nature includes landscapes shaped by farming, horticulture, and agriculture. Respect for the flourishing of plants in this second sphere demands, among other things, that cultivation techniques are chosen so that plants can develop their typical characteristics and fulfill their life-cycle. In this second sphere, however, plant ethics expands its concerns beyond the flourishing of individual plants, as the cultivation of nature is the collective enterprise to shape natural resources and landscapes. Respect for flourishing becomes here part of a much broader assessment of the value of plant life, extending, for example, also to issues in water ethics and sustainable land use.[4]

The third sphere is that of *utilized nature*: nature that is transformed and used so that its most basic life-processes are shaped and modeled by humans and in view of human objectives.[5] Nature is utilized when cells are modified, in smart farming and when working with biofacts (Karafyllis 2001). When utilizing nature, plant ethics can at least shift the burdens of proof when judging technologies and methods of breeding. Note that to say that plants have the capacity to flourish does not necessarily mean that each single plant should flourish. It does mean, however, that technologies which have a deep impact on plants' capacities to flourish need to undergo a particularly thorough scrutiny. I have argued elsewhere (Kallhoff 2009) that technologies which prevent plants from generating seed, as for example the terminator gene, should be criticized as mistreatment of plant life.

When it comes to utilized nature, it is difficult to judge whether controlling plant life through smart farming, or changing the most basic characteristic of plants by means of genetic engineering, is right or not. Ethical deliberation in these cases will include principles of precaution, but also debates about sustainability. Here again, plant ethics wants manipulation to be justified: technologically innovative breeding technologies are needed in order to enhance the food supply, but they still need to be evaluated in reference to a number of criteria, including their effects on plant flourishing. Against the backdrop of an ethics of plant flourishing there is also a difference between using plant tissue or cells in order to develop new materials or medicines, and designing plants that can no longer flourish on their own. Unlike the former, the latter technologies undermine that which plants essentially are: a life-form that strives to develop a good life.

Conclusion

In this chapter, I have argued for an interpretation of plant life that mediates between two opposite ideas. Plants are neither presented as having moral standing because of some plant-self that claims respect; nor are plants regarded as entities that are morally comparable to stones that can be kicked around. Instead, the study of plant life in botany tells us that plants strive to realize a life that is good in their own terms. They strive to flourish.

As for the moral conclusions that have been drawn from this interpretation of plant life, I have argued for a cautious and multi-faceted way to argue plant ethics – yet one that takes flourishing as its baseline. Even though plants do not suffer in a way comparable to the way that animals suffer, they can objectively be harmed or benefited. Following an analysis of von Wright, the categories of "the beneficial" and "the harmful" have a causal and an axiological component. Both can be applied to plant life. Following this assessment, it is also right to claim respect for flourishing, yet without claiming that it is the plant itself that matters. Instead, the anchor that an approach to flourishing provides for a moral theory is the distinction between constructive behavior as opposed to destructive behavior regarding plant life. I have also argued that three spheres of human–plant relationship need to be distinguished. The distinction helps us translate the rather abstract claim to respect plant life into principles of adequate treatment of plants in different contexts.

Since life on Earth is competitive, it is important not only to respect a variety of life-forms; it is also important to discuss cases in which decisions that are harmful to some and that are good to others need to be made. Overall, a neo-Aristotelian approach seeks to argue for win–win scenarios whenever this is possible. In particular, it draws attention to sensible categories in plant life, including water supply, soil, and space more generally. The enhancement of conditions of plant flourishing is not only a sound claim in a plant ethics. It is also part of a more comprehensive approach to an ethical framework that takes the living-conditions of various types of beings seriously. If humankind wishes to continue to live a good life on planet Earth, it is important to respect plant life.

Notes

1. I do not imply the concept of a "species", because this concept is not only highly controversial, but also rather a rough guide to the cartography of the diversity of life-forms. For the concept of "flourishing" it suffices to call attention to inborn capacities that are expressed in typical ways by comparable living beings. This approach fits the proposal of Thompson to speak of a "life form" in terms of specific and particular ways to realize shared capacities which are typical of groups of living beings (see Thompson 1995).
2. This sentence is of course meant to provide an analogy to Thomas Nagel's famous article on animal life. He argues that we persons simply cannot know how it is like to be a distinct animal (Nagel 1974).
3. Therefore, "ecological space" is particularly important in plant life. The category of "ecological space" and its moral dimensions have recently been explored in (Hayward

2017). Hayward regards ecological space as morally important for human beings, but I believe the notion can usefully be extended to plants, as the most basic condition for the life of individual plants to unfold and for plant species to evolve.

4. A proposal for a value-based assessment of the design of water-resources that also includes ideas about fairness to nature is in Kallhoff 2014b.
5. Note that this sphere differs from Taylor's (1986) proposal.

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