Plant Ethics and Botanic Gardens

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In this paper I briefly explore whether plant ethics can make sense and discuss the important role that botanic gardens may play in our grasp of plants as subjects. I begin by considering various prima facie difficulties to the development of a plant ethics. After this I suggest that encountering plants as subjects may be a pre-condition for ethical considerability of plants, however such an attitude may be further justified theoretically. In this context I propose that, at least among spaces accessible to urban populations, botanic gardens may be particularly well suited to facilitate encounters with plants as subjects. I conclude that the development of a reflected practice of plant ethics may contribute in a significant way toward a change to less environmentally destructive practices.

Can plant ethics make sense?

Can we avoid killing or otherwise harming plants and still survive?

Plants have seldom featured in contemporary discussions of ethics, and, when they have made an appearance, this has been mostly to illustrate the kind of cases in which we do *not* grant them a role, *per se*, in our ethical life, presumably because of their lack of sentience.[2] This, despite the fact that animal life, human life included, is directly dependent on plants for food and that, in contrast to other features of our environment on which we depend, such as air, water or table salt, plants are *alive* and, in many ways, *responsive* to interventions in their proximate space. (We may add that, as it happens, we also owe the oxygen in the air, and much of the filtration of water, among other benefits, to plants.)

The present, newly enlivened, discussion regarding plant ethics seems to have taken a boost from the bold proposal by the Swiss Government's Federal Ethics Committee on Non-Human Biotechnology[3] for concrete measures to respect "the dignity of plants".[4] The measures were sparked by the "brave new world" possibilities of biotechnology, such as Monsanto's "terminator" technologies (GURT). These measures have provoked the dismay of some results-oriented biotechnology researchers, who fear that these guidelines and requirements represent a further barrier to freedom in scientific research,[5] but also generated some interesting new discussions about plant autonomy.[6]

Just thinking of the possibility of a plant ethics leads to a number of questions about the very *feasibility* of such an ethics. If ethics has to do with right and wrong, should right and wrong not be impacted by what is possible? In philosophy it is assumed that "ought implies can", that is, that ethics should not demand the impossible. So, is acting ethically toward plants *possible* if human beings, naturally, *also* want to survive? For, it would seem that, barring some kind of future advances in synthetic chemistry, human beings are utterly dependent on plants for their own

survival – either immediately, by direct use – or mediately, through the use of plants by animals and our subsequent use of those animals or their products. For the time being, in any case, human beings require the products of plants, be they fruits, roots, sap, leaves, stems or tubers, just as they require oxygen.

One may think of the problem in analogy with the necessity of breathing. As climate science has argued, emissions of CO_2 are a major contributor to the present process of climate change, which is expected to cause major upheaval for living things on Earth from here into the future. As such, any emission of CO_2 to the atmosphere not duly compensated by a corresponding amount of CO_2 absorption should, in principle, be considered ethically problematic but, does that mean that we should stop breathing if, at the time, we have no ready way to compensate for this? To suppose that the answer is yes would seem difficult to accept, but, what is wrong with the reasoning, if anything?[7]

With regard to plants, in any case, one may say that we are utterly dependent on them and cannot avoid it. Perhaps it may be suggested that, under such circumstances, how to act regarding plants becomes a matter of *etiquette* more than ethics. According to this line of reasoning, since we (feel that we) *have* to live, the question might rather be to determine what would be "polite" behaviour toward plants, under the circumstances. In analogy, we can imagine, for example, becoming unintentional guests on a sailboat crossing the Pacific as a result of a shipwreck or similar. Until the sailboat docks at some (friendly) port we may need to live off its stores, either openly or secretly. On the assumption that the only other option would be to jump ship and drown, we seem reduced to no option but to mooch (this is supposing that the Law of the Sea does not grant food rights to stowaways). Is this unethical?

Presumably the answer depends on whether important interests of any beings with moral standing are being affected by this action (e.g., if our decimation of the stores would endanger the survival of the crew and other residents on the boat). If no such important interests were harmed, we may still wonder whether there are not matters of etiquette involved. For example, should we stowaways limit our consumption from the ship's stores to the minimum amount, so as to minimise harm to the legitimate owners? Should we avoid drinking the champagne and eating caviar – if other beverages and foods were available? Should we try to compensate the ship's purser after the voyage by paying for the stores used? Possibly the answer is yes, but perhaps these concerns are only matters of etiquette or politeness, and not truly part of ethics, if no serious harm foreseeably comes from the action.

The case of using plants may be considerably more serious than the case of using the ship's stores by the stowaways, however, since using plant products as food often means that the plants themselves die. Logs used as construction materials or to make paper generally cannot be obtained without destroying trees, carrots and radishes cease living once extracted from the ground, cabbages and broccoli plants die when harvested. Nonetheless, surprisingly, it turns out that, in large measure, when we obtain food from plants we *need not kill the plant*, as in all the cases in which fruits, seeds, nuts, or "spare", non-essential, leaves (e.g., *nopales*/*Opuntia*) are consumed. This is the case with *most staples*, such as wheat, rice or the various sorts of beans (legumes), which are seeds normally harvested after maturity of the plant. It is also the case with regard to all the food items that, in common parlance, are called "vegetables" but really are *fruits*, such as tomatoes, squashes (such as zucchinis and pumpkins), cucumbers, or tubers (such as potatoes).[8]

So, given that there are plenty of plant foods that do *not*, in principle at least, require actively killing the plants from which they come, perhaps it is *not* so paradoxical to think of plant ethics as a reasonable project. There are many reasons to engage at the

very least in an *etiquette* with regard to the use of plants. For example, while most fruit consumed in the world comes from plants that receive considerable care from concerned orchardists, if trees did not *already* have a disposition to offer their fruit *gratuitously* there would not be anything to be harvested at the end of the season. In other words, when we obtain food from plants we are in receipt of many unearned benefits – a gift from plants, as well as from generations of dedicated agriculturalists, who selected the most valuable qualities in former specimens for our uses and predilections and thereby created the stock of our present useful plants.

Can an ethics regarding plants make sense if plants are not sentient?

As noted already, at least in mainstream philosophy, the question about ethics with regard to plants barely ever gets raised (with notable exceptions), even while ethical issues regarding animals have been taken relatively seriously since Jeremy Bentham.[9] Even the consideration of the intrinsic value of ecosystems, which would seem to be a much more vague topic than the consideration of individual plants, became the subject of debate in the 20th century, while plant ethics has no entry in philosophical encyclopaedias. The reason seems straightforward. Plants lack that which would seem to be a basic pre-condition for ethical considerability, namely *sentience*. Without sentience it is difficult to understand how some being could *care* about what happens to it, and, consequently, it seems correspondingly difficult to state why anyone should be concerned when his or her actions affect such beings.

This take on the status of plants has faced opposition, however. J.L. Arbor already objected to this line of reasoning in 1986 as being hasty and guilty of a fallacy based on human chauvinism.[10] Insofar as plants are capable of attaining certain end-states – toward which they visibly strive, it would seem that *they can be harmed* if they are prevented from reaching them. Hence, they may be ascribed interests in certain goods, such as sunshine, water and dirt, needed to attain those end-states. From this perspective, the mainstream, which treats sentience as a *sine qua non* for moral considerability, seems to be caught in fallacious "sentientism", which, in its exclusion of plants, may be as arbitrary as anthropocentrism in its exclusion of non-human animals.

To talk of end-states and of being directed toward attaining such states as sufficient for moral consideration poses its own quandaries, of course, for we can ask why various types of computational programs, or such programs properly attached to robots if you will, or some further complexification of this sort, do not also qualify as entities deserving of moral considerability, since, on the face of it, they would be harmed if interrupted in their "normal" progression. Asking such a question presumably would be intended to provoke the response that this makes consideration of harm in non-sentient beings *nonsense* since we already *know* that inanimate stuff – even if electrically actioned, electronically managed, computationally guided and, in some circumstances any way, behaviourally indistinguishable from human beings (as when solving problems for which it has been duly programmed) – is not really thinking, feeling, being sentient, or desiring anything, in short, does *not* qualify as morally considerable.[11]

In the case of plants, there is, of course, a set of features that makes ascription of the possibility of harm much more reasonable than in the case of computer software, insofar as plants are living, organic beings that visibly share with human beings and other animals the striving for continued life, as already noted by Aristotle.

Recognition of capacities and needs as pre-conditions for a plant ethics

The discussion so far should lead us to review what could be the foundation for ethical consideration of non-standard cases. Complementing Hall's historical purview

on plant ethics, we may look at the history of humanity from an anthropological perspective and note that, for traditional societies, ethics has *not* commonly been exclusively limited to relationships with *human* beings,[12] even if standard histories of ethics may suggest otherwise. Apparently, only as agriculture, and the urbanised settlements that it made possible, proliferated did ethics primarily become a way of thinking about the good life of humans in separation from the rest of beings, and right and wrong became defined in terms of modes of intra-human relations.[13] This history is still being written.[14]

It is clear that relationships to the non-human were a point of interest only to a minority throughout the early period in European history for which we have a written record.[15] Throughout the Middle Ages, the Christian faith was interpreted in such a way that human beings were considered superior to the rest of the natural world.[16] Only after utilitarians, such as Bentham and John Stuart Mill, introduced an alternative principle of rightness of actions, not based on human dignity but on sentience, did an ethics regarding the non-human become a potential topic for mainstream discussion. As it happens, most arguments for the moral considerability of animals hark back to, or at least depend on, the attribution to animals of sentience, which they share with humans. This standard, ironically, has been associated with further ethical exclusion, "by simply extending the moral boundary to those "most like" humans."[17]

While the debate has focussed on whether sentience is a sufficient ground for moral considerability, it is noteworthy that the first argumentative move here is the demand that the exercise of a *certain kind of capacity* or the satisfaction of a *certain kind of need* be considered *morally relevant*. Typically, this argumentative move plays itself out regarding a diversity of non-standard *human* cases. So, our responses, both as individuals and as societies, to the special needs of certain human beings, whether they are non-sighted, deaf, or otherwise challenged, are *ethical* matters because we recognise that their overall capacities to lead meaningful lives and associated needs should be considered. On the obverse, the standard response of *not* continuing with life-sustaining procedures in the case of human beings who are in an incurable comatose condition is based on the supposition that these individuals have *no more capacities* to exercise or associated *needs* to satisfy.

So, the basic move is to ask in what ways a particular kind of capacity, or need deriving from the capacity, comes into play in some particular case, and then to realise that one ought to have certain attitudes toward these individuals, leading to certain supportive actions. The subsequent argument form usually is analogical, insofar as it is asked what one would oneself want to be done, given that one had the particular needs and capacities in question. In cases in which what would be good for oneself would also be bad for another, this would raise questions about fair coordination, of course. The basic move, however, is straightforward.

Given this basic argumentative structure, it would seem that the possibility of a plant ethics is *not* so far-fetched, insofar as, in our deliberations regarding right and wrong action, we are able to identify with many of the *capacities* of plants (capacity to maintain itself alive, to reach particular end-states of growth, to generate seed, and so on) and to empathise with their corresponding needs (for air, water, appropriate sources of light, suitable habitat or ecosystem, and so on). Following a quasi-Rawlsian approach, right action or policy would be that which *we* would choose, from behind a veil of ignorance, if *we* were in the circumstances, endowed with such capacities and beholden to such needs, as plants are.

The stumbling block for plant ethics then probably is mostly *a failure in imagination*, since we are likely seduced into thinking that, if we were not able to *experience* anything (if we were not sentient), then *nothing* would matter to us, even if we

were deprived of goods necessary for the exercise of our capacities.[18] It is notable, however, that, in certain circumstances concerning humans, we *do* speak of right and wrong, as a result of certain deprivations, even if we suppose that we may not experience anything untoward as a consequence.

One may imagine fancy cases involving some kind of harm to one's body that does not produce any noticeable symptoms but shortens one's life by a non-negligible amount of time. Or the more run-of-the-mill cases, discussed in philosophy textbooks, such as libellous claims that eventually generate a bad reputation for someone, but which, during his or her lifetime, remain without direct effects for the individual targeted by a fluke. (Cases of non-compliance with the wills of deceased individuals are more controversial, since it is unclear to whom a harm is done if the deceased do not exist to experience the effects of the actions in question.) In all of these cases it would seem that intuitions may be drawn toward the supposition that one need not *experience* something in order for *harm* to occur, which makes the case of harm to plants, if their functioning is interfered with, more plausible, and hence argues for the possibility and reasonableness of a plant ethics.

Is there an already existing plant ethics?

So, what stops plants from being recognised as being part of the moral community in the mainstream of contemporary societies? The reasons would seem to be partly ideological, stemming from the denigration of plants to third place in the hierarchy of beings (following humans and animals) in Judaeo-Christian and Greek thinking, partly systemic, due to the fact that, within the prevailing capitalist system, all things tend to be reduced to mere place-holders for monetisable value, and partly epistemological (and perhaps ontological), as a result of rapidly growing dis-acquaintance and dis-connection in our urban, technologically-oriented societies, with things "outside" the human, artifactualised, sphere.

Plants *do* have a presence in our societies but primarily in instrumental terms: as harvests (even in terms of merely potential harvests, traded on the futures markets before the corresponding plants even come to exist), as potentially profitable targets of ever innovative weed eradication treatments, as decoration for upscale neighbourhood landscaping, as surfaces and surroundings for golf courses or soccer fields, and even as tools to "draw down carbon" out of the atmosphere to mitigate greenhouse gas emissions.

This being said, there is an evident yearning for a closer acquaintance with the plant world than that available through economically measurable transactions. This yearning is manifested in the continuing traditions of people from many European and non-European countries for hikes in forests, the creation, maintenance, and delight in, neighbourhood parks (wild or tended), the emotive reaction to and genuine concern regarding the effects of acid rain on forests (which in German is called "*Waldsterben*", meaning "dying of forests"), the worry concerning clear felling of the remaining rainforests, such as those found in the Amazonian region and on the coasts of British Columbia, and in the delight of most people in gardening.

It may be objected that, even among these people, the apparent membership of plants in the moral community does not seem to impede plants, or their products, from being consumed. This point is well taken, but interestingly some argue that precisely *this* fact may contribute to the flourishing of plants *as species*.[19] This is Michael Pollan's argument in the *Botany of Desire*,[20] who claims that, by providing human beings with substances that we crave, be they starch (as in potatoes), stimulants (as in alcoholic apple cider and marihuana), or decorative, aesthetically salient, sights (as in tulips), plants *domesticate us*, and are thereby spread by the hundreds of millions all around the

world. It may be objected to this reply that different types of cases are really at issue here since the fact that plants are planted in great numbers does *not* imply that they are *cared* for.

What seems crucial, however, is that, despite the fact that the issue of plant ethics has heretofore been largely overlooked by professional ethicists, plants already *are* the recipients of a considerable degree of care from people around the world, and often this care is not simply self-regarding, because of certain benefits for humans from plants. This would seem to indicate that many people already have a sense of right and wrong with regard to plants, even if they have no reason to believe that they are sentient.[21] Furthermore, in many non-Western cultures plants are cared for and explicitly granted moral standing.[22] The reasons are diverse, but much would seem to have to do with the fact that plants are ready enough to *gift* human beings with nourishment, shelter, medicines, and even aesthetic satisfactions. Interestingly, care for plants often is connected with the perception that plants should be seen as *subjects* and *not* as mere objects. We turn next to address this point.

Plants as subjects and botanic gardens

Matthew Hall has gone as far as claiming that we may consider plants as agents and even as persons. Given the difficulty in ascertaining whether their metabolic responses should be seen as actions fully comparable with what we call actions among human beings, I will content myself with considering the possibilities of recognising plants as *subjects*, and consider the role of botanic gardens in this context.

Plants as subjects

As of late, much has been written from a Levinasian viewpoint about the significance for ethics of recognising other beings *as others,* i.e., as beings with whom one has the equivalent of fact to face relations (be they cooperative, competitive or otherwise).[23] While we will not enter into this discourse here, I would like to point out the relevance of such a perspective for the issue of plant ethics.

Ethics presupposes that we acknowledge parts of our environments (human beings, in any case) as *others*, and *not* as mere background, or as furniture that may be manipulated or simply steered around, or as thing-resources to be exploited. Recognising others *as* others is to view them as subjects, that is, as beings that have, if not a full-blown (conscious) point of view, then at least a *telos* or goal-orientation and a potential trajectory that is at least partially defined internally (e.g., by genetic information). For some being to be recognised as an "other" or as a subject is no guarantee for ethical consideration, though, since we may not be ready to expand the moral community to some subjects; *without* such a recognition however we may exclude pre-emptorily beings that, on reflection, really ought to be included in our moral community. Unfortunately, examples of exclusion on the basis of *non*-recognition as others, and hence their non-recognition as subjects, abound: by down-grading to *non-subjects* the indigenous peoples of the Americas,[24] Africans, Australian Aborigines, and even women and children, their consequent exclusion from ethical consideration became straightforward.

As Hall notes,[25] plants have been effectively excluded from ethical consideration within the contemporary mainstream as a result of certain turning points in European history of thought, which include the embrace of the Aristotelian hierarchical perspective and the neglect of his student Theophrastus' more sophisticated approach to plants. Without attempting to retrace this history here we may note that, as a consequence, plants simply disappear from view as potential moral subjects in

European history of thought. In other words, plants are pushed into the background of human activity, nearly assimilated to the inanimate in terms of moral standing.

Sometimes it is mistakenly supposed that, in order for plants to be subjects one would have to suppose human-like sensations in plants. Recent research shows, however, that, irrespective of the question whether they have human-like sensations, plants show remarkable responsiveness as whole organisms in the face of what may constitute objective threats or opportunities for them.[26]

In other words, even if plants differ from human beings and animals in many fundamental ways (insofar as they lack central nervous systems, for example), there may be sufficient reason to acknowledge them as subjects, insofar as they are able to modify themselves and their environment in order to continue on their trajectories toward their own end-states. This much even Aristotle had already recognised when he included plants among those things that are goal-directed.[27]

Recognition of a being as a subject, however, does not necessarily mean that we suppose this being to be autonomous in a Kantian sense, i.e., as capable of envisioning its behaviour within a universe of possible behaviours and choosing from among them. It also does not mean that it necessarily is capable of recognising *itself* as an autonomous subject. Rather, it means that we come to see the being in question as active, guided by its own ("inbuilt" or independently developed) logic or mode of achieving ends. In the case of plants as in the case of animals, this logic reflects a whole evolutionary history of adaptation to environments such that, in acknowledging subject status to plants, we are opening ourselves up to performing a comparison between our own, human, evolved mode of being in the world and theirs. This implicit comparison of ways of being alive surely constitutes at least part of the pleasure experienced by gardeners, arborists and botanists in their interactions with plants. As I have proposed elsewhere,[28] and summarise next, botanic gardens offer outstanding opportunities to experience plants as active makers of their lives, i.e., as subjects.

Perceiving plants as subjects in botanic gardens

The relationship of people to plants in gardens is of a special sort, as many commentators have pointed out. While the temptation exists to assimilate gardens to the logic of market exchanges, insofar as they can serve as handy ways to lower household expenses for food (in the case of kitchen gardens), increase property values of the lot in which they are located (in the case of landscape or flower gardens), or even reduce costs of medical treatment, given the exercise and relaxation values that they afford gardeners, it is possible to carve out still other, more plant-relevant, roles for gardens. While a number of writers have already eloquently approached this more general topic,[29] very little attention has been paid so far to the case of *botanic* gardens.[30] Insofar as we are interested in the plausibility of plant ethics, I propose that, at least in an urban environment, botanic gardens may be sites that may most clearly show up the possibilities for approaching plants as *subjects* and *not* as mere objects.

Historically, today's botanic gardens can be traced to a diversity of planted sites with various sorts of aims, such as to serve as the re-creation of Eden, as "Physick Gardens" to supply herbs and medicinal plants to monasteries, as living warehouses – functioning as *en route* supply centres of vital fruits (such as scurvy-preventing citrus) to sea-faring, colonising nations (especially Britain), as intermediate acclimatisation points of exotic plants (such as potatoes and bananas) intended for ultimate cultivation in European countries, or even as keystones of eco-nationalist projects.[31] While in modern times the primary aim of botanic gardens was research and education, more recently roles have shifted. Presently their primary functions seem to be as recreational displays for urban populations that are relatively cut off from other sorts of "green spaces", and

as sites for *ex situ* plant conservation of species threatened by land use changes and, increasingly, by climate change.

When botanic gardens are seen as sites of research, education and recreational display, plants mostly seem to function as *objects*, manipulated to address particular research questions, for the achievement of educational goals, or for the entertainment and relaxation of garden visitors. When we think of these gardens as sites for *ex situ* plant conservation, the situation is slightly different. The aim here is not to benefit humans in some way (at least not immediately or directly). In these cases, plants, as representatives of certain species, are being considered as worthy of protection and care, largely for their inherent value, that is, for a value that human beings recognise in them *as such* and not merely because they are useful for the satisfaction of some (immediate) human interest. From this perspective, the relation between humans and plants in botanic gardens seems best to be described as *stewardship*.

Even so, one may ask about the ultimate aim of such conservation efforts, and whether under this description plants are perceived as *subjects* rather than *objects*. Are these botanic gardens, so conceived, intended as **biodiversity reserves** for some future, unspecified regeneration *in situ* (despite the fact that *ex situ* conservation generally is undertaken only if *in situ* maintenance of species is not possible)? Are these plant collections rather intended as museal displays, converging in this way with the aims of botanic education or recreation noted already? Or are conservation efforts really undertaken because of un-self-interested respect for the continued existence of diversity in plant species?

I propose that, apart from the roles for botanic gardens mentioned so far (as sites for research, education, recreational display and conservation), these sites are exemplary as spaces that make possible an encounter with plants *as subjects*. Of course, *any* plant-based garden, even those not designated as *botanic*, is a site of *collaboration* between plants and human beings. As gardeners know, there is nothing purely mechanical in the creation of a flourishing garden, and human beings have to limit themselves to the facilitation of the conditions under which plants may express their potential. (Aristotle already noted that plants share with human beings and other animals the characteristic that they actualise, or seek to actualise, their potentials.)

This being said, there are various "straightjackets" that can be foisted onto plants in ordinary gardens, such as the application of topiary techniques, the intentional pursuit of stunted growth (as in Bonsai trees), or force-feeding based on artificial fertilisers.

In this context, botanic gardens certainly are special insofar as the aim of such spaces is to allow certain sets of plants *to freely express* their originary characteristics (in other words, to "realise their potential"), with minimal interference by human beings in their development (even if the spaces in which they are placed, of course, are thoroughly prepared by humans). As such, botanic gardens more readily allow for the experience of plants *as subjects* by facilitating the recognition of their capacity to reach their own ends.

Certainly, nothing can replace the kind of possibilities for the full and free expression that plants can find in their environments of origin, since there are climatic, edaphic, and ecosystemic subtleties present in their places of origin that may be hard to reproduce in humanly made botanic gardens. Nonetheless, to city-dwelling people of today, botanic gardens offer several advantages over their wild counterparts. For one thing, accessibility. Most people simply do not have the financial means, time or expertise, to frequent wild, vegetated places outside their cities, and less to travel to the many places from which the plants existing in botanic gardens come. Furthermore, botanic gardens have the advantage that they usually feature introductions to the plants

on site through labels and tours, facilitating thereby a deeper insight into their mode of existence. These gardens, moreover, offer aesthetic experiences to ordinary people that they would not have had even in the places of provenance of the gardens' contents.

In summary, insofar as in botanic gardens plants are allowed free expression of their nature in a collaborative environment, such sites become valuable places for rethinking the place of plants in relation to human beings and provide the experiential context for the recognition of plants as *subjects*. In this way botanic gardens support the consequent possibility of the integration of plants in the moral community, and of the corresponding development of a plant ethics, or at least of an appropriate etiquette.

Conclusion

While plants have been much neglected in ethical discourse, the supposed difficulties for plant ethics mostly turn out to be merely apparent obstacles. For one thing, the lack of sentience of plants need not be considered as an insurmountable impediment for the justification of such a plant ethics. Notably, there is a clear sense in which plants can be harmed, since plants have end states toward which they strive and capacities that can be thwarted. Furthermore, the application of such an ethics need not mean that human beings could *not* survive, since the ethical considerability of plants need *not* mean that plants or many of their products cannot be used. The fact that, in practice, plants often *already* are being cared for by attentive people around the world, moreover, works as a kind of "material demonstration" for the possibility of a plant ethics.

Plants certainly are the most abundant life form visible to most people. They fulfil a great number of vital functions for animals, human beings included, ranging from the provision of oxygen and the production of nourishment to the furnishing of materials for shelter and heating materials. Nonetheless, for the most part, plants are seldom seen as ethically considerable for themselves. In this paper I have suggested that one important step toward addressing plants from the perspective of ethics is their recognition *as subjects*, since attributing subjecthood to an entity means that it is to be considered as an "other", a being that, in facing us, requires a response from us. As subjects, plants are seen as beings that shape their own trajectories toward particular ends in active interplay with environmental conditions. I have suggested, furthermore, that botanic gardens provide especially good opportunities to perceive plants as subjects.

Even while botanic gardens are created and maintained to serve a multiplicity of functions, ranging from research and education to *ex situ* preservation of species in danger of extinction, their approach to plants is consistent with the recognition of the autonomy and subjecthood of plants. Insofar as in these gardens *the ends* of plants, namely, their realisation of their potentialities as the kind of plants that they are, precisely is *the means* for the achievement of the other ends that these gardens are designed for, these gardens direct visitors toward an appreciation of plants as subjects and not as mere objects. In this way, botanic gardens carry out an important service: they make available to visitors and staff the opportunity for seeing plants in close continuity with human beings in terms of intrinsic value, such that they may become objects of ethical considerability.

Practically, botanic gardens could even more explicitly integrate into their educational programmes the story of each plant species, and their individual specimens, as actors in pursuit of a place in the environment, while also contributing to the functioning of ecological communities and large-scale eco-systems. It may, furthermore, be valuable for botanic garden designers to dedicate exhibition space to the contrasting ways in which plants do grow if left to themselves in their particular niches, and how, in

industrial agriculture, treating them as mere means to fulfil human purposes (by being provoked to grow to inordinate sizes, for example) often undermines their adaptation to their provenances.

Lessons about plant subjecthood gained through visits to botanic gardens may then transform gardening in other spaces, such as in people's front or back yards, leading to greater cooperation *with* the natural tendencies of plants, leaving more room for local species, and to less aggressive ways of obtaining instrumental value from them (as through permaculture, for example). Ultimately, the broadening of ethical consideration to include plants will enable people to more easily develop the kind of inclusiveness of the non-human that is needed to counteract the self-defeating and destructive over-exploitation of the natural environment prevalent today. Consequently, the development of a plant ethics and of our perceptual sensitivity to recognise plants as subjects gains a special urgency, and botanic gardens acquire a crucial importance.

Notes

1. University of Victoria, Canada.
2. But see J.L. Arbor (1986), "Animal Chauvinism, Plant-Regarding Ethics and the Torture of Trees," *Australasian Journal of Philosophy*, Vol. 64, no. 3 (Sept. 1986), pp. 335-39; S.L. Warber, M.D. Fetters, P.B. Kaufman (2003), "Finding a moral compass for human plant interaction," *Alternative Therapies in Health and Medicine*, 9 (2), Mar-Apr, 100-105; and especially A. Kallhoff (2002), *Prinzipien der Pflanzenethik. Die Bewertung pflanzlichen Lebens in Biologie und Philosophie*, Frankfurt/New York, Campus Verlag. Among the few other philosophers from the Western World, besides Arbor and Kallhoff, who make mention of plants from the perspective of ethics one can mention T. Regan (2003), *Animal rights, human wrongs: An introduction to moral philosophy*, Rowman & Littlefield, who denies that they can be rights holders because they lack sentience, and P. Taylor (1986), *Respect for Nature: A Theory of Environmental Ethics*, Princeton University Press, who grants them inherent worth because they are alive, but goes no further into specifics concerning what this might mean for our treatment of them. C.D. Stone (2010), *Should Trees Have Standing? Law, Morality, and the Environment*, Oxford University Press, does argue for granting legal rights to trees and other natural objects, but does not discuss their moral rights. A. Schweitzer (1966), *The Teaching of Reverence for Life*, Peter Owen Limited, London, moreover, in the continental tradition, argues for respect or reverence for all life, which includes plants, but without going into any details regarding what this might entail for plants, in practice. More recently, M. Midgley (1994), "The Origin of Ethics," in Peter Singer (ed), *A Companion to Ethics*, Oxford, Wiley-Blackwell, 3-13, argued that plants, along with many other sectors of our world, have been neglected from ethical consideration without good cause. N. Hettinger (1994), "Valuing predation in Rolston's Environmental Ethics: Bambi lovers versus tree huggers," *Environmental Ethics*, 16, 3-20, discusses a "bias" in favour of plants in Holmes Rolston's environmental ethics, but does not address directly whether we ought to have ethical concerns about plants. (I owe this reference to Nathan Kowalsky.) J. Deckers (2009), "Vegetarianism, sentimental or ethical?", *Journal of Agricultural Environmental Ethics*, 22, 573-97, also discusses plants and their rights, but mostly as an aside in his discussion of vegetarianism.
3. ECNH (Federal Ethics Committee on Non-Human Biotechnology, 2008), *The dignity of living beings with regard to plants*. http://www.ekah.admin.ch/en/documentation/publications/index.html (accessed 5 August 2011).
4. See F. Koechlin (2009), "The dignity of plants," *Plant Signal Behavior*, January; 4(1), 78–79.
5. A. Abbott (2008), Swiss 'dignity' law is threat to plant biology, *Nature News*, 23 April, http://www.nature.com/news/2008/080423/full/452919a.html (accessed 7 August 2011).
6. Notably M. Hall (2009), "Plant Autonomy and Human-Plant Ethics," *Environmental Ethics*, Summer, Vol. 31 (2), 179-180).
7. It may seem a faulty approach to ethics if it demands the impossible, or at least makes impossible our very survival. But, what if our survival implies the demise of other beings with moral standing?
8. Though generally, harvesting of staples only happens once the plant has died or is dying, as in the case of potatoes or wheat, it is to be noted that obtaining agricultural produce is connected with "clearing" of

land, which involves removing pre-existing vegetation, and with weeding. Moreover, as Hall has noted, "rice is usually grown as an annual crop, but in tropical areas, if left alone, rice can grow as a perennial and survive for many more years. Whilst removing the fruits may not kill the plant the agricultural system usually does." (personal communication, 6 August 2011) So, agriculture, in practice, does require some harm to plants, but see M. Hall (2010), "Escaping Eden: Plants in a Gardener's World," in D. O'Brien, *Gardening Philosophy for Everyone*, Oxford, Wiley-Blackwell, 38-47, for some partial remedies, such as permaculture.

9. C. Osborne (1995), "Ancient Vegetarianism," in *Food in Antiquity*, Exeter, University of Exeter Press, 214-24, recounts that the ethics of the use of animals, in fact, already was a topic for some Ancient Greek and Roman philosophers, but a similar concern for the use of plants is not in evidence, at least to my knowledge.
10. Arbor (1986), op. cit., also see Taylor (1986), op. cit., and Kallhoff (2002), op. cit.
11. Despite bold demands by computationalists not to engage in "wetware apartheid", and, rather, to accept the verdict of the "Turing Test"; also see the application of the "intentional stance" to consciousness D. Dennett (1991), Allen Lane (ed.), *Consciousness Explained*, The Penguin Press.
12. M. Hall (2011a), *Plants as Persons: A Philosophical Botany*, Albany, State University of New York Press.
13. At some point it, furthermore, became defined as a matter of purported relations between some god or gods and humans, of course, but we shall not engage this point here.
14. But see Midgley (1994), op. cit., and G. Silberbauer (1993), "Ethics in Small-Scale Societies," in Peter Singer (ed), *A Companion to Ethics*, Oxford, Wiley-Blackwell, 14-28.
15. See Osborne (1995), op. cit.
16. Lynn White (1967) famously argued that the prevailing belief system in Mediaeval Western Christianity attributed transcendence to human beings, supposing that they are more akin to the Christian God than to the other living things on Earth.
17. As pointed out by M. Hall (2011b), personal communication 6 August 2011; also see V. Plumwood (1999), "Ecological Ethics from Rights to Recognition: Multiple Spheres of Justice for Humans, Animals and Nature," in Nicholas Low (ed.), *Global Ethics and Environment*, London, Routledge, 188-212.
18. Regarding the prejudicial consequences of grounding ethics on capacity for consciousness, see H. W. Ingensiep (2007), "Consciousness and its Place in a 'Natural Hierarchy': Considerations Concerning the Role of Consciousness in Modern Philosophy and Ethics," *Synthesis Philosophica*, 4(2), 301–317.
19. The question of care for plants as individuals vs. as species would need to be disentangled, but suffice it to suppose that both are relevant when discussing the possibility and plausibility of a plant ethics. See E.T. Lammerts Van Bueren and P. C. Struik (2005), "Integrity and rights of plants: Ethical notions in organic plant breeding and propagation," *Journal of Agricultural and Environmental Ethics*, 18, 479–493, for one way to resolve it.
20. M. Pollan (2001), *The botany of desire: A plant's-eye view of the world*, Random House.
21. Lammerts Van Bueren and Struik (2005), op. cit.
22. Hall (2011a), op. cit.
23. D. Perpich (2008), *The ethics of Emmanuel Levinas*, Stanford, CA, Stanford University Press.
24. But see Bartolomé de las Casas' arguments for their humanity (see R. H. Wagner and H. Rand Parish (1967), *The Life and Writings of Bartolomé de Las Casas*, New Mexico, The University of New Mexico Press). Following de las Casas arguments, the papal bull Sublimus Dei of 1537, which officially banned Native American slavery, was declared. Unfortunately, Africans then replaced the remaining Native people as slaves.
25. Hall (2011a), op. cit.
26. See e.g., Koechlin (2009), op. cit.
27. He says, for example, that plants send down their roots naturally "for the sake of nourishment" (Aristotle, Physics 199a 23-30;) 199a29, in W.D. Ross, *Aristotle's Physics*, New York, Clarendon Press, 1936).
28. T. Heyd (2006), "Thinking through *Botanic Gardens", Environmental Values* 15, 197-212.
29. See, for example, D.E. Cooper (2006/2008) *A Philosophy of Gardens* (Oxford, Oxford University Press; D. O'Brien (ed.) (2011), *Gardening: Philosophy for everyone*, Oxford, Wiley- Blackwell.
30. But see Heyd (2006), op. cit., and T. Heyd (2007), *Encountering Nature: Toward an Environmental Culture*, Aldershot, U.K., Ashgate.
31. F. Ginn (2008), "Extension, subversion, containment: Eco-nationalism and (post)colonial nature in Aotearoa New Zealand," *Transactions of the Institute of British Geographers*, Vol. 33 (3), July, 335-353.