

## THE ROOTS OF DISREGARD

*Exclusion and Inclusion in  
Classical Greek Philosophy*

That we are a plant not of an earthly but of a heavenly growth,  
raises us from earth to our kindred who are in heaven.<sup>1</sup>

—Plato

In the search for philosophies that have systematically backgrounded plants as passive, inert beings, while excluding them from moral consideration, our first stop is the work of classical Greece's most famous philosophers. Against a background of myth and story in ancient Greece (which is detailed in Chapter 6), in the fifth and sixth centuries BCE, a new, more critical way of understanding the world began to materialize.<sup>2</sup> Much has been made of the origins of purely scientific philosophical enquiry, but the change from an animistic, relational world to one based upon critical observation was a gradual process.<sup>3</sup>

The emergent pre-Socratic philosophy did not completely discard its Greek religious heritage. For example, the earliest pre-Socratic philosophers such as Thales still appear to have recognized the idea of an embodied divinity. Thales is famously reported to have exclaimed that all things are full of gods, Anaximenes of Miletus considered air to be a god, and for Xenophanes, God was the underlying substratum of the universe.<sup>4</sup> There is also recognition of substantial kinship between all things. For Thales, everything was made from water; for Anaximander the original stuff which linked everything in the world was air; while according to Heraclitus, this substance was fire.

Unfortunately there are few surviving references to plants by the pre-Socratics; however, the work of Empedocles provides a basis from which to assess the

subsequent philosophical developments of Plato and the Peripatetics. One of the most noticeable features of Empedocles' treatment of plants is that there appears to be an explicit recognition of kinship between plants and other living beings. An examination of the surviving fragments of the *Physics* will serve to illustrate this kinship. In one passage from the *Physics*, Empedocles depicts an explicit substantial kinship between humans, animals, and plants by describing the "four roots" (earth, fire, water, and air) and how they serve to unite living beings:

Trees sprang from them [the four roots], and men and women, animals and birds and water nourished fish, and long lived gods too, highest in honour.<sup>5</sup>

In the work of Empedocles, it seems that all these living beings have a common origin. Indeed it is noticeable that plant life is depicted as emerging before other living beings.<sup>6</sup> As in the animistic myths of ancient Greece that will be detailed in Chapter 6, Empedocles attributes aspects of sentience to all beings that emerge from the four roots:

All things are fitted together and constructed out of these [the four roots], and by means of them they think and feel pleasure and pain.<sup>7</sup>

As for animals, the Empedoclean outlook is that a plant's thinking is most often directed toward the search of sufficient food, the acquisition of which is thought to cause pleasure, while the deficiency of food is thought to cause pain.<sup>8</sup> The recognition of this subjectivity in animals led Empedocles to famously decry animal slaughter for human consumption.<sup>9</sup> In the fragments of Empedocles' work, there is also a similar suggestion that plants should be treated with some respect. In the *Karthamoi*, Empedocles advises "to keep completely from leaves of laurel" in order to avoid harm and injury to them.<sup>10</sup>

In this respect, Empedocles retains strong elements of the ancient animistic understanding. In Hesiod's *Theogony*, it is the Earth that gives birth to everything, including all the gods, human beings, and the plants.<sup>11</sup> Thus, there is a sense of kinship between all beings. Greek mythology also presents kinship in the form of transformation and links this to the possession of person-like qualities of sentience. A common depiction of trees and plants involves them undergoing suffering in the same way as animals and human beings. Chapter 6 details the myth of the Heliades, daughters of the sun god Helios, who mourned for their brother so intensely that they were transformed into poplar trees. The poplars that emerged from the transformation demonstrate sentience by continuing to cry tears of pain and grief; a fact that demonstrates their ontological similarity to human beings as creatures capable of being harmed.

In Empedoclean thought, it is noticeable that there is a similar ontological connection between plants and human beings. Plants and humans are closely related—each made of the four roots and each displaying considered, thoughtful behavior. In Empedoclean philosophy, the recognition of this relatedness obligates human beings to consider the interests of plants in their behavior toward them.

However, although pre-Socratic philosophy retained elements of an animistic understanding, the developing philosophical discipline began to reject the myths and stories which personified other living beings and natural entities. Philosophers such as Xenophanes actively began to define their rationalism in opposition to mythology and Greek superstitious religious tradition.<sup>12</sup> The rejection of traditional poetry, story, and ritual began to be a rejection of the animistic nature of ancient Greek society. In this respect, although Empedocles urged respect for plants, the pre-Socratics movement also heralded a shift away from a society focussed on maintaining respectful relationships with nonhumans, toward the prioritization of rational, causal explanations of natural phenomena.<sup>13</sup>

#### PLATO'S PLANT PHILOSOPHY

From this critical, more rational platform, Greek philosophical thought was to have a huge influence on Western perceptions of, and behavior toward, plants. The primary process that can be identified in the classical Greek philosophy is the establishment of plants as passive creatures with no capacity for intelligence or communication. This can be clearly seen in the philosophy of Plato (ca. 427–347 BCE), which marks a turning point in the Greek tradition. Although, like those of Empedocles, Plato's ideas appear to contain remnants of ancient, animistic Greek thought; they also demonstrate a turning away from plants being viewed as related, active, autonomous beings.

In her seminal ecofeminist critique, *Feminism and the Mastery of Nature*, Plumwood regards Platonic philosophy as one of the key Western sources for the “denial, exclusion, and devaluation of nature.”<sup>14</sup> Plumwood writes:

Platonic philosophy is organised around the hierarchical dualism of the sphere of reason over the sphere of nature, creating a fault line which runs through virtually every topic discussed, love, beauty, knowledge, art, education, ontology. . . . In each of these cases the lower side is that associated with nature, the body and the realm of becoming, as well as of the feminine, and the higher with the realm of reason.<sup>15</sup>

Plumwood discusses the formation and justification of this hierarchical dualism in depth, and the following sections owe a great deal to her scholarship.

However, for brevity, to elucidate the main principles, I will focus on discussing the philosophy of two types of causation, which in the *Timaeus* is dualized into a higher and lower form. The higher form is considered to be intelligent in nature, pertaining to a “rational principle or Form, and which is the true form of causation.”<sup>16</sup> This type of causation is allied to the abstract, unchanging Platonic Forms, which are considered superior to ordinary, unchanging, material reality.<sup>17</sup> This rational causation is considered to be the source of all goodness.<sup>18</sup> In Platonic philosophy, it is contrasted with the lower causative principle, the material, which unlike the higher form is neither eternal nor unchanging. Plato regards this form of causation to be irrational, lacking in intelligence and ultimately disorderly.

By way of a very brief summary then, one of the principal reasons for reason’s considered superiority is its alliance to the realm of the abstract, unchanging, divine Forms. As the material form of causation is not universal or eternal, it is generally regarded as inferior. Reason is also regarded as superior to nature, because it imposes order on the disorderly, insensate material realm.<sup>19</sup> As Plumwood makes clear, Plato attempts to both extend and justify this philosophy in his cosmology to counter the material philosophy of Democritus. In the cosmology of the *Timaeus*, God, representing logos or the rational ordered principle, imposes an order on the cosmos in flux “because he believed that order was in every way better than disorder.”<sup>20</sup> Thus, as the ordering principle of the cosmos, logos is considered superior. It is also ranked higher as it is able to shape the malleable, changing material world, which is described in the *Timaeus* as “neutral plastic material” “upon which differing impressions are stamped” by rational forces.<sup>21</sup>

From reading the Platonic dialogues, it is clear that in order to sustain a dualism between reason and nature it is necessary for Plato to divest reason from the plant kingdom, which dominates the natural world. As reason is regarded as the superior faculty, and is defining of superior human life, any domination of nature requires the emphasis of differences between humans and plants. Based upon this need for separation and exclusion, plants are divested of reason in the same way as slaves and women.<sup>22</sup> Portrayed as passive, mute beings, plants are thus more easily dominated as mere resources for human endeavor.

Plants are attributed with the lowest level of Plato’s tripartite soul. In the above account from the *Timaeus*, they are given the appetitive soul, but are denied the spirited soul (activity and volition) and the rational soul (intelligence and self control).<sup>23</sup> The beings most repeatedly associated with the appetitive soul are slaves, women, and children—beings at the very bottom of Plato’s social hierarchy. As they are thought to lack reason and self control, plants (along with slaves, children, and women) are naturally ruled by those male human beings who exercise rationality.<sup>24</sup>

When compared with the philosophy of Empedocles, it is possible to detect in Plato's *Timaeus* the beginning of a process of exclusion, which depicts the ecologically dominant plant kingdom as passive and limited in awareness. This exclusion appears to be very much an act of intellectual violence perpetuated in part to sustain a (false) collective identity of humankind as well as justifying resource use.<sup>25</sup> In the description of creation, the *Timaeus* provides details about the genesis of the plant kingdom:

They mingled a nature akin to that of man with other forms and perceptions, and thus created another kind of animal.<sup>26</sup> These are the trees and plants and seeds which have been improved by cultivation and are now domesticated among us; anciently there were only the wild kinds, which are older than the cultivated. For everything that partakes of life may be truly called a living being, and the animal of which we are now speaking partakes of the third kind of soul, which is said to be seated between the midriff and the navel, having no part in opinion or reason or mind, but only in feelings of pleasure and pain and the desires which accompany them. For this nature is always in a passive state, revolving in and about itself, repelling the motion from without and using its own, and accordingly is not endowed by nature with the power of observing or reflecting on its own concerns. Wherefore it lives and does not differ from a living being, but is fixed and rooted in the same spot, having no power of self-motion.<sup>27</sup>

Like Empedocles before him, in this passage, Plato appears to recognize continuity between life forms. He is explicit that the plants are made by the gods from a nature that is akin to that of human beings. Also, as for other types of life, the *Timaeus* describes plants as having experiences of desire as well as of pleasure and pain. Yet, Plato differs from Empedocles in his hierarchical value-ordering of the different types of being, a value-ordering which sanctions domination.

Therefore, within this suppressive hierarchical framework, the recognition of relatedness and the ability to be harmed requires no modification of human behavior toward lesser beings. As Carone points out, "Plato does not seem to find anything wrong with feeling pain as long as it can serve a greater, positive end."<sup>28</sup> Plato's *Republic* is a slave-based society, fundamentally hierarchically ordered, with the pain and work of the slaves sustaining the existence of the three classes of the polis.<sup>29</sup> The slave is constructed as lacking in reason, in the same way as nature is painted as a chaotic state requiring ordering.<sup>30</sup>

Although Plato admits some continuity between plants and human beings, his work instigates the process of removing connectivities between plants and humans. In the above passage from the *Timaeus*, Plato appears to define the *phuta*

(plants) principally by their growth, as the singular *phuton* also means “that which has grown.” In rejecting ideas that plants had such faculties as activity, self motion, and awareness without providing any evidence, Plato displays a fundamentally zoocentric philosophy. In Plato’s observations, as plants are sessile beings, they are described as only capable of growth. In comparison with the incessantly active animals, plants are rendered as passive, inactive, and unminded.

Thus, in the description of creation in the *Timaeus*, the real purpose of plants is to not to live and blossom for themselves, but to provide animals and humans with food. Immediately after plants are painted as passive creatures, Plato writes that the “superior powers had created all these natures to be food for us.”<sup>31</sup> Although it is clear that plants *are* food for animals, the fact that Plato portrays plants as unminded, inactive beings incapable of flourishing means that they can have no purpose of their own.

#### ARISTOTLE’S HIERARCHY OF SOUL

Although we can trace the emergence of instrumentalism and hierarchical ordering in the *Timaeus*, the work of Aristotle (384–322 BCE) greatly expands and intensifies this process of exclusion. Building upon the ideas of Plato, Aristotle continues the drive toward separation and discontinuity, the drive that Plumwood considers to be characteristic of Western philosophy.<sup>32</sup> One of the most noticeable aspects of Aristotle’s philosophy of the natural world is his hierarchical ordering of nature and the bracketing of plants into a lower class of being. This devaluing of plants is more explicit in the work Aristotle as it explicitly forms part of his famous theory of the soul. Breaking from the tradition of the pre-Socratics, Aristotle regards the soul as a form, rather than as a separate substance. The nature of the soul for Aristotle is set out in *De Anima*:

Soul is substance as the form of a natural body which potentially has life and since this substance is actuality, soul will be the actuality of such a body.<sup>33</sup>

In this view, the soul is not just a form but a form that has life, “the ensouled is distinguished from the unsouled by its being alive.”<sup>34</sup> All living things are thus attributed soul, while inanimate objects are not ensouled. Life and soul can be said to be interlinked. From this basis, as well as the soul being a form, Aristotle’s concept of soul could also be interpreted as the principle and practice of life itself.

For the plant will be torn apart if there is nothing that prevents this and if there is such a thing this will be the soul.<sup>35</sup>

It is clear from this passage that the soul of a being sustains life and prevents decay and death. In the thinking of Aristotle, the soul organizes and preserves life. It also directs a being's mode of living and sets limits on change and growth.<sup>36</sup> Such maintenance of integrity could lead to the conclusion that ensouled beings are autonomous and active. However, Aristotle's description in *De Anima* of different "faculties" or effectively *types* of soul, denies plants this nature. Aristotle describes the faculties of the soul as "nutritive, perceptive, desiderative, locomotive and intellective."<sup>37</sup> These faculties or different aspects of soul represent the different capacities of living beings. In the philosophical tradition, these five faculties of the soul have generally been divided into three levels.<sup>38</sup> The first of these is the nutritive level, which confers the ability to feed and reproduce. The second level is the sensitive and the third level of the soul is the intellectual.

The works of Aristotle recognize that all living beings possess the first of these levels, the nutritive or vegetative soul. The nutritive soul is regarded as the most basic in the sense that its existence is fundamental to the possession of the other faculties. The ability to gather food and reproduce underpins the abilities to sense and to reason. However, in *De Anima* as well as in *Parts of Animals* and *Nicomachean Ethics*, the higher faculties of the soul are not attributed to all beings. In the tripartite division of soul, plants are only attributed the ability to feed and reproduce. Describing the nutritive soul, Aristotle stresses:

Now this faculty can be separated from the others but the others cannot be separated from this in mortal things. And this is obvious in the case of plants as they have no other potentiality of the soul.<sup>39</sup>

In this description of plant faculties, Aristotle extends the Platonic separation of plants and animals. Denied the ability to perceive their environment through the sense of touch, plants are perceived to be without any of the other faculties of soul. Unlike all other ensouled beings, plants are conceived as being without awareness and mentality. This explicit philosophy serves to counteract the idea that as ensouled beings they maintain their own integrity. Therefore, life processes, such as the feeding and reproduction of plants, are rendered as passive, mechanical processes. In this state, plants become truly vegetative, without any self-direction and unable to assess the environment around them:

Plants having only the nutritive, other living beings both this and the perceptive soul. But if they have the perceptive faculty they also have that of desire. For desire is appetite, passion or wish, all animals have at least one of the senses (namely touch) and for that which there is perception there is also pleasure and pain and the pleasant and the painful

and for those for whom there are these there is also appetite, the desire for the pleasant. And they also have perception of their food.<sup>40</sup>

Based upon a denial of the obvious, that they are sensitive and perceptive, in the system of Aristotle, plants were also excluded from the highest faculty of the soul, the possession of intellect or mind. This is again expressed clearly in Book 1 of *Nicomachean Ethics*:

For the vegetative element in no way shares in reason, but the appetitive and in general the desiring element in a sense shares in it, in so far as it listens to and obeys it.<sup>41</sup>

Again, Aristotle follows Plato's pronouncement in the *Timaeus* and authenticates it for the study of natural history. In this excerpt, Aristotle removes volition, choice, intelligence, and communication from the growth activities of plants, further asserting a subjective vacuum in the plant kingdom. In the botanical tradition, this is perhaps the earliest assertion that plants are divest of mental attributes, and all subsequent assertions can be said to draw upon it in some way.<sup>42</sup>

Unlike in Empedocles, and the founding myths of ancient Greece in which plants were recognized as ontologically related to animals and human beings, Aristotle's strict divisions remove the sense of a kin-based relationship between humans and plants. The voices of plants are completely silenced in Aristotle's work—reducing their lives to nothing more than feeding and reproduction.

As Aristotle attributed them only with a nutritive soul, the lowest of the three divisions, plants have traditionally been viewed as being at the bottom of a "psychic hierarchy" or *scala naturae*.<sup>43</sup> This value-ordering of the soul's faculties rests on several bases. Carone regards the nutritive soul as basic because it supports other faculties of soul, but can also exist as a stand alone faculty, as in plants.<sup>44</sup> However, this does not fully explain the value-ordering of the different souls. Why should the nutritive faculty be regarded as basic solely because it can function alone?

The rational soul is placed at the apex of existence in the natural world partly because the *Nicomachean Ethics* relates that the proper exercise of reason results in happiness, the highest human good:

For we praise the rational principle of the continent man and of the incontinent, and the part of their soul that has reason, since it urges them aright and towards the best objects.<sup>45</sup>

It is reason that allegedly sets human beings apart from others, and is the faculty which in most senses defines human beings,



Enough of this subject, however; let us leave the nutritive faculty alone, since it has by its nature no share in human excellence.<sup>46</sup>

Reason is valued above the nutritive faculty as Aristotle believes that reason allows human beings to be virtuous and achieve happiness. It is regarded as the element that prompts human beings into action and is valued above the passive nutritive faculty, “for in all cases that which acts is superior to that which is affected.”<sup>47</sup> This attitude has parallels with a Platonic philosophy, which valued reason above nature on the basis that reason allowed the imposition of order. Ultimately however, it can be said that reason is valued above all because it is regarded as the hallmark of the human being. In other words, the higher faculties of soul are higher purely because they are thought to belong solely to human beings. This value-ordering is fundamentally anthropocentric, with humanity becoming the yardstick for value.<sup>48</sup> This anthropocentrism in Aristotle is perhaps most famously expressed in a passage from the *Politics*:

In like manner we may infer that, after the birth of animals, plants exist for their sake, and that the other animals exist for the sake of man, the tame for use and food, the wild, if not all at least the greater part of them, for food, and for the provision of clothing and various instruments.<sup>49</sup>

This famous passage agrees with the *Timaeus* and clearly expresses the notion similar to that found in the Bible (see Chapter 3) that all the entities in the natural world exist for the sake of humanity. In this anthropocentric world, humanity is the apex of existence, for Aristotle regards all other beings to have been created for our use. This hierarchical notion of instrumental use clearly echoes Aristotle’s hierarchy of the soul. In fact this hierarchy of use is entirely dependent on the tripartite division of the soul. The lowest beings, the nutritive plants, exist for the sake of animals and humans, while the sensitive animals exist for the sake of the rational humans. The important point here is that without rendering plants as passive creatures—inactive, mute, and insensitive—it is much more difficult to make such claims on the plant kingdom. In order to claim them solely as *instruments* for human use, Aristotle violates the autonomy of plants and animals, indeed strips them of any autonomy or subjectivity.

The refusal to acknowledge any aspect of agency, sensitivity, or mentality in plants appears to be a deliberate political ploy—in much the same way as Aristotle (and again as Plato before him) depicts slaves as naturally lower beings in order to justify their bondage.<sup>50</sup> In this context, the goal in backgrounding plants is to achieve the untrammled use of plant resources. In Aristotle, therefore, it is not unreasonable to conclude that plants are backgrounded, rendered as passive and mute, in order to achieve human domination. The resulting

instrumental relationships serve to nullify any notions of relatedness or responsibility of care toward plants for their own sake and so do away with inherent limits on human claims.<sup>51</sup> This slavery of the natural world also has very important ramifications for human beings, for as Vlastos notes, it is used to justify the domination and slavery extant in human society.<sup>52</sup>

#### ZOOCENTRISM

As well as being founded on anthropocentrism, this exclusion of plants in Aristotle relies equally on a zoocentric appraisal of plant life.<sup>53</sup> For Aristotle to consign plants entirely to the nutritive soul, his observations of plants should have excluded the possibility that plants were able to perceive their environment. Yet although Aristotle's theory deemed that plants do not have perception, a passage in *De Anima* clearly demonstrates that Aristotle observed plants responding to external stimuli in a very similar way to animals:

It is also clear why it is that plants do not perceive, *though they have a psychic part and are in some way affected by the touch objects*. After all they become hot and cold. The reason is that they do not have a means nor such a principle as can receive the forms of the sense objects.<sup>54</sup>

Aristotle clearly observed plants responding to both touch and to changes in ambient temperature. In the above passage, he even goes so far to admit that this constitutes a kind of active mentality in plants. In *De Anima*, Aristotle asserts that beings with the sense of touch are able to perceive their environment, for "those living things that have touch also have desire."<sup>55</sup> It is clear from the passage above that Aristotle recognizes that plants respond to touch in a similar way to other living beings. In Aristotle's system, plants *logically* deserve recognition as sensitive, perceptive beings.

Instead, plants are denied this, partly because Aristotle was unable to observe the means by which they could achieve perception. The zoocentric bias here is clear; because plants do not have the discernible brain tissue of most animals, Aristotle deems them incapable of perception. Rather than considering them on their own terms, instead the abilities of plants are defined from a zoological perspective—evaluated using the physiology and capacities of animals.

Thus the zoocentric bias which is discernible in Plato pervades Aristotle's philosophy of the natural world. This arises not from innate physiological biases as suggested by Hallé, Wandersee, and Schussler. In Aristotle, the *zoocentrism* is more akin to a philosophical stance, underpinned by limited observations and a general bias emerging from his scholarly orientation. In his studies of the natural

world, Aristotle focuses his attention on animals, and as a prolific zoologist, Aristotle demonstrates a remarkable understanding of the structure and function of the anatomy of animals. One of the consequences of this academic specialization is that in his dealings with plants, Aristotle almost always defines and evaluates plants using *zoological* criteria and considers plant physiology as a *series of lacks*.<sup>56</sup> An example of the apparent simplicity of the plant kingdom is expressed in a comparison of plant and animal organs:

Now this kind will include any body that has organs—and even the parts of plants are organs, though completely, as for instance the leaf is a covering for the pod and the pod for the fruit while the roots are like the mouth in that both draw in food.<sup>57</sup>

Although Aristotle is regarded as a great empiricist, he is not known as a particularly fine botanist. This flawed understanding of plant anatomy represents the general level of Aristotle's botanical investigations, and from this rendering of plant morphology, Aristotle evaluates the plant kingdom. Aristotle writes of three major differences between plant and animal physiologies. The first of these is the lack of a control system. The other differences between plants and animals are found within *Parts of Animals* Book 2 which states:

As for plants, though they also are included by us among things that have life, yet are they without any part for the discharge of waste residue. For the food which they absorb from the ground is already concocted, and they give off instead [as its equivalent] their seeds and fruits.<sup>58</sup>

The presumed differences found in plants are the inability to process food and to excrete waste products. Again, these life processes are perceived entirely from the perspective of zoological anatomy and physiology. In particular, the passivity of plants is reinforced due to the presumption that they undertake no processing of their food. As the food they needed is presumed to be adequately concocted in the ground, there must be no activity involved.

Unlike animals, plants are sessile. Animals find their food and process it by movement. Therefore Aristotle's apparent reasoning is that as plants are sessile, they do not accomplish such food acquisition and processing. The roots of the plant are compared to the mouths of animals and are presumed to act as a passive receptacle for the uptake of food. As this concocted food in the ground is thought to be just what plants need, it is presumed that they do not give off waste products.<sup>59</sup> Instead, plants are conveniently thought to give off only seeds and fruits, solidifying their role as instruments for human and animal consumption.

## THE FATHER OF BOTANY

Theophrastus (371–ca. 287 BCE) is a colossus of the Western botanical tradition and is commonly bestowed the title the Father of Botany.<sup>60</sup> As the head of the Lyceum, Theophrastus continued the work of Aristotle, and it is thought that the task of researching the botanical element of natural history was given to him by his teacher. In addition to his numerous other works, it is presumed that botany was too large a labor for Aristotle to tackle properly.<sup>61</sup> In his two outstanding botanical treatises, *Historia Plantarum* and *De Causis Plantarum*, Theophrastus reported many of the findings that are now fundamental to his discipline. Theophrastus's works differ from those of Aristotle in their detailed observations of the plant world. Often, the intricate detail of plants' internal and external anatomy is noted with accuracy. For instance the different textures of the wood in different tree species, the complexities in root systems and various methods of germination were all observed.

Most of Theophrastus's botanical work is concerned either with systematic, physiological, or agricultural matters and is not (as was Aristotle's *De Anima*) geared toward an explicit philosophical analysis of the nature or capacities of plants. Theophrastus did write his own version of *On the Soul*, but unfortunately this text has not come down to us. The only surviving fragments of this work are quotations from Priscian and Themistius. Nevertheless, despite not being explicitly metaphysical, the erudite descriptions in *Historia Plantarum* and *De Causis Plantarum* contain implicit references that allow an understanding of Theophrastus's conception of plants.

## PLANTS AND ANIMALS, CONNECTIVITIES AND DIFFERENCES

Your plant is a thing various and manifold; and so it is difficult to describe in general terms.<sup>62</sup>

In his *Metaphysics*, Theophrastus writes that to be known, each thing must be approached in the appropriate manner; "The starting-point and the main thing is the appropriate manner."<sup>63</sup> For botany, this involves careful and detailed observations of living plants. In his seminal botanical studies, he fully recognizes the differences that plants display. However Theophrastus does not find it appropriate to evaluate plants from a zoological perspective. Instead, the differences inherent in plant life suggest the need to deal with plants on their own terms, and so Theophrastus notes in the first few pages of *Historia Plantarum*:

Perhaps we should not expect to find in plants a complete correspondence with animals in regard to those [parts] which concern reproduction any more than in other respects.<sup>64</sup>

Theophrastus's basis for understanding plants is to recognize that their lives are constructed in different ways to those of animals, a fact which implicitly rejects the zoocentric evaluation of Aristotle. For example, Theophrastus recognizes that the local environment is more important for an understanding of plants than of animals. As the next section explores, he was aware that plants are perhaps more influenced by their environments than animals. This is because a plant is "united to the ground and not free from it like animals."<sup>65</sup> As well as in reproduction, other major differences between plants and animals are recognized. In particular, Theophrastus pays attention to the incomplete correspondence between plant and animal growth:

The number of parts is indeterminate [in plants]; for a plant has the power of growth in all its parts; in as much as it has life in all its parts.<sup>66</sup>

As well as being indeterminate in their growth, the number of plant parts is described as being constantly in motion. The recognition of this detail of plant anatomy is greatly significant because here Theophrastus is describing attributes in plants that are *lacking* in animals:

It may be however that, not only these things but the world of plants generally, exhibits also other differences as compared with animals, for as we have said the world of plants is manifold.<sup>67</sup>

Reading this passage from *Historia Plantarum*, it is hard not to detect Theophrastus's admiration and wonder when faced with the plant kingdom. Certainly the "manifold" plant world comes across as more diverse, unusual, and intricate than the world of animals. In this manifold world, plants are implicitly acknowledged as possessing many different qualities and capabilities not necessarily found in their animal kin. Yet it is characteristic of Theophrastus that this difference is stated without reference to any supposed inferiority on the part of plants. Unlike Plato and Aristotle, it appears that he recognizes differences in plants, but does not seek to arrange these differences in a hierarchy of value with reference to anthropocentric or zoocentric criteria.<sup>68</sup> Theophrastus also worked toward finding similarities between beings, a stance which is confirmed by a passage in his *Metaphysics*:

And in general the task of a science is to distinguish what is the same in a plurality of things.<sup>69</sup>

Thus, throughout the texts of *Historia Plantarum* and *De Causis Plantarum*, Theophrastus emphasizes connections between the anatomy and life history of

plants and animals. In the search for these connections, the shedding of plant parts such as leaves in winter, and the shedding of animal parts, like horns, are regarded as analogous processes. The process of decay and death in plants and animals is described as being due to the same event, that of the failing of the moisture and warmth that belong to both.<sup>70</sup> Theophrastus echoes the mythology of the ancient Greeks (detailed in Chapter 6) and equates the sap of plants with the blood of animals. As well as their implicit kinship in shared blood, other parts of plants are connected to those of animals. The bark, wood, and core tissue of plants are described as being made up of “sap, fibre, veins, flesh.”<sup>71</sup> Theophrastus also takes the analogy further, labelling the core of the tree as the “heart” or “heart-wood,” an expression still in use today.<sup>72</sup>

In *Historia Plantarum*, he is explicit that such comparisons exist only as an aid to understanding for people more familiar with the animal world.<sup>73</sup> They are a bridge to understanding and have the added function of showing and emphasizing the connections and kinship between animals and plants. They are not an attempt to define plants from a zoological perspective.

Historically it is important that Theophrastus took great pains to clarify that these names for the parts of plants are borrowed from animals due to a superficial resemblance. They were an aid to understanding and a means of bridging the gap between the plant and animal. They were never intended to be taken as literal explanations of plant structure and function because for Theophrastus the world of plants deserved evaluation on its own terms. However, it must be noted that an unfortunate historical consequence of this attempt to explain plants in terms of animal parts, was that plants continued to be commonly regarded in reference to animals. As Chapter 2 details, thinkers such as Pliny, who relied heavily on Theophrastus, did not understand the importance of Theophrastus’s warnings and were less careful about *judging* plants from within this animal framework.

#### PLANT AUTONOMY

The fundamental recognition that plants should be treated on their own terms manifests itself in Theophrastus’s recognition of the independence and autonomy of the plant kingdom. In contrast to the backgrounding philosophies of Plato and Aristotle, through his careful description of fruit formation in *De Causis Plantarum*, Theophrastus recognizes a purposeful autonomy.<sup>74</sup> The first important description of fruit anatomy reads:

There is to be sure a concoction of the pericarpion [fleshy pericarp of a true fruit], but there is another of the fruit proper [the seed], and the former concoction—serves to provide man with food, the latter serves

the generation and perpetuation of the tree, *this being what fruit and seed are for*. Each of the two concoctions interferes in a way with each other; with greater fluidity and size in the pericarpion goes smaller fruit [seed] and with larger fruit [seed] goes a smaller, harder and more ill flavoured pericarpion.<sup>75</sup>

While the detailed understanding of fruit anatomy is remarkable in itself, what makes this passage even more outstanding is the implicit recognition that the fruit and seed are not *designed* for man or animal to eat. There is a clear distinction between the proper seed that reproduces the plant, and the fleshy part of the fruit which is appropriated by man. Theophrastus recognizes that from a botanical point of view, one could say from the plant's point of view, the fruit and the seed are not aimed at satisfying man. The fruit and seed are for the plant to continue its lineage.

A sceptic could argue that the continuation of the species is very much in the interest of man and, thus, could quite easily be part of a system that was ultimately created for the satisfaction of human needs. However, if we also consider Theophrastus's studies on the different relative sizes of wild and cultivated fruits (and seeds), the only reasonable conclusion is that plants are considered to be autonomous beings with their own purpose.<sup>76</sup> Plants are not solely on Earth to feed human beings:

Of the two ripenings this of the seed is the more important for reproduction, that of the pericarpion the more important for human requirements. To which of the two ripenings we are to assign the greater achievement by the tree of its goal is another question. Indeed if we assign it to the ripening of the pericarpion we should have to say that in plants whose leaves (or again whose roots) we use alone, as vegetables, the concoction of these parts is the more important [for humans]; and yet the goal lies here in their seeds, which we do not use for food at all.<sup>77</sup>

Wild plants are described as having much larger seeds than cultivated plants. By careful observation of a plant's fruits it is fairly obvious that free-living plants show marked preference to flourishing and continuing their own species, rather than producing food for human beings. In these two short passages, Theophrastus's studies lead to the recognition that plants have their own goals in life. A passage from *De Causis Plantarum* helps explain the Theophrastean understanding of what those goals might be:

The nature [of a plant] instead always sets out to achieve what is best, and about this (one may say) there is agreement.<sup>78</sup>

In this instance, “what is best” refers to what is good for a plant, or its final cause. Rather than his *extrinsic* teleology that plants are created for the purpose of feeding humans, Theophrastus follows the *intrinsic* aspect of Aristotelian teleology, that there is a good to be had for an organism and that this good is a final cause to be striven for. Achieving this final cause is the purpose of the plant, not satisfying the needs and wants of human beings. With the establishment of *intrinsic* teleology Theophrastus renders the growth and reproduction of the plant *for itself*, as the cause to which its life is directed. This is acknowledged with the line “yet the goal lies here in their seeds, which we do not use for food at all.”<sup>79</sup>

Significantly the recognition of plants as autonomous beings, rather than as slaves for humankind, is accompanied by descriptions of the striving, intentional, perceptive behavior they exhibit in order to fulfil their own purposes. To achieve what “is best,” the plant must be able to know what is best, and so their flourishing in both current and future generations is described as being achieved via intentional, discriminatory activity. The descriptions of intentional, perceptive plants in Theophrastus are incredibly important as they are the first, albeit implicit, recognition of mental phenomena in plants in the Western botanical tradition.

#### PLANT ACTION AND PERCEPTION

Conduct and activities we do not find in them, as we do in animals.<sup>80</sup>

In light of Aristotle’s work, this passage could be read as a support for his hierarchy of value. Some authors have indeed done this and claimed that Theophrastus went even further than Aristotle by removing any aspect of soul in plants.<sup>81</sup> However, in Theophrastus’s extant writings there is no explicit doctrine of the capabilities of plants and no explicit support for the imprisonment of plants within the bounds of the nutritive soul. In light of his more vocal pleas to consider plants on their own terms, and the recognition of plant autonomy, it appears that the above passage is an attempt at a fair appraisal of the differences in plant and animal life. Just as he recorded the ability of plants to grow from different parts, so he notes that they are unable to move around and behave in the same way as animals.

The disagreement with Aristotle that plants are not passive beings can be seen in Theophrastus’s understanding of sense perception. In his commentary on Theophrastus’s *On the Soul*, Priscian asserts that Theophrastus did not think it possible for living beings to be devoid of sensory awareness. For Theophrastus, the possession of sense is “completive of the living thing.”<sup>82</sup> Unlike in *De Anima*, being alive in Theophrastean thought entails being aware of the environment.



A passage from *Historia Plantarum* has parallels with Aristotle's recognition that plants are sensitive to changes in ambient temperature. However, the Theophrastean understanding of perception leads to startlingly different conclusions. During a description of how environmental conditions affect plant growth, Theophrastus remarks:

The roots of all plants seem to grow earlier than parts above ground (for growth does not take place downwards). But no root goes down further than the sun reaches, since it is the heat which *induces* growth.<sup>83</sup>

Within this description of the patterns of root growth, there is a clear acknowledgement of perceptive and receptive capabilities in addition to the basic recognition of growth.<sup>84</sup> This passage strongly suggests that the plant is able to perceive the presence of heat and gear its growth to this change in its niche. Aristotle describes the same phenomena in *De Anima*, but he does not admit this as an example of perception, because the plants have no discernible tissue that receive the form of the sensory object. In contrast, Theophrastus succinctly describes the ability to sense the environment and to respond with active, directed growth.

Much of Theophrastus's work was geared toward agriculture, and he was one of the first Greek writers to record basic agricultural techniques.<sup>85</sup> Historically, one of the most significant agricultural descriptions was a record of the technique for pollinating the date palm.<sup>86</sup> In *De Causis Plantarum*, the date palm is also used as an example of trees that are not only able to sense their environment, but which actually *enjoy* and *prefer* certain localities over others:

For some trees, delight in the one or the other excess [of heat], some favoring heat, like the date palm, others cold, like the ivy and silver fir.<sup>87</sup>

But different trees differ in the degree. Some love moisture and manure, some not so much as the cypress, which is fond neither of manure nor of water.<sup>88</sup>

These descriptions of the likes and dislikes of plants are just two succinct examples of a way of writing about plants that pervades the work of Theophrastus. Trees are attributed with having *preferences* as to which environments they may grow in. They have the *enjoyment* of thriving in their preferred environment and only in the most suited environment will a plant be able to flourish.<sup>89</sup>

In the work of Theophrastus, there is recognition that trees are very much affected by the soils in which they grow, by the amount of shade and sun, and by

strength of the winds in the area.<sup>90</sup> Underpinning this is the recognition that plants possess the ability to sense the differences in their localities and respond accordingly. This adjustment of the plant's nature to the prevailing environmental conditions is explicitly stated in *De Causis Plantarum*:

Every plant must possess a certain adjustment to the season, since the season turns out to be more responsible than anything else. For all are seen to await their own appropriate season.<sup>91</sup>

From his close field observations, Theophrastus clearly recognized that plants had capacities which far outstripped the faculties of the nutritive soul. These were faculties by which the nutritive and reproductive capacities of the soul were *accomplished* but which extended beyond feeding, growth, and reproduction.

Linked in closely with the demonstration of preferences are the faculties of perception and awareness. In order to express preference, plants must be able to differentiate environments and act according to the prevailing conditions. Perhaps of even greater interest is the fact that as possessors of this desiderative nature, plants are also closely connected with mentality. In the *Metaphysics*, Theophrastus asserts that it is "the thinking faculty, in which indeed the desire originates."<sup>92</sup> Thus, as beings that clearly act out their likes and dislikes, it is not unreasonable to suggest that for Theophrastus, plants were also beings with the capacity of intellect.

#### AUTONOMY AND AGRICULTURE

The recognition that plants are autonomous led Theophrastus to question whether cultivating plants was a natural process. Theophrastus also displays a remarkable affiliation with ancient animisms (see Chapter 6) by acknowledging the harm done to plants by human beings. In *De Causis Plantarum*, he notes that one of the costs to cultivation for the plants involved is a shorter life. Theophrastus observed that cultivated plants expend their energy on forming the part of their anatomy that is more desirable to humans, rather than on their own overall growth and repair.<sup>93</sup> Thus, cultivation diminishes the overall flourishing of plants, by reducing their physical health and their capacity for reproduction. Like Plato and Empedocles, Theophrastus asserts that human activity could cause *suffering* to trees, something explicitly denied by Aristotle. In cultivated trees he remarks:

Not only do trees that have borne to excess fare thus [live shorter lives] but even when they have borne a large crop trees *suffer* and often perish from depletion.<sup>94</sup>

In fact, concepts of plant sentience seem to have still been quite widespread in Greece at the time. Theophrastus describes the practice of driving iron pegs into almond trees, which have too much foliage and too little fruit; and records that “some call this ‘punishing the tree,’ since its luxuriance is thus chastened.”<sup>95</sup> Unlike in Aristotle, it appears that the men doing this work acknowledge the harm in their acts.

Interestingly, the process of cultivation is thought not to be of complete detriment to the plants involved. Some of the positive points to cultivation (from the plant’s point of view) are that plants receive plentiful food and water, which may be lacking in the wild. They are also kept free from competition and disease, which impede growth and reproduction. Theophrastus muses that such benefits could be a price worth paying for the harm experienced by the cultivated plant. In this way, the morphological changes brought about by plant breeding could also be viewed as appropriate and reciprocal, perhaps of benefit to the plant involved:

If the nature of the plant *demand*s that external aid for the achievement of what is better, it would also accept these internal modifications as appropriate to itself; and it is reasonable that it should *demand* and *seek* them.<sup>96</sup>

Rather than being a form of bondage, Theophrastus understands cultivation to be a collaborative, mutualistic, relationship between plants and humans. With this, Theophrastus envisages a more respectful form of farming, in which the cultivator engages in a partnership based on respect for the awareness and autonomy of the cultivated.<sup>97</sup> In a similar way to a kinship relationship, this invokes the need for reciprocal care and responsibility.

This Theophrasteian understanding stands in stark contrast to the *scala naturae* of Aristotle in which the plant (and consequently much of nature) is rendered as passive and subservient to human beings. Thus, at the dawn of the natural sciences, we can pinpoint two very different understandings of plants emerging from the classical Greek tradition. One was based upon *exclusion*, *separation*, and *superiority*; the other was based more upon *inclusion*, *connection*, and appreciation of *autonomy*. As Hallé has pointed out, our contemporary understanding of plants resembles the first position far more than the second.<sup>98</sup> Yet rather than being a natural phenomenon, it is clear from this chapter that our perception of plants depends heavily upon our philosophical orientation. The following chapter builds upon this understanding and explores how the two different Peripatetic perceptions of plants have had contrasting influences on botanical studies. It aims to demonstrate that the ready acceptance of the Aristotelian zoocentric dualism and anthropocentric hierarchy has hugely influenced Western understandings of plants.