

The Imagination of Plants: Botany in Rousseau and Goethe

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This article will analyse the ways in which two very different writers engage imaginatively with the non-human world. More specifically, it will compare and contrast the approaches to botany adopted by Rousseau and Goethe. The perspective to be adopted is thus probably best qualified as ecocritical according to the broadest definition of ecocriticism as a form of literary enquiry that ‘encompasses nonhuman as well as human contexts and considerations’.¹ The focus here will be on what Jonathan Bate calls the central question confronting literary ecocriticism, namely ‘the place of creative imagining and writing in the complex set of relationships between humankind and environment, between mind and world’.² Plants have been chosen not only because of their centrality in the work of Rousseau and Goethe, both of whom pursued scientific pursuits alongside their literary careers, but also because they combine, arguably more than most other natural phenomena, a marked appeal to the senses with a considerable amount of accrued cultural significance. As Georges Bataille has pointed out, the flower *as such* is in danger of disappearing when it is used to stand for human emotions or characteristics: instead of ‘seeing’ a rose, for example, one would now tend to see ‘love’.³ Indeed, in his *Fragments pour un dictionnaire des termes d’usage en botanique*, Rousseau discusses – and also unwittingly illustrates – the difficulty of distinguishing between the ‘literary’ flower, the flower of rhetoric, and the ‘natural’ flower, the object of scientific investigation.⁴ This difficulty of separating cultural history from what is still often called ‘natural history’ would thus seem to represent a particular challenge to the writer-botanist and a potential obstacle to the authentic imagining of plants aspired to by Rousseau and Goethe.

It should be pointed out at the beginning that this article is not concerned with specific questions of influence (although Rousseau’s

botanical writings did have a considerable impact on Goethe⁵). Rather, an attempt will be made to examine the contrasting – and possibly conflicting – paradigms that emerge from their imaginative engagement with botany. One central question that will be addressed here concerns the relative compatibility of the scientific and the artistic/imaginative approaches to nature adopted by Rousseau and Goethe. A further, related, consideration will be to ask whether their different responses can be characterised as more *anthropocentric* in privileging human vision (with flowers being seen through what is essentially some kind of human lens, be it utilitarian, aesthetic or cultural) or what is now termed *ecocentric*, with flowers being looked at, as it were, for their own sake, *on their own terms*.⁶ To what extent, in other words, is it the real flower that is being seen and described in their writing? If it is true, as Lawrence Buell claims in his highly influential *The Environmental Imagination*, that writing about nature entails an aesthetics of ‘dual accountability’, both to the outside world and to the inner one, or what he calls a ‘symbiosis of object-responsiveness and imaginative shaping’,⁷ how do these two writers acquit themselves? To what extent do they succeed in respecting and preserving the living otherness of nature and avoid immobilising, objectifying, anthropomorphising it? Do they invite the reader just to interact with a literary text or does their writing also encourage him/her to enter into a more conscious interaction with nature? As Buell also succinctly puts it: ‘Must literature always lead us away from the physical world, never back to it?’ (p. 11).

It would obviously go beyond the scope of this article to contextualise in detail Jean-Jacques Rousseau’s interest in plants both within his own career and within the botany of his time. Suffice it then to say that his knowledge of and passion for botany were long-standing and have received a certain amount of critical attention. He records the delight he took in plants as early as 1738 and this continued with varying degrees of intensity until his death forty years later.⁸ A constant feature that emerges from all his various writings on botany is his vehement condemnation of what he refers to as ‘ce dégoûtant préjugé’ (this distasteful prejudice),⁹ namely the tendency to value plants purely in terms of their potential medicinal usefulness, which is how they were seen by most contemporary botanists. Indeed, his *Lettres élémentaires sur la botanique* of 1771–3 are intended to be purely informative and pedagogical, written for a young mother who wishes to instruct her four year-old daughter in understanding and identifying flowering

plants. As such, they could be said to represent a homage to the Swedish naturalist Carl von Linné who, according to Rousseau in the *Rêveries*, partly succeeded in rescuing plants from the pharmacy and transferring them to the realm of natural history (p. 127; p. 110).

Rousseau's argument against the medicinal exploitation of plants is, firstly, that a utilitarian perspective considerably restricts the number of plants likely to be studied and, secondly, that it focuses attention only on specific, supposedly healing, properties. It thus ignores 'la structure végétale' and 'l'organisation des plantes' (*Le Botaniste sans Maître*, p. 14) or 'what plants are by paying attention to what they can do'.¹⁰ Rousseau's avowed aim of concentrating on 'what plants are' would seem to suggest a more ecocentric perspective, one that focuses in a disinterested way on the uniqueness and specificity of the individual plant. This impression is confirmed in the seventh of the *Lettres élémentaires* where he observes that botany is 'une étude de pure curiosité, et qui n'a d'autre utilité réelle que celle que peut tirer un être pensant et sensible de l'observation de la nature et des merveilles de l'univers' (*Le Botaniste sans Maître*, p. 80; a study of pure curiosity which has no real usefulness other than that which a thinking, sensitive being can derive from the observation of nature and the wonders of the universe). Indeed, it is precisely its uselessness that recommends botany to Rousseau since, for him, utilitarian concerns prevent human beings from approaching nature with an open mind and lead them rather to try to impose their will on it in a way that can be ultimately destructive. In explicitly rejecting this anthropocentric perspective Rousseau considers himself to be different from – and possibly superior to – the rest of humanity: 'Ces tournures d'esprit qui rapportent toujours tout à notre intérêt matériel ... n'ont jamais été les miennes. Je me sens là-dessus tout à rebours des autres hommes' (p. 128; This attitude which always brings everything back to our material interest ... has never been an attitude of mine. In this I am diametrically opposed to other men, p. 111).

In these *Lettres élémentaires* Rousseau recommends studying plants 'as a way of learning both how to see clearly, without preconceptions or assumptions, and how to classify, systematize and understand the miracles of nature in a spirit of humility' (Dent, p. 42). The ability to observe plants closely and systematically is in fact, as he says in the first letter, more important than knowing their names. It is this emphasis on the detailed and unprejudiced observation of the phenomenon, what Rousseau in the *Rêveries* calls a 'contemplation pure et désintéressée'

(p. 129; pure and disinterested contemplation, p. 111), in other words, an attempt at seeing the real flower and not the literary or symbolic flower, that will later be adopted and adapted by Goethe. Typical of Goethe too, as we shall see, are the 'spirit of humility' and the desire to 'understand the miracles of nature'.

When one looks more closely, however, it becomes apparent that, although Rousseau explicitly rejects a utilitarian perspective on nature, on another level the pleasure he takes in the study of plants is far from pure and disinterested. On the contrary, he makes numerous references in his autobiographical writings to its *therapeutic* function. In *Les Confessions* he says, for example: 'La botanique, telle que je l'ai toujours considérée, et telle qu'elle commençait à devenir passion pour moi, était précisément une étude oiseuse, propre à remplir tout le vide de mes loisirs sans y laisser place au délire de l'imagination, ni à l'ennui d'un désœuvrement total' (Botany – as I had always considered it and as I still did when it began to become a passion with me – was exactly the kind of idle pursuit to fill the void of my leisure, leaving no room for the wildness of the imagination or for the boredom of total inaction).¹¹ It is, in other words, a civilised pastime which calms his soul and occupies his mind, preventing him from reflecting on painful experiences. Rousseau says more specifically of his botanical writings in *Les Réveries du promeneur solitaire*: 'c'est le moyen de ne laisser germer dans mon cœur aucun levain de vengeance ou de haine' (p. 124; it is a way of preventing any seeds of vengeance or hate from taking root in my heart, p. 106). To be happy despite his persecutors, he adds, is in fact the best way to take his revenge on them! In other words, not only does he study plants in order to be happy and keep himself occupied, but his happiness itself is intended to perform a further – very human – function. Botany thus becomes an agreeable distraction from and antidote to his celebrated misanthropy,¹² and even – indirectly – a weapon to be used against his enemies.

It is thus illuminating to consider Rousseau's inconsistency here: the obvious anthropocentrism of the medicinal exploitation of plants is rejected, whereas the more subtle *psychological* use made of them not only is acceptable in his eyes but also seems *as important as* the increase in knowledge to which studying them gives rise. In Rousseau the flower could thus be said to exist *for its observer*, for the aesthetic pleasure, intellectual activity and above all serenity it stimulates in him. As Philip Knight points out, although Rousseau claims his 'sentimental botany' has no utilitarian purpose, he presents it both as a

retreat from society into rustic nature and as a way of purifying his imagination through contact with the innocence of plants.¹³ One teleology has thus been replaced by another: for Rousseau plants seem to be there, not for their own sake, but as objects of human contemplation.

Moreover, in Rousseau's 'passion' for classifying plants one can detect evidence of a desire to control and even dominate. It is interesting to note that 'assujettir' (to subject or subjugate) is the word he uses to describe the making of a herbarium.¹⁴ In this process flowers are picked, dried, dissected and labelled, their living presence transformed into a dead specimen and completely cut off from the ecosystem to which they belong. The herbarium then functions as a kind of botanical diary: seeing a dried flower reminds Rousseau of the living specimen and of the particular personal and geographical context in which he saw it. As Knight says, the activity of 'herborisation' produces the '*herbier*, an anthology not only of plants but of remembered (recreatable) feelings, each dried flower a nostalgic emblem of happiness in a rustic setting' (p. 16). Rousseau describes, for example, in the seventh *Promenade* how in old age, no longer able to visit scenes of past pleasure and no longer able fully to recall them with his failing imagination, he needs these 'primitive and highly personalised anthologies' which allow 'the experience to rush back to him, transcending temporal and spatial boundaries, giving him the exquisite illusion of attaining eternity'.¹⁵ As Jean Starobinski puts it, 'la fleur desséchée ... réveille le paysage, la journée ... Elle est le signe qui permet au bonheur révolu de redevenir un sentiment immédiat' (the dried flower ... reveals the landscape, the day ... It is the sign which allows past happiness to become once again an immediate feeling).¹⁶ In other words, Rousseau makes use of flowers not only as objects of contemplation but also as stimuli to his memory.

Indeed, Rousseau lists and categorises individual plants, but it is interesting to note that, in his non-botanical writings, he does not attempt to describe them. In the second *Promenade*, for example, he mentions his pleasure at recognising a number of rare flowers, whose Latin names he gives, but then almost immediately moves on to convey an impression of the atmosphere of the whole setting: 'je quittai peu à peu ces menues observations pour me livrer à l'impression *non moins agréable mais plus touchante* que faisait sur moi l'ensemble de tout cela' (pp. 46–7; I gradually passed from these detailed observations to the equally agreeable but more affecting impressions made on me by the complete picture, p. 37). In this particular instance the impression is in

fact highly anthropomorphic, 'un mélange d'impression douce et triste trop analogue à mon âge et à mon sort pour que je ne m'en fisse pas l'application' (mixed feelings of gentle sadness which were too closely akin to my age and my experience for me not to make the comparison). A very similar pattern is repeated in the seventh *Promenade*: 'je trouvai la *dentaire heptaphyllos*, le *cyclamen*, le *nidus avis*, le grand *laserpitium* et quelques autres plantes qui me charmèrent et m'amuserent longtemps. Mais insensiblement dominé par la forte impression des objets, j'oubliai la botanique et les plantes, je m'assis sur des oreillers de *lycopodium* et de mousses, et je me mis à rêver plus à mon aise' (p. 135; Here I found seven-leaved coral-wort, cyclamen, *nidus avis*, the large *laserpitium* and a few other plants which occupied and delighted me for a long time, but gradually succumbing to the powerful impression of my surroundings, I forgot about botany and plants, sat down on pillows of *lycopodium* and mosses, and began dreaming to my heart's content, pp. 117–8).

Rousseau's writing about botany is thus characterised by a striking contrast between, on the one hand, the scientific labelling of plants and, on the other, the vaguer, more atmospheric presentation of a whole ecosystem. In other words, he uses both a very specific Linnean binominal nomenclature and a more conventional, generalised poetic lexis. One critic has commented on the discrepancy in Rousseau between the richness of the experience of nature and the relative poverty of the conceptual and linguistic material with which he describes it and has suggested that in his usage of commonplace, arcadian images – the 'brillantes fleurs, émail des prés, ombrages frais, ruisseaux, bosquets, verdure' of the *Rêveries* (p. 132; bright flowers, adornment of the meadows, cool shades, streams, woods and green glades, p. 114) – he is typical of his period.¹⁷ By contrast with this, the precise language of botany allowed Rousseau economically and unambiguously to evoke a particular plant. This perhaps explains his predilection for precise Latin terminology which thus functions as the verbal equivalent of and accompaniment to the dried flowers in his herbarium, linguistic labels which serve both to identify and to stimulate recollection.

Before we leave Rousseau it is worth considering one final passage (from Book 6 of *Les Confessions*) which sheds an interesting and ironic light on his emphasis on *seeing* plants. This famous extract is worth quoting in full:

En marchant elle [Madame de Warens] vit quelque chose de bleu dans la haie, et me dit: Voilà de la pervenche encore en fleur. Je n'avais jamais vu de la pervenche,

je ne me baissai pas pour l'examiner, et j'ai la vue trop courte pour distinguer à terre les plantes de ma hauteur. Je jetai seulement en passant un coup d'œil sur celle-là, et près de trente ans se sont passés sans que j'aie revu de la pervenche ou que j'y aie fait attention. En 1764, étant à Cressier avec mon ami M. du Peyrou, nous montions une petite montagne au sommet de laquelle il a un joli salon qu'il appelle avec raison Belle-Vue. Je commençais alors d'herboriser un peu. En montant et regardant parmi les buissons, je pousse un cri de joie: *Ah! voilà de la pervenche!* et c'en était en effet. Du Peyrou s'aperçut du transport, mais il en ignorait la cause; il l'apprendra, je l'espère, lorsqu'un jour il lira ceci. (p. 223)

As she walked she saw something blue in the hedge, and said to me: 'Look! There are some periwinkle still in flower'. I had never seen a periwinkle, I did not stoop to examine it, and I am too short-sighted to distinguish plants on the ground without doing so. I merely gave it a passing glance, and nearly thirty years elapsed before I saw any periwinkle again, or at least before I noticed any. In 1764, when I was at Cressier with my friend M. du Peyrou, we were climbing a hill, on the top of which he has built a pretty little look-out which he rightly calls Belle Vue. I was then beginning to botanize a little and, as I climbed and looked among the bushes, I gave a shout of joy: 'Look, there are some periwinkle!', as in fact they were. Du Peyrou noticed my delight, but he did not know its cause; he will learn it, I hope, when one day he reads this. (p. 216)

In this strange passage nobody actually *sees* 'de la pervenche'. Madame de Warens, passing by, notices 'something blue in the hedge', while Rousseau himself is at least twice blind: involuntarily ('I had never seen a periwinkle' and 'I am too short-sighted') and voluntarily ('I did not stoop to examine it'). But the unseen object of vision does not let itself be ignored. Thirty years later a similar scene occurs at a place, significantly called Belle Vue. Rousseau 'recognises' 'de la pervenche' which he still has never actually seen before. It seems that what allows him to recognise the flower are the words which come back to him, along with a glimpse of colour: 'the flower speaks first to the ear and only then to the eye' (Sartiliot, pp. 120–22); and it is through a connection to the past that he can then identify something in the present. Although Rousseau refuses to 'see', he is not allowed to forget: the flower is remembered without having been seen or described. As Sartiliot puts it, 'Laziness and shortsightedness prevent Rousseau from "seeing", from consciously allowing into his mind something that somehow gets inscribed there unconsciously' (p. 121). Despite his bad eyesight¹⁸ and his bad memory,¹⁹ the flower resists his neglect and survives.

One might conclude from these examples that, despite his own claims and some initial appearances to the contrary, it is a largely anthropocentric paradigm that we find in Rousseau. His work bears

witness to a great desire to observe and understand botany, but ultimately plants seem to be valued largely for what they evoke in the observer, namely memories, the intellectual pleasure of accumulating and systematising knowledge, a degree of psycho-spiritual serenity. In this respect he could be said to be typical of the spirit of his age: on the one hand, Buffon and Linné are adopting a systematic approach to the study of natural phenomena; on the other, there is a new pre-Romantic interest in their suggestive potential. Rousseau's work articulates this gulf between the scientific study of plants (in his purely botanical writings) and their affective, imaginative appeal (in his autobiographical texts), but is unable to bridge it. In fact, he himself illustrates this split particularly clearly in the distinction he makes between 'botanistes' and 'bergers' in his dictionary definition of the word 'fleur'. This entry begins as follows: 'Si je livrais mon imagination aux douces sensations que ce mot semble appeler, je pourrais faire un article agréable peut-être aux bergers, mais fort mauvais pour les botanistes: écartons donc un moment les vives couleurs, les odeurs suaves, les formes élégantes, pour chercher premièrement à bien connaître l'être organisé qui les rassemble' (*Le Botaniste sans Maître*, p. 112; If I were to abandon my imagination to the gentle sensations which this word seems to evoke, I could write an article which would perhaps appeal to shepherds but be very bad for botanists: let us therefore for a moment forget the vivid colours, the sweet scents, the elegant forms, in order first of all to try to get to know the organised being which unites all of these features). This distinction echoes the difference described by John Ruskin in his Preface to *Modern Painters* 'between the mere botanist's knowledge of plants, and the great poet's or painter's knowledge of them'. The difference, he says, is that 'the one notes their distinctions for the sake of swelling his herbarium, the other, that he may render them vehicles of expression and emotion'.²⁰

Turning now to Goethe, we shall consider whether it is in fact possible to be at once a 'mere botanist' and a 'great poet', that is, to unite the scientific study of plants with an openness to their imaginative appeal. Although he admired Rousseau and claimed to have learnt a great deal from him, Goethe himself adopted a very different approach to botany. Best-known of course as a poet and playwright, he also, however, spent many years, between 1777 and his death in 1832, engaged in scientific pursuits, of which one of the most important was the study of plants, although he also carried out research in, amongst other things, mineralogy, geology, optics and anatomy. A great deal has

been written about the philosophical issues surrounding his studies of nature but less about the experimental method itself. However, one writer who *has* dealt with it provides a useful definition, based on Goethe's own somewhat unsystematic descriptions. For Fritz Heine-mann this method is 'genuinely phenomenological. It begins with phenomena, proceeds through them, and ends with them, returning at the last from the Ur-phenomenon (archetypal phenomenon) to the particulars whose claims have not at any point been abrogated'.²¹

Goethe's aim in his phenomenology of nature was to make systematic use of a scientific methodology which would value the *qualitative* as much as the quantitative experience of phenomena.²² By uniting empirical observation of nature with a more intuitive, imaginative response, this approach would seem to reconcile the scientific and the artistic in a way that Rousseau's did not. In order to highlight the differences between Rousseau and Goethe it will be necessary to look at some of the techniques the latter developed in order to bring about what he termed 'Anschauende Urteilskraft', usually translated as intuitive and/or perceptive judgment, a kind of 'higher' empiricism.²³ The following exposition is, however, just an overview of some of the ideas developed by Goethe in two lengthy essays, 'Morphology' and 'The Metamorphosis of Plants', as well as in a series of shorter writings. It will not attempt to present in detail the *outcome* of his botanical research but, for the purposes of a comparison with Rousseau, will focus on the methodology he used.

Goethe himself divided his method of approach into three stages: seeing the 'empirical phenomenon', then the 'scientific' phenomenon and finally the 'pure' (or archetypal) phenomenon, stages which are distinct but closely interconnected. The first step for Goethe was always the attentive, objective observation of the natural object, using all the senses and free of any preconceptions. He describes this as a kind of self-denial which would allow the purest possible assimilation of the phenomenon.²⁴ This sounds very reminiscent of Rousseau's avowed aim but, as we shall see, Goethe succeeded in putting theory into practice in a much more radical and systematic way. As he says in his essay 'Experiment as Mediator between Object and Subject', written in 1793: 'Thus the true botanist will not allow the beauty nor the use of plants to divert him; he will examine their formation and their relation to the rest of the plant kingdom. Just as they all are conjured forth by the sun's rays which shine on all, so shall he look upon them and cognize them with the same quiet gaze, taking the

standards for such knowledge, the data to guide his judgment, not from himself but from the circle of the thing which he observes'.²⁵ Like Rousseau he rejects the utilitarian view of plants but, unlike Rousseau – who, as he himself says in the *Rêveries*, instinctively preferred the most agreeable objects (p. 136; p. 120) – he also refuses to be influenced by their beauty. The observer of nature, Goethe goes on to say, must forego 'the standards of pleasure or displeasure, attraction or repulsion, use or harm'. As we shall see in more detail later, his criteria for 'judging' them come from the plants themselves, that is, are ecocentric rather than anthropocentric.

It is also worth pointing out that, unlike most botanists of the time with their habit of examining uprooted plants in a herbarium, for which, as we have seen, Rousseau also had a predilection, Goethe pursued his studies outdoors as much as possible.²⁶ As a result, he became not only increasingly convinced that plant forms varied considerably according to the habitat in which they grew but also increasingly dissatisfied with the rigidity of Linnean classification.²⁷ His travels (particularly to Italy) revealed to him the important formative influence of factors such as climate, temperature, humidity and condition of the soil. In other words, Goethe thought that a plant could only be fully understood when the precise and intimate relationship between a particular specimen and a particular ecosystem was taken into account. Indeed it is for this idea and its development that Goethe is particularly well-known: Rudolf Magnus refers to him as 'the founder of comparative morphology in botany' (p. ix).

The second step for the 'Natuschauer' (the term Goethe preferred to the more common 'Naturforscher') was then to turn away from the object and attempt to produce an exact mental equivalent, imaginatively conjuring it up in one's mind's eye. This process he called 'exakte sinnliche Phantasie', literally translated as 'exact sensorial imagination', which means that one is perceiving the object in imagination as if with the senses, thinking the object rather than thinking about it.²⁸ More specifically, this kind of seeing is concerned with the *relationships between* the qualities observed and thus allows one to experience the plant's growth process. The 'Natuschauer' is, as it were, creating the flower in his/her imagination, participating in the act of its creation or, as Goethe himself put it, 'recreating in the wake of ever-creating Nature' ('Nachschaffen einer immer schaffenden Natur').²⁹ In other words, he or she is internally reproducing the coming into being of the plant, imaginatively participating in its generative movements, rather

than visualising a static mental equivalent. Whereas Linné organized plants into species and genera by comparing individual parts (leaves, sepals, petals, stamens etc.) as they occur in different specimens, Goethe saw the plant holistically: 'He discovered another dimension in the plant, an intensive depth, in which these different organs are intimately related'.³⁰ What he in fact discovered was continuity of form.

This can be seen in what is probably the best-known example of Goethean science, observation of the leaf types of a single plant, a practice which demonstrates a new intuitive way of understanding plant development. This exercise in fact represents just the first stage in Goethe's investigations into metamorphosis, to which, for the purposes of clarity and brevity, we will be limiting ourselves here. It involves 'the method of serial arrangement of the phenomena to be investigated ... the one that Goethe made his very own' (Magnus, p. 54). Thus, in order to make a leaf sequence, all the leaves of a plant are laid out in the order in which they were formed, from the oldest, most basal leaves to the newest most apical ones. It soon becomes apparent that there is a great variety of shapes and sizes and that no single leaf can be seen as representative. The observer looks at one leaf after the other, filling in the gaps between each with the imagination, thereby with practice creating a smooth mental continuum. In the physical world the plant is frozen in a moment of time. But mental visualisation enables one to link the various leaves like frames of a moving picture into a fluid metamorphosis from one form into another. Goethe himself described how he grasped the metamorphic process in the following words:

If I look at the created object, inquire into its creation, and follow this process back as far as I can, I will find a series of steps. Since these are not actually seen together before me, I must visualise them in my memory so that they form a certain ideal whole. At first I will tend to think in terms of steps, yet nature leaves no gaps, and thus, in the end, I will have to see this progression of uninterrupted activity as a whole. I can do so by dissolving the particular without destroying the impression itself (Hoffmann, p. 133).

This exercise of 'exact sensorial imagination' gives one a heightened inner perception of the flow of energies in the plant and with this experience we arrive at the third stage in the Goethean method. Here the movement and inner necessity of plant growth, what Goethe calls the plant's formative *gesture*, (or its 'formative life-principles', Hoffmann, p. 134) can be directly experienced in the imagination. Patterns become apparent which are not perceptible to the analytical, logical

intellect. It is important to stress that what is being imaginatively experienced here is not one physical form developing into another since all these leaves are adult stem forms and not stages of any other; rather it is *the formative process itself* which is being transformed as it produces successive leaves on the stem. In other words, metamorphosis for Goethe is 'not the outward alteration of one form into another but the differing outward expressions of an inward idea'³¹ or archetype, the 'pure phenomenon'. The unity of the plant is in the formative movement which generates the various physical manifestations.

Here an important contrast with Rousseau becomes apparent. For Goethe Rousseau's approach is flawed in that it fails to take adequate account of the fact that the flowering plant is not a fixed, unchanging object to be dissected, but is both in a constant process of development and subject to considerable variation. It is, in other words, a process rather than a finished product. As Charles Davy puts it: 'The plant world asks for a schooling of the imagination not towards 'objectivity' (the grasping of objects) but towards participatory movement (thinking with *processes*)'.³² Goethe felt that conventional botany made the mistake of treating the organic realm as if it were inorganic, whereas the former in his opinion requires a quite different form of cognition which he called 'Vernunft' (reason) by contrast with the 'Verstand' (understanding) appropriate to the latter. This opposition is neatly summarised in one of his 'Maxims and Reflections': 'Reason concerns what is becoming; understanding what has become'.³³ This might also be characterised as the difference between taxonomy on the one hand, and morphology on the other. It is interesting to compare this notion with Henri Bergson's discussion in his 'L'évolution créatrice' (1907) of the kind of self-contradiction that appears when we try to grasp motion by rational thought (as illustrated in Zeno's famous paradox of the flying arrow, for example). Bergson recognised that this reflected an intrinsic limitation of the analytical mind itself, and he considered the possibility of a transformation of consciousness into a more intuitive mode whereby the reality of change itself can be experienced directly.³⁴ This mode would also, for example, be the appropriate means of appreciating music.

Goethean science with its 'pictorial-dynamic contemplation of the sense-world'³⁵ represents just such a transformation of consciousness. This more intuitive mode permits direct experience of the essential specificity of the plant in a way that is not possible with conventional botany. It could be said that the latter (and indeed Rousseau) are

concerned with studying *natura naturata*, nature as a series of created products or observable objects, (a more analytical understanding of separate constituent parts), whereas Goethe is attempting to penetrate through these in order to intuit the formative processes at work in *natura naturans*, nature as a creative, dynamic force, an initiative centre of activity. (These terms originate with St Thomas Aquinas and Scholastic thought.) However, as we have seen, the unique gesture of a living being can only be imaginatively and precisely reproduced once its total material reality has been assimilated. In other words, this approach to botany would seem to reconcile not only the senses and the intellect,³⁶ but also the scientific and the imaginative. What is more, Goethe's approach is genuinely ecocentric in that it rejects the false anthropomorphism of the pathetic fallacy or the exploitation of plants in order to fulfil other human needs by allowing the phenomenon to speak for itself.

It will thus be apparent that, while Goethe's approach to botany clearly is influenced by and builds on Rousseau's, the two are nonetheless based on very divergent paradigms. The epistemology underlying Rousseau's scientific and autobiographical writing about plants is fundamentally Cartesian: the onlooker is detached from the object of study, consciousness and nature are irrevocably separated, plants are 'machines vivantes' (*Rêveries*, p. 132; p. 115) which are to be either intellectually understood or emotionally and aesthetically appreciated. Goethe's botanical writings, however, are based on the non-dualistic premise that human consciousness is *part of* nature and that, by observing its activity in the right way, we can become participants in its productivity, 'dass wir uns, durch das Anschauen einer immer tätigen Natur, zur geistigen Teilnahme an ihren Produktionen würdig machen' (Böhme, p. 155). The 'participatory epistemology' underlying this approach to nature is described thus by Richard Tarnas: 'from within its own depths the imagination directly contacts the creative process within nature, realizes that process within itself and brings nature's reality to conscious expression. Hence the imaginal intuition is not a subjective distortion but is the human fulfilment of that reality's essential wholeness'. 'The human mind', he says, 'is ultimately the organ of the world's own process of self-revelation ... Nature's reality ... comes into being through the very act of human cognition'.³⁷ In conclusion it could thus perhaps be said that Rousseau's writing about botany illustrates a problem to which Goethe provides a possible solution.

NOTES

- 1 Glen A. Love, *Practical Ecocriticism: Literature, Biology and the Environment* (Athens: University of Georgia Press, 2003), p. 1.
- 2 *The Song of the Earth* (London: Picador, 2000), pp. 72–3.
- 3 ‘Le Langage des fleurs’, in *Œuvres complètes*, 12 volumes (Paris: Gallimard, 1970), vol. I, p. 173.
- 4 *Le Botaniste sans Maître* (Paris: Éditions A. M. Métailié, 1983), pp. 112–3.
- 5 Rudolf Magnus, *Goethe as a Scientist* (New York: Collier Books, 1961), pp. 41–2.
- 6 ‘Ecocriticism’ has been defined as a kind of ‘ethical relinquishment’ by Greg Garrard in ‘Radical Pastoral?’, quoted in Laurence Coupe (ed.), *The Green Studies Reader: From Romanticism to Ecocriticism* (London: Routledge, 2000), p. 185.
- 7 *The Environmental Imagination: Thoreau, Nature Writing and the Formation of American Culture* (Cambridge, Mass: Harvard University Press, 1995), pp. 91–103.
- 8 N. J. H. Dent, *A Rousseau Dictionary* (Oxford: Blackwell, 1992), pp. 41–2.
- 9 *Les Rêveries du promeneur solitaire* (Paris: Garnier-Flammarion, 1964), p. 127; translated by Peter France as *Reveries of the Solitary Walker* (Harmondsworth, Middlesex: Penguin Books, 1979), p. 110. Where no source is given, translations are my own.
- 10 Christopher Kelly, *Rousseau’s exemplary life: The Confessions as Political Philosophy* (Ithaca: Cornell University Press, 1987), p. 229. The italics are mine.
- 11 (Paris: Bibliothèque de la Pléiade, 1947), p. 632; translated by J. M. Cohen as *The Confessions* (Harmondsworth, Middlesex: Penguin Books, 1975), p. 592.
- 12 ‘La nature est pour Rousseau un lieu abstrait, un lieu symbolique; elle est l’antonyme de la ville’ (Nature is for Rousseau an abstract, symbolic place. It is the antithesis of the town). This quotation is taken from Michèle Crogiez, *Solitude et Méditation: Étude sur les ‘Rêveries’ de Jean-Jacques Rousseau* (Paris: Champion, 1997), p. 109.
- 13 *Flower Poetics in Nineteenth-Century France* (Oxford: Clarendon Press, 1986), p. 16.
- 14 See Claudette Sartillot, *Herbarium Verbarium: The Discourse of Flowers* (Lincoln: University of Nebraska Press, 1993), p. 119.
- 15 David Scott, ‘Rousseau and flowers: The poetry of botany’, in *Studies on Voltaire CLXXXII* (1979), pp. 77–8.
- 16 *Jean-Jacques Rousseau: la transparence et l’obstacle* (Paris: Gallimard, 1971), p. 280.
- 17 É. Guitton, *Le Prérromantisme: Hypothèque ou hypothèse* (Paris: Klincksieck, 1975), p. 234.
- 18 See Alice Planche, ‘Les Fleurs du rêve et le regard du myope’, in *Actes du colloque de Nice sur Rousseau et Voltaire* (Paris: Champion, 1979), especially p. 588.
- 19 As Kelly points out, Rousseau frequently connects the pleasure he takes in botany to his lack of memory: ‘he often rediscovers what he has known before rather than finding something completely new’ (p. 231).
- 20 This is quoted in M. H. Abrams, *The Mirror and the Lamp: Romantic Theory and the Critical Tradition* (Oxford: Oxford University Press, 1953), p. 312.
- 21 This is quoted in Nigel Hoffmann, ‘The Unity of Science and Art: Goethean Phenomenology as a New Ecological Discipline’, in David Seamon and Arthur Zajonc (eds), *Goethe’s Way of Science: A Phenomenology of Nature* (New York: State University of New York Press, 1998), p. 130.
- 22 Hartmut Böhme, *Natur und Subjekt* (Frankfurt am Main: Suhrkamp, 1988), p. 155.

- 23 Hoffmann, p. 135. In a late essay entitled 'Anschauende Urteilskraft' Goethe 'maintains that he has achieved in practice what Kant had declared to be forever beyond the scope of the human mind ... Goethe chose the title of the essay so as to refute Kant by its very wording'. This is quoted from Ernst Lehrs, *Man or Matter* (London: Faber and Faber, 1951), p. 65.
- 24 See Peter Sachtleben, *Mit den Augen denken lernen: Einführung in die Naturstudien Goethes* (Schaffhausen: Novalis, 1994), p. 196.
- 25 This is quoted in Herbert K. Koepf and Linda S. Jolly (eds), *Readings in Goethean Science* (Spring Valley New York: Bio-Dynamic Literature, 1978), p. 26.
- 26 Magnus, pp. 42-3.
- 27 For some of Goethe's comments on Linné see Sachtleben, p. 32.
- 28 Hoffmann, pp. 133-4.
- 29 This is quoted in Lehrs, p. 69.
- 30 Henri Bortoft, *Goethe's Scientific Consciousness*, Institute for Cultural Research Monograph Series, no. 22 (Nottingham: Russell Press, 1986), p. 42.
- 31 Ronald H. Brady, 'The Idea in Nature: Rereading Goethe's Organics', in *Goethe's Way of Science: A Phenomenology of Nature*, p. 106.
- 32 This is quoted in Henri Bortoft, *The Wholeness of Nature: Goethe's Way of Science* (Edinburgh: Floris Books, 1996), p. 395.
- 33 This is quoted in Brady, p. 104.
- 34 This is discussed in Bortoft, *Goethe's Scientific Consciousness*, p. 76 and also in his *The Wholeness of Nature*, pp. 286-9.
- 35 Lehrs, p. 81, and see also Böhme, p. 156.
- 36 'He developed a stage in which his morphological thought reached out to the reconciliation of the antithesis between senses and the intellect, an antithesis with which traditional science does not attempt to cope', Agnes Arber, quoted in Koepf and Jolly, p. 4.
- 37 *The Passion of the Western Mind* (London: Pimlico, 1996), p. 434.