Sensitive Life: Cultivating Vegetality in a Culture of Sensibility

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In the title of his *Dictionnaire raisonné et universel des animaux* (1759), Aubert de la Chesnaye des Bois advertised to potential readers a list of animals subject to description in the four volumes. Included among the more familiar quadrupeds, birds and reptiles, he advertises the “zoophytes, ou plantes animales.”¹ As a strategy for attracting the curious, mentioning this particular example of animal life was a good bet. Over the preceding two decades these creatures—the fresh water polyp—were the subject of a series of mémoires at the Académie des Sciences, which attempted to distinguish between their animal and plant-like nature. As Des Bois notes, these “productions qu’on a voit prise pour de belles Plantes” are in fact not plants at all, and they must be given the name that expresses “exactement ce qu’ils sont.”² While they “vegetate” in the sea and grow young polyp “comme une tige d’arbre pousse une branche, & comme une branche pousse un rameau,” naturalists have removed them from the category of plant, noting their carnivorous nature and animal-like motions.³

Despite Des Bois’ certainty that animal was the proper name to give to these boundary creatures, explaining “ce qu’ils sont” for the polyp was as difficult for *les Physiciens* as other troubling forms of life: the *plantes pierreuses*, the lithophytons, the mimosa pudica. The eighteenth century French naturalist faced an array of bodies that seemed to exhibit both vegetal and animal qualities. The

¹ AUBERT DE LA CHESNAYE DES BOIS, François-Alexandre. *Dictionnaire raisonné et universel des animaux, ou le règne animal, consistant en quadrupèdes, cétacées, oiseaux, reptiles, poissons, insectes, vers, zoophytes, ou plantes animales: leurs propriétés en médecine: la classe, la famille, ou l’ordre, le genre, l’espèce avec ses variétés, où chaque animal est rangé, suivant les différentes méthodes ou nouveaux systèmes de Messieurs Linnaeus, Klein & Brisson ... ouvrage composé d’après ce qu’ont écrit les naturalistes anciens & modernes, les historiens & les voyageurs.* Paris, C.-J-B. Bauche, 1759. 4 v.


³ Ibid, p. 528.
classificatory act of separating, sorting and naming bodies, while central to eighteenth century natural history, suffered a constant threat of disruption from bodies on the ground. At the same time, these disruptions opened up a space in which vegetable and animal life could be reimagined, the boundaries redrawn. This paper asks what it is to know “ce qu’ils sont” for vegetable bodies in the eighteenth century and how they came to participate in representing and refiguring human bodies in the period.

A Primer on Vegetality: Duhamel du Monceau, 1728-1760

A pensionnaire in the Académie des Sciences, and inspecteur général of the Royal Navy, Duhamel hardly seems a candidate for the title of revolutionary. On the contrary, dividing his time between fine Paris houses and several landed estates, with his nose to the grindstone of the least popular questions of experimental physics, Duhamel seems more like a would-be candidate for the guillotine. However, at the end of his life, this rather too simple figure in French science won the praise of academicians and citoyens alike for his contributions to the botany and agriculture. From the beginning of his career, he chose the experimental method of William Harvey and Stephen Hales as a means to uncover the true nature of vegetable bodies, rather than chemistry or classification, and sought to apply what he learned in his laboratories and fields to the practical questions of French agriculture. From his earliest work, he rested his career on the fine edge between academic and public audiences, and introduced both to fresh connections between the world of plants and men.

Duhamel’s first mémoire for the academy illustrates his commitment to an experimental method as a means of getting to the vegetal “ce qu’il est.”\(^5\) For this first public test of his skills, Duhamel was asked by the Académie to address the question of a pernicious disease, la mort, which was attacking saffron plants in French fields. When his search for authors who had written on the disease turned up nothing, he turned to “ceux qui s’applique à la culture de cette plante.”\(^6\) The experts in cultivation proved as useless as the philosophers in solving the problem, since they were accustomed to the wonders of nature and so were “gens qui les choses les plus admirables ne touchent point.”\(^7\) Duhamel was left to his own research to solve the problem, both for science and for French agriculture, and that he did. Surprised to watch each infected plant become “a murderer of his own kind,” Duhamel treated the disease like an epidemic among livestock, separating infected plants from others.\(^8\) Inspecting the bulb of each diseased plant, Duhamel noted reddish “corps glanduleux” appearing on the diseased bulbs. He concluded that a parasitic plant was taking hold on the bulb of the saffron plant, propagating its destruction by the roots, spreading from plant to plant through the soil.

Duhamel’s entrée into the world of the academy was a success; he won a place in the section of botany on the strength of his analysis. But this success also secured his faith in a method of inquiry that adopted two major lines of action: first, a dedicated empiricism and experimentalism that refused to take the word or text or tradesman, and instead turned the field into a laboratory of bodies, with the goal of understanding their interactions; second, a productive application of analogies that shifted his attention from common perspectives to focus instead on similarities between otherwise separable kinds of bodies. In solving the question of the saffron plant, Duhamel entered into what would become a

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\(^7\) Ibid, p. 101.

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lifelong habit of looking for analogies in the nature of plants and of animals (including humans) and experimenting to find out how much of that nature was shared.

This combined approach produced research published in the mémoires of the Académie that refined the physics of the plant's very organization. In a mémoire on the effects of rainfall on plant growth, Duhamel writes that rather than rainfall itself, it is the cooling and heating of the air that causes the most growth during spring and summer.\(^9\) This happens in part because of the operation of the air upon plant bodies. In comparison to humans and animals, plants have no heart to circulate their sap. This necessary action is accomplished instead by the air, which enters the plant and as it is condensed and rarified, pushes and pulls the sap through the internal workings of the plant. Duhamel draws the analogy, already drawn out by his predecessor Stephen Hales, between plant sap and human blood:

« Cet air qu'elles on pris, non-seulement anime la Sève comme il anime notre Sang, mais quand il se rarefie, il la pousse vers l'endroit de la moindre résistance, & quand il se condense, il l'oblige à couler dans les especes qu'il a quittées. » In the ancient world, plants were considered to be far simpler organisms than animals or humans – made of earth, and deprived of motion, reason, sensation. In Duhamel's image, however, the plant's body mirrors human organization, but with the important distinction that plants depend on the external environment for some operations that animals have an organ to produce. The analogy between plants and humans produces in Duhamel's descriptions a new awareness of similarity, even as it begins to draw lines of potential new boundaries between the human and the vegetal forms.

In fact, Duhamel's experimental and analogical explorations of vegetable bodies would continue to emphasize the role that environment played in the formation and health of the body of the plant. For the saffron, la mort approached a healthy plant through roots pushing through the soil. After his saffron

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studies, Duhamel turned his attention to another situation where plant bodies form the environment for each other: grafting. In a series of articles that combined an inquiry into the physics and the practical techniques of grafting, Duhamel notes that there is an analogy to be drawn between the reconnecting of tissues of two grafted pieces of tree and the reconnecting tissues of broken bones in human bodies. He experiments with the transplantation of animal parts, severing and reattaching parts to evaluate how the fibers of vegetable and animal bodies reassociate themselves with the disattached parts.\textsuperscript{10}  
Duhamel’s work was “fondé sur l’analogie qui est entre les corps organisés, animaux & végétaux, & que personne certainement ne doit mieux connôtre que lui.”\textsuperscript{11}  Both human and vegetable bodies proved able, albeit in limited conditions, to take in a foreign object and unite it with the original body. Bolstered by a separate series of articles comparing the growth of bones and tree trunks, Duhamel proved not only the productivity of experiment and analogy, but also rendered impossible a denial of similarities between plant and human bodies.

For Duhamel, being a plant meant being responsive to the immediate environment and that sensitivity was, as Des Bois had it, “ce qu’ils sont.” For Duhamel, this meant the role of the cultivator was to know the physics of the individual plant, to understand the operations of the environment upon its organization. He wrote \textit{La Physique des arbres} (1758) to broaden the audience for his vegetable anatomy from the academy to farmers and gardeners who could improve their crops, he argued, if they understood “what properly belongs to the plant.”\textsuperscript{12} But they must also understand how to accommodate the environment to the plants most suitable conditions, or conversely, understand which plants would grow best in a given environment. His \textit{Traité des arbres et arbustes qui se cultivent en


\textsuperscript{12} Duhamel, \textit{La Physique des Arbres} (Paris, 1758), 2vols., p. 300.
France en pleine terre (1755) was only one of a number of available treatises listing plants that were native to or would grow properly in French climates.\textsuperscript{13} He provided gardeners with a guide for managing the environment aboard ship when transporting plants from one country to another, putting both the physics of plants and the manipulation of environment to work for the benefit of the plant trade.\textsuperscript{14} While the physics of botany left plants and humans grafted onto each other, there was room in Duhamel’s approach to acknowledge the part that humans played in orchestrating the environment in which plants, particularly agricultural products, flourished.

The Ethics of Man the Plant: Julien Offray de la Mettrie, 1747-1751.

While Duhamel’s search for parallels between vegetative and human forms of life was guided by the questions professional and pragmatic, the image of plants as creatures sensitive to their environments was resonating in other corners of French culture. Julien Offray de La Mettrie occupied a world far from the tireless experimentalism of Duhamel. His forcibly itinerant lifestyle escaping the effects of his own radicalism and early death in a country far from home sits in marked contrast to Duhamel’s long life and almost universal good reputation. As a physician, La Mettrie’s primary focus was the human body, and fundamentally, he sought to know better the “ce qu’ils sont” of human bodies, their nature, their qualities.\textsuperscript{15} To get access to these truths, however, La Mettrie like Duhamel used analogies between the vegetable and human bodies to generate new perspectives on the body.

La Mettrie is better known for the extended analogy between man and machine in his materialist treatise, L’homme machine (1747).\textsuperscript{16} There he claims to push Cartesian philosophy to its

\textsuperscript{13} Duhamel, Traité des arbres et arbustes qui se cultivent en France en pleine terre, (Paris, 1755). 2 vols.
\textsuperscript{14} Duhamel, Avis pour le transport par mer des arbres, des plantes vivaces, des semences, des animaux et de différens autres morceaux d’histoire naturelle (Paris, 1752).
\textsuperscript{15} For biographical information, particularly the medical contexts, see Kathleen Anne Wellman, La Mettrie: Medicine, Philosophy, and Enlightenment, (Durham: Duke University Press, 1992).
\textsuperscript{16} Two excellent English translations with notes and introductions are Julien Offray de La Mettrie, L’homme Machine: A Study in the Origins of an Idea, Ed. Aram Vartanian (Princeton: Princeton University Press, 1960) and
logical conclusions in arguing for a mechanical understanding of the human body, and ridding Cartesians of the need to maintain a theory of the human soul. Life, he argues, need not be anything other than fibers and springs of the body, and the basic actions and reactions of muscles and nerves merely automatic responses inherent in the nature of these organs. His radical materialism would win him friends only among the philosophes gathering at the court of Frederick the Great in Prussia, where La Mettrie fled after the censure of his books. Far from retreating, La Mettrie published the following year a treatise entitled *L'homme plante* (1748), which extends the analogy of the living machine to plants, just as it draws extended comparisons between plant and human organization.  

Far as he is from Duhamel, La Mettrie puts to work the same analogies between parts of plants and parts of humans and raises the same spectre of plant dependency that Duhamel proposed in his studies on the effects of rain water. While most parts of the plants have direct analogies to parts in human beings – lungs to leaves, trunk to bones, skin to bark, etc – there are two areas where the mapping effect of analogical method remain blank, where humans have a heart, plants depend on the heat of the sun to accomplish basic physiological processes: "Does the heart beat in every animal? Does it swell the veins with streams of blood that carry feeling and life throughout the whole machine? Likewise, heat, that other heart of nature, that fire in the bowels of the earth and the sun...this fire, I say, is the heart that makes the juices circulate in the tubes of plants...Indeed, what other cause but heat could make everything in the universe germinate, grow, flourish, and multiply?" La Mettrie draws a similar analogy between human nerves and air, which though it is external to the plant, is, he argues, necessary for basic physiological function. "Air" he writes "seems to produce the same effects in plants that are rightly attributed to the subtle spirits in the nerves of man...the pressure and spring of air


18 *Machine Man and Other Writings*, op. cit.
sometimes makes plants elevate themselves above the surface of the water, and open and close as one opens and closes one’s hand.” Whether plants are drawing food from the soil, responding to the day’s heat or the pressure of the air, they depend on the environment for basic physiological processes. The image of the plant-as-machine is one that is not only influenced, but abjectly dependent upon the environment - on sun and air - for its most basic processes.

The link La Mettrie draws between heart and heat, nerves and air, at once reinforces the image of the plant as susceptible to external environments. La Mettrie implies no total collapse of the categories of man and plant. He emphasizes the differences between plants and humans: humans can move, they have circulation that depends on internal organs, not external environments. But much like Duhamel’s reconfiguration of plants and humans, the difference is a question of degree, rather than kind. Though they meet their needs in different coordination between internal and external stimuli, they are both according to La Mettrie built of fibers and springs that operate automatically when impressed by internal or external forces. Plants’ movements are limited; they cannot leave their environments. Their dependency is greater. But they, like humans, live under the same sun and “vegetate according to the same laws.” In _L’homme plante_, plants not only become machines but they become a vivid illustration of the sensitivity of the machine to the environment.

In _L’homme plante_, La Mettrie embeds plants and humans into a hierarchy, a material chain of being defined by increasing organization and decreasing sensitivity to the environment. But he uses the image of the sensitive plant to re-imagine human sensitivity to climate. In his Anti-Seneca (1751), he builds an ethics centered around the concept of a sensitive human body at the mercy of climate to argue for a compassionate and liberal moral code. In English translation of the Anti-Sénéque available in _Machine Man and Other Writings_, op. cit.

19 Central to that argument are images of the human-as-plant: “Such is the power of climate, he writes, that a man who changes climates feels the effects
despite himself. He is like a wandering plant which has transplanted itself; if the climate is not the same, it is normal that the plant should decline or improve.\textsuperscript{20}

If plants are more susceptible than humans to the effects of their environment, if their very heart and animating forces originate outside of themselves in the warmth and spring of the air, they provide a moment of vivid exaggeration of the human quality of sensitivity. If they are inherently amoral creatures, that characteristic makes it easier rather than harder to use them as a frame for the human condition. If they are above all sensitive to the environment, they serve to flag that one quality when joined figuratively and analogically to the human body. In La Mettrie's exposition of a sensitive ethics, the amoral status of plants makes the figural language more powerful, not less, because there is no contradiction between competing moral codes. To compare men and animals is to compare reason with instinct. There is no such comparison to be made with a plant that merely reflects its environment. It is a canvas on which La Mettrie may fill in the moral and social requirements of human life without giving up the powerful image of man as a sensitive plant.

It is perhaps worth noting that Duhamel du Monceau would never have consented to La Mettrie's ethics of the sensitive body. Though he, like La Mettrie, used analogy as an analytical tool to shift perspective and refocus attention on similarities, his religious and political leanings were decidedly conservative. Nevertheless, there is a point before either one moves from facts to ideology where the two would assent to the same points: the plant is a sensitive creature, dependent on its environment for basic physiological processes; humans share a sensitivity to their environment, and exhibit a responsiveness to both injurious and beneficial conditions. The point of divergence between Duhamel and La Mettrie lies in how the human being responds to those stimuli. For Duhamel, humans can alter their own environments, or those of the plants they are responsible for cultivating in order to produce

\textsuperscript{20} \textit{L'homme machine}, Ibid, p. 9.
better results. For La Mettrie, a natural ethics would instead be built upon the realities of the
environment, and any alterations to the latter would be, at best, a temporary change.

*From the forest to the tree: Cultivation in Voltaire’s L’Ingénu, 1767*

If the image of the sensitive plant serves to refocus discussions of health and disease, physics
and moral philosophy in the eighteenth century, it remains to ask how the concept of sensitivity now
part of the concept of the plant functions in the burgeoning culture of sensibility. Metaphors of human
beings as plants appear in ancient text, in medieval and early modern literature, so what makes the
eighteenth century plant metaphors different? Voltaire’s *L’Ingénu* provides one example of overlap
between the reconfiguration of plants as creatures sensitive to climate and a sensibility that is even
more than La Mettrie’s ethics a question of the connection between the physical and the moral.

In, *L’Ingénu*, the Huron finds himself transported from his native forests of northern North
America to the coast of France. A series of adventures ensues, which cause the Huron to move deeper
and deeper into the interior of France, and along the way, become more and more familiar with its
culture. With hardly disinterested help along the way, the Huron is led by teachers who help him to
cultivate his body and mind, and he willingly participates as he seeks to understand the world in which
he is living. Voltaire writes that “le jeune Ingénu ressemblait à un de ces arbres vigoureux qui, nés dans
un sol ingrate, étendent en peu de temps leur racines et leurs branches quand ils sont transplantés dans
un terrain favorable.”21 Like La Mettrie, Voltaire turns to a plant to describe the effect of the
environment upon Ingénu, who, like La Mettrie’s wandering plant, feels the effects of a change in
environment despite himself. Voltaire points at once to the physics of environmental influence and to
the activity of cultivation that moves a plant from one environment to another.

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However, this movement from one soil to another is neither generic nor benign. L’Ingénu’s origins are not accidental. He moves from the forests of Canada to the cultivated fields in France, and that journey maps onto the evolution from primitive to civilized society prized by Enlightenment. In the “Premier Discours” of the *Encyclopédie Methodique*’s volume on Agriculture, l’abbé Tessier proposes a history of agriculture. It begins with the first inhabitants of the globe joining forces to find a “more certain, more abundant” nourishment; this is the origin of society. Their first act as a society is to remove valuable trees and plants from the forests, whose fruits were the most favorable. These selected plants were then transplanted to other places, where cultivation adjusted to the best habits for the new environment. Like many of his contemporaries, Tessier considered agriculture to be a marker of civilization. "Dans cet état primitif, » for example, « les anciens Grecserroient dans les forêts comme les animaux..." The Huron of Voltaire’s L’Ingénu moves from these same primitive origins in the forest to the cultivated land and cultivated selves of France. As a satire, Ingénu serves to ridicule as often as reiterate the mores of the French culture of sensibility, and Ingénu will, like Candide, find that a simpler life generates a happier one. Nevertheless, in figuring the education of Ingénu as transplantation and the progress of agriculture, Voltaire taps into a strong undercurrent within the figurative language of eighteenth century and sensibility specifically. The image of the plant alone held deeply symbolic meanings in earlier periods, but for the eighteenth century, grasping the full meaning of these literary choices turns upon knowing just what eighteenth century authors thought was the “ce qu’ils sont” of plants and humans. The sensitivity to the environment served as a part of the overall concept of plant in the eighteenth century, and is woven into the fabric of depictions of sensibility in literature and the arts. As the literature on sensibility grows, scholars may remain fixed on the human body as the central subject of its history. Strong ties between the physical and moral aspects of sensibility would seem to

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23 Ibid, pg. 1.
24 Ibid, pg. 6.
delimit the participation of inherently (un)moral bodies, such as plants, who without a mental or moral faculty could not participate in true sensibility. However, our understanding of the imaginative vocabulary of plants in the eighteenth century invokes proximate bodies like plants to represent human sensitivity to environment.