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WHAT IS IT LIKE TO BE A MACHINE? A HISTORICAL LOOK AT THE PROBLEM OF CONSCIOUSNESS

Anyone who has a good knowledge of intellectual history, or who would agree with the sentiment that there is rarely anything new under the philosophical sun, would not be surprised to find out that primitive versions of the same mechanist view of human consciousness that is so prevalent today in intellectual circles, enjoyed significant influence as early as the middle of the eighteenth century. Julien Offray de La Mettrie's L'Homme machine (Man a Machine), first published anonymously in 1748, deserves to be recognized as a landmark in the development of the "physicalist" doctrines advanced today by such thinkers as Daniel Dennett, Steven Pinker, Francis Crick, and many others, and widely discussed by philosophers as "the problem of consciousness" (or, "the mind-body problem," &c). La Mettrie extended what many have seen as the necessary conclusions of Newtonian physics and Cartesian mechanics to the workings of the human mind itself, arguing that there is no reason that human beings should be exempt from the necessarily mechanical nature of physical things, and thus that "mental" states, like other physical phenomena such as electricity and motion, are nothing but mechanical properties of organized matter.

Criticism of such mechanist views of consciousness is prevalent in contemporary literature on the philosophy of mind, but it is often disconnected and imprecise. As Dennett's Philosophical Lexicon would put it, critics of physicalism are "beset by a swarm of nageling doubts"[1]—they feel that there is something wrong with the physicalist picture, but can't quite pin down what it is. This paper will attempt to take those varying critiques and give them some focus; I will show that our present conception of matter, deriving from the Newtonian-Cartesian tradition, keeps us from understanding consciousness in any meaningful "physical" terms.

Perhaps some will object that such a critique is best directed at a more "sophisticated" physicalist depiction of mind; since 1748, significant advances, he would say, have been made in showing how mental states could be mechanical properties of organized matter. I will reply to such an objection by denying, first of all, that such advances have been made. I believe that the "mind-body problem"

[1] See Dennett, "The Philosophical Lexicon": "**nagel**, *v*. To sense, vaguely, that something crucial but ineffable has been left out of account. 'No sooner had I completed my proof that the robot was conscious than I was beset by a swarm of nageling doubts.'"

is a conceptual dilemma that cannot be resolved given our present understanding of physical matter. This conception of matter—it takes up space, has weight, and obeys physical laws—is rooted in exactly the same Newtonian-Cartesian worldview that was so revolutionary at the time of La Mettrie.[2] Secondly, I feel that a historical view of this problem may free it from the stagnant and repetitive quality that has unfortunately characterized much contemporary discussion of the topic. In any case, I hope this paper can provide those without much experience in the philosophy of mind with a brief sketch of what many consider to be its central issue. I also hope it can provide those with significant knowledge of the contemporary discussion, with a historical reference from which their reflections can draw some inspiration.

The Problem with Dualism

The Sixth Meditation of René Descartes' Meditations on First Philosophy remains the canonical argument for a dualist view of human nature:

> My essence consists entirely in my being a thinking thing. And although perhaps (or rather, as I shall soon say, assuredly) I have a body that is very closely joined to me, nevertheless, because on the one hand I have a clear and distinct idea of myself, insofar as I am merely a thinking thing and not an extended thing, and because on the other hand I have a distinct idea of a body, insofar as it is merely an extended thing and not a thinking thing, it is certain that I am really distinct from my body, and can exist without it. (Descartes 96)

It is to such an argument that La Mettrie responds in L'Homme machine, by pointing to the utter implausibility of, and lack of evidence for, the belief that human beings are composed of two distinct substances ("substance dualism"). In the first place, La Mettrie argues, Descartes believed that animals were simply complicated machines without spiritual souls (La Mettrie 70:110-71:111);[3] since human beings are animals, why should we be any different in this regard? In fact, La Mettrie asserts that Descartes did not even believe in the

[2] The challenges presented by quantum physics may one day be strong enough to seriously undermine this view; at present, however, law-governed and mechanist physics remains the predominant conceptual apparatus. Further, it seems to me that quantum-physical theories of consciousness, largely because they are so rooted in the assumptions of mechanist physics, would fall victim to the same sort of critique as the mechanist theory presented by La Mettrie.

[3] All quotes from *L'Homme machine* will come from the Hackett edition, and page numbers will be noted as such: the page of the Hackett edition, followed by a colon, followed by the page number of La Mettrie's original edition. For more on the conception of human beings and animals as machines in the writings of Descartes, see Justin Leiber's Introduction to the Hackett edition of *Man a Machine* (esp. pp.14-15), and n.64 (p.70).

doctrine of dual substances he presents in the Meditations and other writings:

> Even though he [Descartes] harps on the distinction between two substances, it is obvious that this is only a shrewd move, a clever stylistic trick to make the theologians swallow a poison hidden behind an analogy that everyone sees but them. This impressive analogy forces all scholars and meticulous investigators to admit that however greatly these proud and vain beings desire to exalt themselves, they are at bottom only animals, perpendicularly crawling machines, more distinguished by their pride than by the name of man. (La Mettrie 71: 111)[4]

The idea that thinking and perceiving are functions that can be carried out only by a spiritual substance is, for La Mettrie, a tremendous misconception. Not only would such a spiritual substance be incapable of carrying out the functions of an entire human body,[5] but there is no good reason to suggest that it should.

The absurdity of substance dualism is confounded by the observable fact that the mind is clearly influenced by what happens to the body; this certainly demonstrates that Descartes, in saying that they are substantially distinct from each other, was utterly mistaken. "The various states of the soul," La Mettrie rightly observes, "always correlate to those of the body" (36:73). He provides no end of observable examples to demonstrate that a view of human beings as composed of two distinct substances is impossible to defend: sleep occurs to both mind and body at once; food is necessary for any human functioning; excessive consumption of alcohol affects the mind; our physical health, as well as the weather and climate, affect our emotional states and the clarity of our thinking; and so on.[6] This, he argues, "confirms the material unity of man" (64:103).[7] Since the mind is clearly affected by the physical state of the body, it cannot be a

[4] There may be some truth to this interpretation; Descartes gives a hypothetical mechanist account of human bodies in *Le Monde*, which he later had suppressed. See Leiber's comments in *Man a Machine*, n.64 (p.70) and Introduction, 14-15.

[5] See La Mettrie 66:106-67:107: "All you need to do is watch a violinist. What suppleness! What agile fingers! They go so fast that they almost seem not to move at all. Now I ask, or rather defy, those … who know so much about our soul's abilities, to tell me how the soul could possibly command the execution so quickly of so many movements at a distance in so many different places in the body." Presumably, La Mettrie would also accept the argument made by contemporary opponents of mind-body dualism, that the physical world is a closed system in which non-physical entities cannot exert any force whatsoever.

[6] cf. ibid. 31:67-38:75 & 59:98-72:112.

[7] Leiber's note is helpful: "Leibniz [whom La Mettrie references] proposed a 'pre-established harmony' between mind and body, supposing that there is no actual causal interaction between the two. La Mettrie means by the 'material unity of man' that the mind simply is the brain" (n.54 (p.64)).

separate substance; indeed, they are clearly one and the same thing.

The Mechanist Doctrine

La Mettrie begins L'Homme machine by drawing a clear distinction between his mechanical materialism, and the idea that matter per se might have the power to think (27:63).[8] To suggest the latter, he says, "is like asking if matter can tell the time" (27:63).[9] The point of La Mettrie's materialism is not that mental states are an intrinsic property of matter, but that they are an emergent property of organized material mechanisms:

> Now look, all the faculties of the soul depend so much on the proper organization of the brain and of the entire body, since these faculties are obviously just this organized brain itself, there is a well-enlightened machine! … Is organization therefore sufficient for everything? Yes, once again. … Given the least principle of movement, animated bodies have all they need to move, feel, think, repent, and in a word, to act in the physical world and also in the moral, which depends on the physical. (59:98)[10]

La Mettrie's mechanist conception of animated beings—that matter, operating according to the principles of Cartesian mechanics, will produce an animated body with no need for a spiritual soul—was both inspired and supported by an increasingly wide number of scientific experiments demonstrating that organized matter can apparently be self-moved. He was particularly struck by Abraham Trembley's experimental investigation of the freshwater polyp, published in 1744. Trembley showed that the creature, which had been classified as a plant, carried out animal-like tasks. He also showed that a polyp could be sectioned into many pieces, each of which would function as a separate organism. Justin Leiber notes:

> This discovery fueled La Mettrie's conversion to the forthright mechanistic materialism of L'Homme machine and L'Homme plante, for it suggests continuity between

[8] La Mettrie's first reference is to John Locke, who "wrote that it is as theoretically conceivable that God should add thought to matter as that he should create a separate thinking substance" (Leiber n.15 (p.27)). See Locke, *An Essay Concerning Human Understanding*, Bk. II, ch. 27, §17. La Mettrie's second reference is to "the Leibnizians, [who] with their *monads*, have set up an unintelligible hypothesis. They have spiritualized matter rather than materialized the soul" (La Mettrie 27:63). See Gottfried Leibniz, *The Monadology*, n. 17ff. One can find refined versions of this doctrine in, e.g., Bertrand Russell, *The Analysis of Matter*, David J. Chalmers, "Consciousness and its Place in Nature", and others. See Chalmers, ibid., for a brief bibliography on this theory and outline of what he calls "type-F monism" and "panprotopsychism".

[9] 'Telling time,' in this instance, refers to something like the operation of a watch (and not a thinking being who can "tell the time")—this will become clearer later.

[10] Emphases added. He gives empirical evidence to support this at 59:98-61:100. cf. 32: 69-70 & 34:71.

> plants and animals. Even more significantly, if by splitting a polyp into scores of bits you can create as many living (animated, ensouled) organisms as you wish, then life is a property of matter, not a mysterious second substance or soul. (Leiber 8-9)[11]

That such findings give firm basis for mechanist views of animated beings is clear; organized matter, it seems, can live, eat, metabolize, reproduce, and do potentially any number of things. Why shouldn't the faculty of thinking arise in a similar way? For La Mettrie, these discoveries eliminate the need for a spiritual soul or a 'thinking' aspect of matter to explain human nature. "Thought," he concludes, "is so far from being incompatible with organized matter that it seems to me to be just another one of its properties, such as electricity, the motive faculty, impenetrability, extension, etc" (La Mettrie 72:112).[12]

In a very real sense, La Mettrie argues, human beings function like clockwork. "It is obvious," he asserts, "that there is only one substance in the universe and that man is the most perfect animal. Man is to apes and the most intelligent animals what Huygen's planetary pendulum is to a watch of Julien le Roy" (69:109).[13] Just as a precise arrangement of matter into gears and springs can produce a mechanism that can tell the time, give the temperature, indicate the motions of the planets, race along the ground, or even fly through the air, so can another arrangement produce a living being. Such living beings can grow, undergo metabolic processes, reproduce, move themselves from place to place, perceive, imagine, and think: all are properties of organized matter, and none requires a spiritual soul. All "natural, automatic, vital, and animal movements," as well as all "feelings, pleasures, passions, and thoughts" are animated by the "springs of the human machine," and nothing else is necessary to explain them (62:101-102).[14] La Mettrie anticipates objections to this theory with a wonderful rhetorical flourish:

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[11] cf. La Mettrie 47:86-54:93 & 72:112-73:114 for comparisons between human beings and animals. La Mettrie's *L'Homme plante* (*Man a Plant*) is also included in the Hackett edition of *L'Homme machine*.

[12] He seems to believe that motion is a property of organized matter, but not matter *per se*; cf. 109:68-69: "Grant me only that organized matter is endowed with a motive principle, which alone differentiates it from what is not so organized (come on! how could one refuse that most incontestable observation?), and that everything in animals depends on the diversity of this organization, as I have sufficiently proved, and this is enough to solve the riddle of substances and that of man."

[13] These are two complicated mechanical devices with which La Mettrie was particularly fascinated (see Leiber n.60 (p.69)). The point is clear: complicated mechanical organisms carry out complicated tasks, like telling the time and predicting the location of the planets; thought is another such property of organized matter. See La Mettrie 50:90, 51:90 & 76:117 for more on the notion of a 'universal substance'.

> Our pride sets limits where none exist. We are like a watch that a writer of fables might make into a person of consequence in a frivolous book. "What!" this watch would splutter. "That stupid workman made me? Me, who parcels out time! Me, who marks so exactly the course of the sun! Me, who says the hours out loud! Nonsense. That cannot be." Ingrates that we are, we similarly disown the common mother (to use the chemical terminology) of all the kingdoms. We imagine, or rather, suppose, that there is a cause superior to the one we owe everything to, the one that truly has made everything in a matter beyond our understanding. No, nothing is vile in matter except to coarse eyes that fail to comprehend its most brilliant works. Nature is not a shackled worker. She produces millions of men with greater ease and pleasure than a clockmaker has trouble making the most complicated watch. Nature's dazzling power is the same in the production of the vilest insect and the most superb man. (74:114-115)

This argument carries significant force; perhaps it is just our desire to be greater than other creatures that leads us to say that human beings must have spiritual souls. If we can "break the chain of [our] prejudice," and "arm [ourselves] with the torch of experience," we will "give nature the honor it merits," and recognize that the faculty of thought has arisen in the same way as any other mechanical property (74-75:115).[15]

"We walk by faith…"

L'Homme machine is a remarkably honest and non-evasive work; La Mettrie is willing to admit that the exact nature of the material processes that go into producing such a complicated machine stand beyond his comprehension:

> It is foolish to waste time looking for the mechanism of this phenomenon. The nature of motion is as unknown to us as that of matter. There is no way to discover how motion is produced in matter unless, like the author of the Histoire de l'âme, one resurrects the ancient and unintelligible doctrine of substantial forms! I am, therefore, really and truly as content with being ignorant of how inert, simple matter becomes active and compounded into organs, as I am with being unable to look at the sun without red glasses. I am equally tranquil about my ignorance of other incomprehensible marvels of nature, such as the production of feeling and thought

[14] cf. ibid. 29:66, 46:85, 61:101-63:103, 65:105 & 69:110 for more on human beings as composed of 'springs'. He also argues that reason's excellence depends on its ability to discern things clearly, not on its immateriality; cf. 28:65.

[15] cf. 27:63, 30:66, 54:93 for more on 'prejudice.' cf. 28:64, 29:66, 30:66-67 & 76:117 for more on rejection of past doctrines in favor of empirical observation.

> in a being that, long ago, seemed to our limited view to be nothing more than a glob of mud. (68:109)[16]

Such outright honesty is refreshing; one does not often see it in a work so controversial and polemical as L'Homme machine. And this difficulty is not devastating to La Mettrie's argument. It is not at all uncommon or inappropriate to believe that something is the case, without being able to precisely explain how it is so. We are able to say that a clock is a purely material machine, even while we remain somewhat ignorant of the precise nature of matter, and exactly "how" it gives rise to such a function. The laws of physics govern the internal mechanisms of the clock, and what results is a working timepiece. Human thought arises in the same way: material parts come together in a mechanical organism, and the laws of physics cause it to operate in a specific manner. If life can be explained in such a way, without any need for a soul, then there is no good reason not to apply the same laws to human nature.[17]

Some Remarks

As I mentioned earlier, many contemporary thinkers find significant difficulties in attempts to explain consciousness in terms of the mechanical operations of a material organism. There is something about consciousness that apparently cannot be explained by the physical facts; conscious states and physical processes are quite conceivable in each other's absence; there seem to be aspects of consciousness that are not exhausted by mechanical explanations. These objections, as I have indicated, are rooted in the vague notion that there is something in the notion of matter that has been handed down to us from Newton and Descartes that separates it from our conception of consciousness, as we experience it. Descartes' argument for substance dualism is a direct outgrowth of this apparent divide: according to these concepts, it is conceivable that I could think without a physical body, or have a physical body without thinking. This apparent distinction may be the result of a misconception (indeed, it most probably is), but it is important nonetheless—it is a dilemma that deserves serious

[16] The author of *The Natural History of the Soul* is La Mettrie himself, writing under the pseudonym "M. Charp". The book, published in 1745, advances a guarded materialism, appropriating the Aristotelian and Scholastic doctrine of "substantial forms" to explain the "active" and "formal" properties of matter, and asserting that man is more than a machine. See Leiber 2-3.

[17] cf. La Mettrie 56-57:95: "What response can one make to a man who says that we do not know nature at all, that everything could have been produced by hidden causes in her bosom? Look at Trembley's polyp! Does it not contain its own regenerative causes? Would it be absurd, therefore, to think that physical causes explain everything that has happened; that the entire chain of this vast universe is necessarily tied and subjected to these causes…?"

reflection.

Saul Kripke's discussion of the mind-body problem in Naming and Necessity stems from the same difficulty faced by Descartes in the Meditations . On Kripke's account, the fact that pain-sensations are always accompanied by C-fiber firings, does not give enough justification to identify the two. I can easily imagine myself feeling pain in the absence of C-fiber stimulation, or having C-fiber stimulation without feeling pain; there is nothing in one concept that makes its relation to the other necessary and not merely contingent (Kripke 151-55).[18] Similarly, Frank Jackson's example in "What Mary Didn't Know," of a fictional girl who is educated in a black-and-white room and knows all the exact physical facts about color vision, and yet learns something when she is let out of the room and sees the color red, points to the simple truth that the physical facts are not all the facts; facts about consciousness constitute another realm of things we can know (Jackson 1986, 291-95).[19] Thomas Nagel, in "What is it Like to Be a Bat?", notes the distinction between "subjective" experience and "objective" observations; looking at the behavior and structure of bats does not tell us what it is like for the bat to be a bat (Nagel 1974, 435-50).[20] All these very straightforward intuitions illustrate the tremendous difficulties inherent in materialist theories of the mind, while not pinning down the exact difficulty at stake.

It seems to me that these and similar mind-body dilemmas arise because, as Chalmers has put it, "physical descriptions of the world are structural-dynamic descriptions,"[21] but we cannot give this sort of description of conscious experience. Given our present understanding of the mental and the physical it is, as Nagel has noted,[22] literally impossible to conceive any way in which we can identify the two. This is unlike the difficulty in identifying "water"

[18] "In sum, the correspondence between a brain state and a mental state seems to have a certain obvious element of contingency. We have seen that identity is not a relation which can hold contingently between two objects. Therefore, if the identity thesis were correct, the element of contingency would not lie in the relation between the mental and physical states. It cannot lie, as in the case of heat and molecular motion, in the relation between the phenomenon (= heat = molecular motion) and the way it is felt or appears (sensation S), since in the case of mental phenomena there is no 'appearance' beyond the mental phenomenon itself."

[19] "It seems, however, that Mary does not know all there is to know. For when she is let out of the black-and-white room or given a color television, she will learn what it is like to see something red, say. This is rightly described as *learning*—she will not say 'ho, hum.' Hence, physicalism [i.e, the belief that complete physical knowledge is knowledge *simpliciter*] is false. This is the knowledge argument against physicalism in one of its manifestations." cf. Jackson, "Epiphenomenal Qualia", 127-36.

[20] "…if the facts of experience—facts about what it is like *for* the experiencing organism—are accessible only from one point of view, then it is a mystery how the true character of experiences could be revealed in the physical operation of that organism."

[21] Chalmers, "Consciousness and its Place in Nature."

with the chemical structure H_2O because both concepts ("water" and "H_2O") are grounded in physical (and, therefore, "structural-dynamic") concepts.[23] Even material unity in complex and animate organisms, which is so important for La Mettrie's argument, is at least plausibly conceivable on such terms—inanimate matter like carbon, and animated organisms like polyps, are both physical concepts.[24] The difficulty in describing thought in terms of materialist mechanics seems intractable because the two concepts ("thought" and "mechanical process") are so utterly incongruent in our present understanding.

La Mettrie is right to note that he need not provide a complete description of consciousness in terms of materialist mechanics, but these critiques seem to show that such an explanation is impossible with our present understanding of matter. No accumulation of structural-dynamic facts about physical things will allow us to use them explain consciousness—the concepts are simply unrelated. The only seeming alternatives are to accept some sort of qualified dualism, or to make "thought" an intrinsic property of matter; as we have already seen, La Mettrie does not find either option viable. He is thus left arguing for a position which, when held up to the test of experience, is literally inconceivable. His assertion that his system is "founded … on the inner feelings and personal experience of each individual" (43-44: 81) ironically points out the specific criterion by which his hypothesis fails.[25]

L'Homme machine is a tremendous work, and its historical import and philosophical merit should not be denied. His discussion and critique of Descartes' substance dualism highlights many of the

[22] See Nagel, "Conceiving the Impossible and the Mind-Body Problem", 337-52. "I believe that the explanatory gap in its present form cannot be closed–that so long as we work with our present mental and physical concepts no transparently necessary connection will ever be revealed, between physically described brain processes and sensory experience, of the logical type familiar from the explanation of other natural processes by analysis into their physico-chemical constituents."

[23] The difficulties in explaining the "look" (and "feel", "taste", &c) of water are significantly more challenging; one would be hard-pressed to show that a large group of H_2O molecules, or a particular configuration of hydrogen and oxygen atoms, will necessarily "look" ("feel", "taste", &c) like water, without some degree of circularity. This points to a difficulty in identity theories in general that is, from my perspective, immensely important.

[24] I, for one, don't find such strict identity particularly plausible; it seems to me that the notion of substantial forms, so decried by La Mettrie, may be essential to explain physical beings, animate and otherwise. But that is a topic for another paper.

[25] Thus, when La Mettrie tries to describe conscious processes, he has to fall back on physical and spatial descriptions that are very clumsy. e.g. 81:43: "Thus, judgment, reason, and memory are only parts of the soul that are in no way absolute, but are real modifications of that *medullar canvas* onto which objects painted on the eye as from a magic lantern"; 47:85: "…if the imagination does not use, so to speak, some of its muscles to maintain its balance on the strings of the brain…."; & 53:93: "…the natural law is only an inner feeling of the imagination, as are all other feelings, among which is thought."

reasons that it is so totally untenable. The central themes of the book—a rejection of tradition and prejudice in favor of unbiased investigation, an empirical mode of study and verification, a materialist view of nature, a primitive discussion of the fundamental role of language in cognitive development, a stress on the similarities between humans and animals and the ethical implications of such an evident equality, and a utilitarian social philosophy, among many other things—have become extraordinarily prevalent in contemporary intellectual culture. Perhaps the book can serve as a yardstick, to see how far such ideas have come in the last two-and-a-half centuries. In terms of his view of consciousness, such an analysis brings to light some particularly important truths about the nature of mind, and the utter inability of the Newtonian-Cartesian conception of physics to account for them.

> I could be bounded in a nutshell
> And count myself a king of infinite space…

Shakespeare, Hamlet, Act 2, Scene 2

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