

$$E = \text{mind} * c^2$$

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Two different statements sparked the approach of this essay. The first comes from Descartes when he inquired “but what, then, am I? A thinking thing, it has been said. But what is a thinking thing? It is a thing that doubts, understands [conceives], affirms, denies, wills, refuses, that imagines also, and perceives” (Descartes 89). The second statement comes from the Huna philosophy, a philosophy based on Hawaiian Shamanism. It’s third principle states that “energy flows where attention goes” (King 10). This means, according to King, that “directed attention is the channel for the flow of biological as well as cosmic energy” (King 10). The existence of cosmic energy aside, both statements combined seem to indicate that a thinking thing is able to direct energy. Since I believe both statements to be true, an interesting discussion about attention and energy seems to be inevitable. Therefore, I have made it the purpose of my essay to examine whether our mind can utilize energy. In order to do this, I would like to start with a distinction between mind and matter based on a Substance Dualism. Then, I will deepen my inquiry into mind and energy, before applying my results to current theories of mind. Before exploring, I would like to erase two possible sources of confusion. First, I only wish to find out whether the mind uses energy, not whether the mind is energy. I lay no claims in defining what the mind is composed of. Second, I use the Substance Dualist approach because it serves as the best example to set out the differences between mind and matter, and not to support this view.

Descartes viewed matter mainly has something having extension. “There is, however, one principal property of every substance, which constitutes its nature or essence, and upon which all the others depend. Thus, extension in length, breadth, and depth makes up the nature of corporeal substance“ (Descartes 185). Mind, on the other

hand, has different properties. Finishing Descartes' sentence from above "Thus extension in length, breadth, and depth makes up the nature of physical substance; and thought makes up the nature of thinking substance" (Descartes). To recall Descartes' more detailed description of mind from the introduction, thought is defined reason, logic, will, perception, memory, and imagination. Descartes claims that these two substances have nothing in common, which directly leads us to the problem of mind-body interaction.

While I agree with Descartes that mind and matter seems to be two very different entities with seemingly different functions, I cannot agree that they are completely different. Both matter and mind are capable of performing work. I believe that matter exerts a physical effort, and that mind exerts a mental effort. Both activities are directed towards some accomplishment, hence work is being performed. It seems questionable whether this physics definition of work is applicable to the mind, but just because the mind is non-physical, doesn't necessitate it to have absolutely no similarities with the physical world. For example, vision is a common function of body and mind. The body provides the physical instruments to see, while the mind performs the mental tasks of perceiving and interpreting what we saw. Thus, the mind and body act in unison and can have like functions describable in similar terms. Imagine the following question: what are the functions of seeing? An answer based on the discussion above would be that the body sees the physical world, and the mind perceives and interprets it. Consider now the question: what is the function of work? The answer will be my initial assumption. The body exerts physical effort, and the mind exerts mental effort. Feeling encouraged by finding such complementing similarities of body and mind, and would like to examine the idea of physical and mental work closer. I wonder whether both physical and mental

work require energy? While classical physics provides enough proof that physical work requires energy, the same cannot be said about mental work. In the next five paragraphs, I will attempt to answer whether mental work requires energy.

The first answer that comes to mind is also the weakest one. From experience, we know that a low energy intake will result in decreased mental efficiency. If an office worker skips breakfast or lunch, he is likely to feel fatigued and less productive. The same applies for anyone with a decreased nutritional uptake. The ability to focus and the level of complex thought will decrease over a period of time. This argument seems problematic because we are unable to tell whether our body, or the mind, lack the necessary energy to perform right. In other words, does the body lack the energy to perform the function of seeing a sheet of paper, or does the mind lack the energy to perform the mental tasks? Since this question will remain unanswered for now, I shall leave this argument as is and look elsewhere for better appeals.

A second appeal lies in the fact that mind and body do seem to interact. Since mind and body are capable of exchanging information, as energy as I suspect, mind must be able to utilize energy. In his book *The Self-Aware Universe: how consciousness creates the material world*, Amit Goswami comes to a similar conclusion. “The shortcomings of dualism are well known. Notably, it cannot explain how a separate, non-material mind interacts with a material body. If there are such mind-body interactions, then there have to be exchanges of energy between the two domains” (Goswami 51). Suzanne Cunningham, author of *What is a Mind?* finds mind-body interaction in our everyday lives. “And yet we know that mind and body do, in fact, interact. When you drink a couple of beers or take certain medication, it can interfere with your ability to

think clearly. When people are depressed, certain medications can relieve the feeling of depression. In other words, we have ample evidence that physical substances like alcohol or medicine can affect the mind” (Cunningham 9). On a much smaller scale, in particle physics, mind and matter interact as well. P.C.W. Davis, Professor of Theoretical Physics, writes “the fact that, once an observation has been made on a quantum system, its state (wave function) will generally change abruptly sounds akin to the idea of ‘mind over matter’. It is as though the altered mental state of the experimenter when first aware of the result of the measurement somehow feeds back into the laboratory apparatus, and thence into the quantum system, to alter *its* state too. In short, the physical state acts to alter the mental state, and the mental state reacts back on the physical state” (Davies 31). Not only do we experience mind-body interaction in our lives, but physicists observe them in research as well. This second appeal seems slightly stronger, but we should embark in search of stronger arguments.

A third and stronger argument comes in form of inverting the question. If thinking required no energy, we could think for indefinitely long. However, this seems impossible. While I do not doubt that we have continuous perception, I dare to doubt that we can analyze, reason, or recall memories for an indefinite amount of time. As long as we take notes, create shopping lists, and are surprised when we see old photographs, I don’t know how one could argue for indefinite memory, will, or thought.

A fourth reason can be found in the way the mind works. The mind uses representational systems such as images and words to achieve its functions. To recall, functions of the mind include reasoning, memory, and perception. Mental work can now be considered to be the transfer of energy from one mental (or representational) system to

another. For example, consider Descartes case of a chiligon. In our mind, we have one representational system of a penta-, octo-, or, hexagon. This means we can picture the actual pentagon itself. On the other hand we have a different system of the use of deci referring to tenth, centi referring to hundredth and, milli referring to thousandth. When imagining a chiligon, we use both systems to achieve our goal. This form of mental work can be seen as a transfer of mental energy.

A fifth argument can be found in similar findings of quantum physics and mind. In *The End of Science*, John Horgan explains that “physicists, philosophers, and others have speculated about links between quantum mechanics and consciousness since at least the 1930s..” (Horgan 172). As a “vigorous advocate of a quantum theory of consciousness” (Horgan 173), he lists John Eccles and Friedrich Beck who attempted the following proof of a quantum state of the brain: “the brain’s nerve cells fire when charged molecules, or ions, accumulate at a synapse, causing it to release neurotransmitters. But the presence of a given number of ions at a synapse does not always trigger the firing of a neuron. The reason, according to Eccles, is that for at least an instant, the ions exist in a quantum superposition of states; in some states the neuron discharges and in others it does not. The mind exerts its influence over the brain by ‘deciding’ which neurons will fire and which will not ” (Horgan 173). While Horgan doesn’t support this view, he also offers no arguments against it. Robert Anton Wilson endorses the quantum mind view in his book *Quantum Psychology*. He “will try to show that the laws of the sub-atomic world and the laws of the human ‘mind’ (or nervous system) parallel each other precisely, exquisitely, and elegantly, down to minute details” (Wilson 43). Also, Amit Goswami comes to a similar conclusion. “The brain-mind is an

interactive system with both classical and quantum components” (Goswami 162). As exciting as a complete exploration of quantum and mind similarities would be, the purpose of this paper is to examine whether mind uses energy. For those who support the quantum-mind argument, the answer seems yes.

Reexamining the previous arguments about mind-body interaction and mind-energy connections seems to support the hypothesis that mind is indeed able to use energy. If we assume this to be true, then what consequences does this have for the current theories of mind?

Physicalism “locates the mind within the natural physical world and considers it to be subject to all the laws that govern that world” (Cummins 21). In this case, the question whether mind uses energy is an affirmative yes. How else could Physicalism explain thinking and perception? Information is directed from, to, or within the brain by small electrical currents traveling along neuro-information-highways. In the physicalist world, this impulse can only be energy.

On the other hand, Behaviorists “take minds not to be inner psychic mechanisms merely contingently connected with their outer behavioral effects, but to be constituted by those outer effects” (Demjancuk 3). This means that mind is based on the fact whether something displays behavior or not. The distinction between Metaphysical Behaviorism and Methodological Behaviorism plays no difference for our discussion. But for the record, the first believes that “mental states [are] simply identified with behavior. It [is] thought that there [is] nothing more to it, nothing internal or hidden” (Cunningam 18). The second form doesn’t give an explanation of what mind is, but because “it [is] for all practical purposes inaccessible to scientific observation and should .. be disregarded”

(Cunnhingham 18). For our interest in the mind and energy, a behaviorist seemingly has to agree that the mind is capable of using energy. Very much like in Physicalism, the behavior is an action of the body determined by physical laws and needs to be scientifically explained. The arguments goes in three steps. First, all behaviors require some form of energy. Second, mind causes behavior. Third, mind must use some form of energy.

Unlike Behaviorism and Physicalism, Functionalism merely says that mental states perform certain functions that are predictable and can cause effects. “..point is that the composition of the system is not the essential factor; rather, it’s network of causal relations determines its status as mental” (Cunnhingham 41). So, it is central to Functionalism that mind can be the cause of something. On a very abstract level, input is converted by a function into an output. I would like to recall the definition of work from the third paragraph. Both matter and mind exert effort directed towards some accomplishment. For a functionalist, this accomplishment can be the function itself. It seems that it is up to every Functionalist for him/herself to decide whether a mental function constitutes work, and whether the mind can be said to use energy. If a mental input can cause a physical output, then I would think this requires some sort of energy.

Last, I will ride the Harley of mind theories, Substance Dualism. For Substance Dualism, the concept of physical and mental energy seems to be as plausible as their more common terms, matter and mind. As problematic remains just how energy is transferred. One solution might present itself in pursuing the hypothesis of mental energy and evaluating how it will fit into the current physics picture. Maybe an underlying equation for the occurrence of mental energy for humans, and the Observer Phenomenon

in Quantum Physics can be found, thus solving both problems at once. To recall, the Observational Theory ‘stresses the role of consciousness in determining the outcome of a given quantum event’ (Beloff 7). If the search for such an equation yields no success, then we could consider rethinking our dimensions of mind and matter. Einstein combined the two phenomena of space and time into one, the space-time continuum. Such a ‘mind-matter’ solution might equip us with a new viewpoint. Last and possibly to Descartes’ disliking, I can conceive of a mind-matter duality. Just like a photon can behave as a wave or as a particle, quanta also show properties of mind and matter. That is, they act in their physical wave-particle duality, but also show signs of a mental consciousness as stated in the Observer example above. I shall leave the rise and fall of these hypotheses up to the field of physics which “attracts the attention of many of the best and brightest of today’s physicists” (Halliday 31) - particle physics and the quest for the ultimate particles.

Summarizing, I think that the ideas of mental work and mental energy appear quite possible. Mind-body interaction on a large scale, and quantum physics on a smaller scale indicate that such an energy transfer should at least be considered. However, I do not believe that mind and matter are as separate as Descartes imagined. But as long as these questions remain unanswered, I will seek shelter in the seventh and last Huna principle: effectiveness is the measure of truth.

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