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INTERROGATING THE MINDS OF ROBOTS

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Abstract

This paper raises the question; do robots have minds? In its appraisal of recent ascription of intelligence to machine, the paper argues that intelligence is an attribute of a first-order mentality which only human mind possesses. Mind, in the Cartesian glance, is a conscious and thinking substance. The paper therefore examines whether robots which perform these acts have minds. While theorists like Hilary Putnam and Gilbert Ryle deny that mind (as a non-physical substance) exists, others like John Searle contend that machines can perform mental activities attributed to the mind. While opposing first-order-mental acts to robots, we argue that robots' actions are solely determined; thus robots lack real, spontaneous emotion and introspective capacity which are bases for moral intelligence.

Keywords: Emotions, Identity, Mind, Robots, First/Second-order-mentality

Introduction

The growing interest in the development of technology, especially in engineering, has motivated researches in artificial intelligence. Central to this paper are two intriguing claims made in the parlance of artificial intelligence concerning the mind and intelligence.

The first is that minds do not exist, and the second claim is that machines are intelligent. These claims are contentious; hence this paper sets to appraise them.

The paper raises the question: 'Do robots have minds?' In a bid to examine the current attribution of intelligence to machines, the paper seeks to argue that intelligence is a first- order-mentality which no robots could possess. While examining this issue, we enquire whether robots which perform mental acts like consciousness and thinking have real emotion and introspection of a first-order-mentality. The paper opposes the attribution of first-order- mentality to robots and as such, argues the thesis that robots' mental acts are second-order- activities, which lack genuine emotion and inner reflection suitable for moral action.

To come to grips with our goals, the paper is divided into three parts. The first section entitled "Mind-Brain Impasse" reflects on the nature of the human mind. The second section entitled "Is Robots Mind Autonomous?" examines the attribution of psych (mind/consciousness/awareness) to robots. This section focuses on the works of John Sear and Hilary Putnam. The final section entitled "Do Robots have minds" critically analyzes notion of 'Intelligence' and the consequences it has for attributing minds to robots.

The Mind-Brain Impasse

This section contemplates on the Mind-Brain Controversy using Cartesian view as its stool. At the outset, it seems crucial to note that the Mind-Brain disagreement is a chapter in the Mind-Body Problem. The Mind-Brain debate is evident in the works of Descartes[1]. It seems interesting to note that the central arguments in Descartes' philosophy are commonsensical, although problematic.

Of course, Cartesian dualism is named after Descartes who believes strongly in the existence of a living, non-biological mind, in each human, In a nutshell, let us quickly explore his view here. Supposing that "A" is a person, not an artificial creation of man-i.e a machine, then he would have a mind and a body which differ from someone else's mind and body. The point, here, which Descartes makes, is that the mind exists as a part of the basic elements in a person, and its functions are clear and distinct. He writes: "I considered that I was nourished, that I walked, that I felt, that I thought, and I referred to all these outcome to the soul."[2] To his mind, the mind is somewhere very close to the brain in the pineal gland;

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[1]Descartes, "Meditations" in *An Introduction to Philosophical Inquiry: Contemporary and Classical Sources*, Joseph Margolis (ed.), (New York: Alfred. A. Knopf, Inc, 1968), p.279).
[2]Ibid, p.278

hence it is not the train. This is the root of the Mind-Brain Dispute.

Descartes seems to be making five claims about the mind, which include (1) the mind has reflective capacity-It thinks, (2) it has internal awareness or experience of thoughts which is not opened to other persons, (3) the mind distinguishes one person from another-it is the source of a person's identity even when one's body changes (4) the mind is located near the brain--it interacts with the brain and the body and, (5) the mind is therefore not the human brain. In corroboration to this claim, Matt Carter observes the following points:

> It is a distinctive feature of our minds that they have a reflective capacity, we can think about our own thoughts, our own mental states. Furthermore, we have unique and privileged access to the contents of our own mental states. This access is unique in that I and I alone am privy to my mental life. It is privileged in that, unlike my access to everything else in the

> universe, my access to my own mental life is direct and not mediated by my senses.[3]

There are many issues which Cartesian dualism has occasioned. Among these issues the problem of interactionism has received adequate philosophical attention. Of course, the problem of interactionism is no longer interesting as it was during the 19th century due to recent ground-breaking researches in neuroscience and artificial intelligence that have falsified some of its claims. Today, the Mind-Brain controversy appears to be more relevant and so it seems crucial due to moral concerns as well as consequences of artificial intelligence.

Interestingly Cartesian usage of consciousness, especially in relation to introspection, emotion and personal identity, seems crucial in an appraisal of the controversies underlying artificial intelligence. In the third section of this paper, an examination of machine's consciousness

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[3]Matt Carter, Minds *and Computer: An Introduction to the Philosophy of Artificial Intelligence*, (Edinburgh: University Press Ltd, 2007), p.7

would be attempted. Since the source of consciousness, rather than consciousness itself, is the utmost philosophical challenge, those who contend that the notion or idea of mind is mystical favour a scientific explanation of consciousness, wherein much emphasis on consciousness is shifted to its physical root in the brain. This is not the place to evaluate the nature of the brain, however suffice it to note that mind is radically opposed in scientific corpus. The word 'mind/consciousness is therefore either reduced to brain or bodily state.

For emphasis, Julien Offray DeLaMettrie maintains, on the one hand, that "the human body is a machine which winds its own springs. It is the living image of perpetual movement. Nourishment keeps up the movements which fever excites. Without food, the soul pines away, goes mad, and dies exhausted,"[4] and, on the other hand, he

[4]J.O. DeLamettrie, "Man a Machine," in *The Philosophy of Mind: Classical Problems/Contemporary Issues*, Brain Beakley and Peter Ludlow (eds.), 2nd ed., (New Delhi: PHI Learning Private Limited, 2006), p.43

contends that "...all the faculties of the soul depend to such a degree on the proper organization of the brain and of the whole body."[5] Thus, DeLaMettrie contends that the soul or mind is an empty word. In the words of John Puddefoot, "There is overwhelming evidence that in the absence of adequate brain function there is no mind..."[6] Some compelling arguments against Cartesian or substance dualism are advanced by Hilary Putnam and Gilbert Ryle.

Much of the debate in the philosophy of mind and psychology dwell on some of these issues, however we feel pulled by the growing interest in artificial intelligence to rethink the Mind Brain controversy as well as the attributions of intelligence to machines. This leads us to the second section of this paper, wherein we are to consider the issue of intelligence in artificial intelligence.

[5]Ibid, p.45

[6]John Puddefoot, *God and the Mind Machine: Computers, Artificial Intelligence and Human Soul*, (London: SPCK, 1996), P.96

Human Intelligence in Machines: The Question of Autonomy

This section reflects on the growing need for intelligent machines today. It is believed that machines, or robots such as AARON, DEEPBLUE, GENERAL PROBLEM SOLVER etc, can perform most tasks that humans can do more effectively. This assumption is based on two other existing beliefs: (a) that humans have the capacity to create such machines and (b) that robots could explore deeper problematic areas of life if instructions given to them are accurate (Garbage-In Garbage Out). This section therefore is entitled "are Robot's Mentality really Autonomous?" if these assumption (a) and (b) are to be true.

To start with, there are two claims made by practitioners of AI. These are known as strong and the weak AI. John Searle, for example, states that the claim of the proponents of strong AI is simply that, "computer is not merely a tool in the study of the mind; rather, the appropriately programmed computer really is a mind, in the sense that computers given the right programs can be literally said to *understand* and have other cognitive states."[7] What this presupposes is that,"....sooner or later all the characteristics of organic life will be realized in machines of one sort or another."[8] Again, what this boils down to is that strong AI suggests that powerful robots can achieve humanlike mental states, which include consciousness, thinking, knowing, emotion, self-reflection, understanding, etc. In short, they would have minds. The claims of weak AI are not the same with that of strong AI. Our focus is to refute the claims of strong AI. But let us explore what it advocates and it modification in Searle and Putnam's works.

Searle's paper: "Minds, Brains, and Programs" examines the argument of the strong AI. Searle observes that strong

[7]John R. Searle, "Minds, Brains, and Programs," in Philosophy of Mind: Classical *Problems/Contemporary Issues*, Brain Beakley and Peter Ludlow (eds.), 2nd ed., (New Delhi: PHI Learning Private Limited, 2006), p.133
[8]Puddefoot, Op. cit., p.71

AI claims that since computers, or robots, have cognitive states, their programmes therefore can explain human cognition. In this respect, he believes that AI advocates are suggesting that: "the machine can literally be said to understand.....and the machine and its program do explain the human ability to understand...”[9] While rejecting the above claims, Searle contends that "one way to test any theory of the mind is to ask oneself what it would be like if my mind actually worked on the principles that the theory says all minds work on”.[10] For him, whatever the nature of the formal principles one puts in a machine, these would not be sufficient for *understanding*. Searle further contends that it would be ambiguous to suppose that car and machine could have understanding (intelligence). He writes

> I understand stories in English; to a lesser degree I can understand stories in French; to a still lesser degree, stories in German; and in Chinese, not at

[9]Searle (2006), Op. cit., p.134
[10]Ibid., p.134

> all. My car and my adding machine, on the other hand, understand nothing: they are not in that line of business.[11]

Subsequently, Searle states that people often attribute understanding to machine by analogy, not in the sense in which understanding is attributed to the mind. Searle then avers that:

> We often attribute "understanding" and other cognitive predicates by metaphor and analogy to cars, adding machines and other artifacts, but nothing is proved by such attributions. We say, "The doors knows when to open because of its photoelectric cel," "the adding machine knows how (understands how, is able) to do addition and subtraction but not division", and "the thermostat perceives changes in the temperature"[12].

Searle notes that it is humans that extend their own intentionality to robots. Robots or machines lack intentionality, according to Searle. So, he rejects the views of Allen Newell and Herbert Simon who had claimed that

[11]Ibid., p. 136

[12]John R. Searle, "Minds, Brains, and Programs," in Mind *Design II: Philosophy, Psychology and Artificial Intelligence*, (Cambridge: The MIT Press, 1997), p.188

humans and computers have the same kind of cognition. For Newell and Simon are of the view that the focus of AI is "not just the hardware, but the programmed living machine-is the organism we study".[13]

While Searle rejects the claim that human and robots' mentality are the same, however he argues that robot could think. He writes: "could machine think? The answer is obviously yes. We are precisely such machine."[14] On the one hand, he takes humans to be a kind of robot which can think. On the other hand, Searle contends that robots could also think. According to him, robots can think, become conscious and have understanding like human, if they are made of soft-protein and humanlike flesh. He harps on that, "assuming it is possible to produce artificially a machine with a nervous system, neurons with axons and dendrites, and all the rest of it, sufficiently like

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[13]Allen Newell and Herbert A. Simon, "Computer Science and Empirical Enquiry: Symbol and Search," in Mind Design II: *Philosophy, Psychology and Artificial Intelligence*, (Cambridge: The MIT Press, 1997), p.81

[14]IBID., P.199

ours, again the answer to the question seems to be obviously: yes."[15] In other words, he avers that Searle grants that it seems open that scientists might be able to produce consciousness, intentionality etc. using chemical principles different from those human beings use. The conclusion that Searle reaches is that "thinking can occur only in very special machines-living ones made of proteins.".[16] It seems clear that Searle believes that, sooner or later, robots which are products of man's intelligence would partake in mental states which are attributed to human minds/brains.

Let us now turn our attention to Putnam's position. Putnam's "Robots: Machines or Artificially Created Life", considers the issue whether robots have life or not. He believes the Mind-Body problem seems fruitless, however he takes the issue of the mind of machine to be more useful. He writes:

[15]IBID., P.199

[16] John Johnston, *The Allure of Machine Life; Cybernetics, Artificial Life, and the New AI*, (Cambridge: The MIT Press, 2008), p.333

> What I hope to persuade you is that the problem of the Minds of Machines will prove, at least for a while, to afford an exciting new way to approach quite traditional issues in the philosophy of mind. Whether, and under what conditions, a robot could be conscious is a question that cannot be discussed without at once impinging on the topics that have been treated under the headings Mind-Body Problems and Problem of other Minds.[17]

Putnam believes that if a clear meaning on what cognitive states such as consciousness, understanding, feeling, life, knowing etc. in respect of how we talk about humans, is given; it would become easy to ascertain whether or not robots could have such psychological states. Putnam's intention is to defend the thesis that robots could have mental states as humans. To do this, he erects some criticisms against the views that only humans have minds. Let us briefly construct them.

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[17]H. Putnam, "Robots: Machines or Artificially Created Life?" in *Philosophy of Mind*, Stuart Hampshire (ed), (New York: Harper & Row Publishers, Inc, 1996), p.64

On the notion of *knowing,* Putnam criticizes philosophers' view that knowing entails having sensation. He writes: "other philosophers (most recently Ayer, in *The Concept of a Person*) have argued that to know one has a sensation one must be able to describe it."[18] As we have earlier shown through Cartesian preview, it is because humans have minds that they have sensations or cognitive states. Putnam opposes this Cartesian and Ryle's thought.

First Putnam advances a water-on-the-brain argument to show the distinction between the mind and the brain. He posits that "....you can have water on the brain but not water on the mind; hence the mind is not brain."[19] Against Ryle and others, he commends that "one con know that one has a sensation without knowing that one is in brain-state S; hence the sensation cannot be identical to brain-state S"."[20]Following from these bases, Putnam argues that a claim that robots and humans have psychological

[18]Ibid., p.70
[19]Ibid., p.71
[20]Ibid., p.71

states only inform the view that they have sameness of functional organization or that their behaviour are similar, rather than the same physical attributes. In spite of this, Putnam rejects three kinds of arguments against the denial of robot's consciousness.

He describes the first argument which he rejects as phonograph-record argument. This argument simply suggests that robots only play behaviour in the same manner that a phonograph record plays. The second argument, which Putnam rejects, is the reprogramming argument which contends that robots do not have real character of its own. The third argument that he rejects is called the question-begging arguments. The question begging argument, as he puts it, holds that the so called mental states of robots are nothing but physical states, so the notion of consciousness, understanding and thinking attributed to robots are not mental events. In other words, the question begging argument holds that human psychological states are not physical states, whereas robots" conscious state is rather physical state.

In refuting these arguments, Putnam maintains that the phonograph record argument "ignores the possibility of robots that learn.”[21] He believes that robots whose brains were merely predetermined without condition for learning would, indeed, be uninteresting. While he argues that the reprogramming argument seems to erroneously suppose that every programme design would lack agency or autonomy, Putnam argues that "the third argument assumes outright that psychological predicates never apply to robot and to a human in the same sense, which is just the point at issue.”[22] Opposing the second argument, Putnam bolds that it would imply then that "a human being who was "reprogrammed (say by a brain operation

performed by race with a tremendous advanced science), so as to have a new and completely predetermined set of

[21]Ibid., p.77
[22]Ibid., p.78

responses, would no longer be a human being (in the full sense)..."[23]Accordingly, he reiterates that:

> All these arguments suffer from one unnoticed and absolutely crippling. They rely on just two facts about robots: that they are artifacts and that they are deterministic systems of a physical kind, whose behavior (including the "intelligent" aspects) has been preselected and designed by the artificer. But it is purely contingent that these two properties are not properties of human beings.[24]

One crucial argument that Putnam seems to grant, though criticized, is Paul Ziff's argument that is based on the question whether one can hold that robot named Oscar is alive. Putnam writes: "Ziff wishes to show that it is false that Oscar is conscious. He begins with the undoubted fact that of Oscar is not alive he cannot be conscious. Thus, given the semantical connection between 'alive" and 'conscious' in English, it is enough to show that Oscar is

[23]Ibid., pp.76-77
[24]Ibid., p.78

not alive."[25] According to Putnam, Ziff's based the strength of his critique on the ground that if one is to decide whether Oscar (a robot) is alive or not, it cannot do so by looking at his behaviour. Ziff submits that it is the structure not behaviour that determines whether a being, species or something is alive. And as such, Ziff, according to Putnam holds that "it is a violation of the semantical rules of our language to say of anything that is clearly mechanism that it is 'alive'.[26] However Putnam argues that Ziff's argument is weak, hence he argues for robots have minds: they are conscious. To be convincing, Putnam, like Searle, constructs argument as follows:

> Yet I cannot agree that these relationships are as clear-cut as Ziff's argument requires. Suppose that we construct a robot--or, let me rather say, an android, to employ a word that snacks less of mechanism-out of "soft" (protoplasm-like) stuff. Then, of Ziff's argument, it may be perfectly correct, if the android is sufficiently "life-like" in structure, to say that we have synthesized life."

[25] Ibid., pp. 84-85
[26] Ibid., p.85

> So, give two artifacts, both "models" of the same psychological theory, both completely deterministic physical chemical systems, both designed for the same end and "programmed" by the designer to the same extent, it may be that we must say that one of them is a "living thing" (albeit"artificially created") and consists of "soft stuff and conscious, simply because one consists of “soft stuff” and the other consists of “hardware”.[27]

For him, it seems possible to design robots such that "robot language" would capture what it means for robots to have sensations and for robots to be able to detect that other robots have sensations, consciousness and the like. Putnam says that at least such an issue calls for a decision not a discovery. It is implied in Putnam's thought that robots have minds because they are conscious analogically.

It seems crucial here to note that if it is granted that robots think, understand, or are conscious, then the *stuff* that is

[27]Ibid., p.85

responsible for such mental acts would need to be assessed. This brings back the issue of Mind-Brain controversy. Is the mind or the brain or programme (software) responsible for mental states of robots?

Do Robots have Minds? : This section, entitled "Do robots have minds," deepens the Mind-Brain controversy. It argues here that robots lack first-order-mentality; accordingly it lacks a genuine emotion and introspective capacity suitable for moral intelligence. In other words, it defends the view that only robots that have minds could truly understand, know and become conscious of the external world. And since robots do not have minds, they lack intelligence. But, the serious problem is whether we take mind to be synonymous with brain, or distinct from it. This is what this section would explore.

First and foremost, it is natural to suppose that mind exists in the same manner that, human brain suffers controls consciousness. Central to the Cartesian argument is the view that mind represents the self, rather than the brain.

Suppose that "A" is a person who has mind and body. Cartesian thesis then takes the person to be his/her mind than the brain. Enlightened psychology and neuroscience have demonstrated that the brain can be established, but mind is a mysterious stuff. Then, it is believed that since brain transplantation and growing research in brain studies can corroborate the non-existence of the mind. DelaMettrie writes:

> ...only the physicians have a right to speak on this subject. What could the others, especially the theologians, have to say? It is not ridiculous to hear them shamelessly coming to conclusions about a subject concerning which they have had no means of knowing anything, and from which on the contrary they have been completely turned aside by obscure studies that have led them to a thousand prejudiced opinions, in a word, to fanaticism, which adds yet more to their ignorance of the mechanism of the body.[28]

Subsequently, scientists have argued that man is a machine, at least Ryle, Putnam and Searle consented to

[28]DeLaMettrie, Op. cit., p.41

this. Following the brain format, machine's brain takes the tasks of the mind, or in a rather loose sense as Puddefoot writes "if not in one neurone, mind must be either a feature of a group of neurones, or a feature of the structure of some parts of the brain as a whole. If the last of these is the case (and it is my view that it is), we have another reason to doubt that a digital computer running a program is capable of generating mind."[29] They claim this therefore that it is only on empirical ground can talks about consciousness be reasonable. As Puddefoot and other advocate of strong AI contend that, "There is overwhelming evidence that in the absence of adequate brain function there is no mind, and that complexity of brain is closely related to complexity of mind."[30] This empirical approach that mind is brain, or that mind (as a non-physical entity) does not exist. If mind is interpreted as brain in an analogical sense, then the question "Do robots have minds?" would be synonymous with the

[29]Puddefoot, Op. cit., p.97
[30]Ibid., p.96

question. "Do robots have minds?" It follows that if the brain is the same as the mind, then robots that have brains are likely to obey all laws governing the latter and as such, would experience psychological states. This gives the Mind-Brain controversy its uniqueness. However, our goal is to prove that this reduction of Mind to brain is untenable.

The Untenability of a Mind in a Machine Argument

We turn now to a critique of machine intelligence. Our criticisms rest on two arguments. The first argument would establish that robots neither have minds nor brains; hence machine intelligence is a second-order-activity. In the second argument we explore the nature of minds intelligence, which are its capacity for both emotional and introspective reflections. It is on these arguments that we query the substance of the notion of "intelligence" in machines.

Today, it appears that commentators on AI would have no objection to the fact that machines can perform more difficult tasks than humans. Without doubt, machines now learn how to mimic human behaviour and explore the world like Homo sapiens would normally do on daily basis. For instance, Ivan Bratko, Zabkar Jure and Martin Mozina note that the most common form of machine learning is learning from examples.[31] However, it could be claimed that robots, being artefacts, are programmed to perform certain tasks. Given that no robots can exist unless they are created to exist in one form or the other, then they cannot exist other than how they have been programmed. The consequence of this is that any mental values attributed to robots are products of human intelligence. Let us suppose that Mr. CHIDI designed a robot (named ISAAC-D) to build a fuel station. In doing this, let us assume further that he has written several

[31]I. Bratko, J. Zabkar, and M. Mozina, "Argument-Based Machine Learning," in *Argumentation in Artificial Intelligence*, Iyad Rahwan & Guillermo R. Simari (eds.), (London: Springer, 2009), p.463

instructions/programmes on how the robot would work as well as how it would create other robots to assist in the construction work. Now, would it be right to attribute intelligence to the robot?

Of course, the strong Al apologists would assert. While it is not our intent to deny that the reproduction of robots of its kind by ISAAC-D involves some knowhow, however such are second-order-kind. This act, we think, is a second order kind because robotic intelligence would not arise unless humans demonstrate the first-order-intelligence. Let us make this point a little bit clearer. Suppose that Mr CHIDI had programmed the robot to destroy the world and the button starts. It would be interesting to see the robot displays it real autonomy to create. However, should the robot be incapable of resisting Mr CHIDI's commands; its autonomy then is in doubt. In most cases, which experience had shown, either in AI or outside it, robot only follows the designer's instruction. Incidentally then, this argument weakens the argument that robots are truly intelligent beings and as well would help scholars to redefine the limit of the intelligence they attribute to machines. One crucial point which the advocates of machine intelligence often ignore is the issue of responsibility (or autonomy) that lies at the core of the term "intelligence". Once put into cognizance, such element is a strong basis for establishing the limit of artificial intelligence researches in respect to the practical and normative consequences they have for the world. This provides a strong support for the second criticism that is based on our belief that robots lack minds, hence they cannot feel real emotion or introspective reflection, which are invaluable for moral intelligence.

One would agree with us that unless robots are free agents, their acts of consciousness thinking or knowing would be nothing other than second-order activity which is a product of human making. As we have noted above, robot learning cannot take place without talk, and talk cannot take place without one being member of a community who interact. This interaction can only take effect only when humans have freewill, which they can realize. Hence, intelligence arises from actions which reflect the common understanding of a people. In this case, the foregoing suggests that intelligence is shared values which include: having ability of self-awareness, ability to adjust and adapt to societal changes, ability to learn, to know and to thinking reflectively. Then, it follows that in actual senses, the term 'intelligence' could be used, robot intelligence is merely a second-order kind. If this be the case, then it follows that robots cannot demonstrate the necessary capacity for the human mind, or perhaps the brain, so as not to take for granted, the contending debate on Mind-Brain controversy. We contend that emotional basis and introspection would suffice in establishing our position.

The Point at Issue: Currently, the issue of personhood is conceived in both mystical and factual explorations. The one which explains human as a conjunction of two substances (mind and body) seems intriguing, although easily refuted on factual basis. However we are wont to agree with Joseph Weizebbaum that factual and computer "models cannot capture the rich unconscious life of the human mind or the roots of feelings such as compassion."[32] This claim requires some justifications.

Let us suppose that ISAAC-D or its advocates make a claim to robotic emotion of some sort such as love, hatred, joy, or any emotion that one can point out. How then can one be so sure that robots have emotions if its entire constituent is mechanical or Searle and Putnam's softbot? Our contention is that if ISAAC-D is to have an emotion such must be directed to something outside it or to itself. Let us suppose that it can be extended to other robots or to humans. Would this imply that robots can be built to have emotion of love, sympathy, pain, etc if feelings that necessitate these emotions arise? While advocates of artificial intelligence are likely to answer in the

[32]Weizenbaum's is cited in Herdenson work, Op. cit., p.125

affirmative, our contention is in the negative. What are the bases for our claim?

One impressive way to defend emotional term is to define it. In this case, it is synonymous with term like affect. Craig DeLancy clearly captures this when he observes that, "in general terms like emotion and affect are used synonymously."[33] Let us mention that unless machines have a mind or a brain, or perhaps-both, it lacks emotion. When something does not have a mind or a brain, or both then it lacks the requirement for having intelligence, which emotion is an aspect. Our argument is that since ISAAC-D is a programme that may not necessarily be designed to have all emotions which any human can have, depending on the situation, then having deficiencies in some emotions like calmness, sympathy, resilience etc would probably not be fruitful for the world since these emotions are needed from time to time. Let us assume that

[33]Craig DeLancey, *Passionate Engines: What Emotions Reveal about Mind and Artificial Intelligence*, (Oxford: Oxford University Press, 2002), p.5

the designers of robots are sadists it is likely that harmful emotions would be written into machines, if one grants that it seems possible to write such emotional programmes. This position, which we defend, is corroborated by David E Rumelhart view.[34]

Furthermore, the question: ‘Do robots have minds" questions the notion of thinking, consciousness, knowing, etc. in artificial intelligence. One implication of these mental sates is that these activities are internal states. It would appear self-defeating to suppose that Mr CHIDI has knowledge he does not have self-awareness of. In other words, one would interpret the argument of those who attribute way of thinking or frame of mind to robots as a claim that machines are not only conscious and thinking entities, they are aware of their thought and conscious states, hence they are intelligent. We feel this argument is not only inappropriate, it is also weak.

[34]D. Rumelhart, “The Architecture of Mind: A Connectionist Approach” in Mind Design II: *Philosophy, Psychology and Artificial Intelligence*, (Cambridge: The MIT Press, 1997), p.206

Clearing this log jam, at least to indicate one's commitments to the pragmatic issues involved in artificial intelligence, we believe that the introspective character of the brain/mind would reorder our thinking concerning robotic intelligence

We believe quite well that intelligence requires consciousness. And one would accept that humans, in their daily activity, have reflective consciousness particularly about their inner states. As Ziff's argument had shown, it is because human exists-having a Mind/brain-that it becomes conscious of its internal state. Carter explains that "when I introspect--when I reflect on my mental life and consider the contents of my mental states-it doesn't seem to me that events in my mental life are physical states."[35] Accordingly, Carter adds that "the argument from introspective appearance appealed to the fact that minds have certain essential properties which

[35]Carter, OP. Cit., p.7

ordinary physical objects lack, and vice versa."[36] Indeed, Descartes has, to some extent, identified this in his distinction between bodily and mental states. While it seems clear that one can ask Mr CHIDI to describe what is on his mind, possibly no robot can be asked programmes that have not been written on it.

Conclusion:

This paper had examined the issue whether robots have minds. While defending the Cartesian commonsense view of mind's essential properties, we argued that the Mind-Brain controversy helps one to query the deficiencies in artificial intelligence. While Cartesian dualism appears questionable, we showed that it seems fundamental for exploring the moral concern in AI. The paper considered some thought-experiments and found AI intriguing, although somewhat problematic. It is our contention that machine intelligence is a second-order-capacity, which lacks real emotion and reflective awareness suitable for moral responsibility.

[36]Ibid., p.8

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