**An Account of Moral Worth in Machine via Functionalism**

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Functionalism in the field of philosophy of psychology is a doctrine primarily concerned with interpreting systems in terms of their parts and how those parts interact with one another. For the purposes of this research paper I shall be relying on Metaphysical Functionalism, as described by Prof. Ned Block.[[1]](#footnote-1) This brand of Functionalism lays forward a theory of the mind in terms of functional states.[[2]](#footnote-2) The concept of “Mental States,” can then be abstracted by the functionalist simply as a sequence of causal relations. This functionalism often draws comparison between mental states and the table states of a Turing Machine. Table States are finite and are governed by algorithmic mechanical processes.[[3]](#footnote-3) On this view we can identify our own mental states as the result of specific and predictable internal processes. For example, the firing of C-firing resulting in an unpleasant neuropathic sensation could be used as a functional definition of pain (at least within a human being). More broadly, this doctrine does not succumb to the physicalist’s tendency for human snobbery, as it recognizes causal relationships as the true nature of the objects it aims to describe.[[4]](#footnote-4)

So flexible are the potential applications of functionalist theory that its influence can also be found in the realm of software development. Specifically, “Black Box testing”, which is a form of software testing where one observes the “function” of an application while disregarding its inner machinations or structure.[[5]](#footnote-5) In certain philosophical contexts this theory becomes particularly useful. When we ask questions like: “What is this?”, “What is this object’s purpose?”, “What is it for?”, or “What does it do?” we are essentially asking about the function of that thing and how it causally fits into our world.[[6]](#footnote-6) As we will find in this paper, functionalism’s ability to answer questions such as these will make it extremely useful in discussions involving the development of artificial intelligence, specifically concerning the ethical implications of building a machine worthy of moral standing. It provides a relatively straightforward framework for building a functionalist model for a moral being.

This question of what constitutes a moral being is an important one. Researchers and industry leaders in the field of artificial intelligence understand the awesome potential this technology holds. Particularly the potential for this technology to compete with humanity as a highly intelligent and potentially self-interested force. In recognition of this danger many of these industry leaders have come together, forming ethical associations and boards with the goal of understanding the dangers of AI development.[[7]](#footnote-7) One issue these groups face is forming a suitable definition of intelligence. They might for instance, ask how is apparent intelligence connected to feelings of morality? At what point can we say that we have some moral obligation to a machine?

In a paper concerning both these questions Robert Sparrow outlines relevant factors for future judgements on the intelligence of a machine as well as a test to determine when it is appropriate to consider a machine worthy of moral standing. He argues that passing Alan Turing’s “imitation game” is more than sufficient to prove a machine intelligent; he argues that it also demonstrates a machine is self-conscious, and has the ability to form projects and hold ambitions.[[8]](#footnote-8) He argues that if a machine can talk like a human it would need the capability to report on its internal states and its past. Ideally, this would demonstrate a self-awareness within such machines. Similarly, expressions of contentment, sadness, anger and joy could be demonstrated via conversation. Sparrow relies on the idea that a machine not capable of these things could never pass the Turing Test. Sparrow also proposes a test for recognizing when a machine ought to have moral standing. His test is a moral dilemma. Given a situation involving three parties, where the first must choose to save another but at the cost of the life of the third, with all things equal, if one can replace one of the latter two parties with a machine without compromising the difficulty of the moral dilemma, then such a machine must be worthy of moral standing.[[9]](#footnote-9) He calls this the Turing Triage Test. A most simple interpretation of these tests from functionalism could be made here, though it would be outside the traditional setting of metaphysical functionalism. We could imagine these requirements as functional states as well. Namely, Turing’s Test requires a machine to interact with a human such that it causally influences states within the human that resemble perfectly such states that would appear if said human were speaking to any other human. Sparrows test requires that something similar, that a machine interact with a human in a situation of moral difficulty such that it causally influences states within the human that resemble perfectly such states that would appear if said human were interacting with any other human. Seen in this way these test are very much alike. As this paper will reveal both these test also suffer from very similar weaknesses.

What I argue here is that both these tests fail in a large part due to the very broad functional conditions put forward by Turing and by Sparrow. With more consideration applied to what we mean by “intelligent” or “self-aware,”[[10]](#footnote-10) from a functionalist view, we can come to find a precise and meaningful description of what a morally worthy being really is. In section I of this paper I put forward a method of functional reasoning and discuss how it differs from the apparent models in Turing’s and Sparrow’s work. Then in section II I will apply the method to the question of functional requirements of an intelligent machine and then again, to the question of functional requirements of a machine with moral standing. In section III of my paper I will consider possible rebuttals and common controversies surrounding functionalism.

I.

There are two crucial aspects of “functional analysis” I will introduce here.[[11]](#footnote-11) They are the specificity of the causal relationship you are describing, and the uniqueness of the mental state this interaction inspires. To develop a useful method of functional reasoning we might start simply by looking closely at what it is we are trying to describe. This will typically involve asking the question: “What functional quality or qualities do things of this sort have in common?” or “What makes them distinct?” It is important to be sufficiently specific when describing an object or risk an overly applicable definition. Take an orange, for example:

Functionally we will say that an orange is object that once consumed provides various us with various nutrients, these nutrients (when consumed in large enough quantities) influence in us a mental state of satiation. We can eat oranges and feel full afterward. This much is true of oranges but it is also true of apples, or dates or mangos.

We have made the mistake of being too broad with our functional definition. Satiation may still be part of a reasonable definition for this fruit but it is obvious we need more information. A better example:

An orange is object that once consumed provides various us with various nutrients, these nutrients (when consumed in large enough quantities) influence in us a mental state of satiation. Moreover, when eaten the orange provides a very specific neurological response, triggering immediately a sensory experience of sweet or sour acidic flavor. Visually it is capable of providing our senses with a specific range of color experiences (green, yellow, and orange colors) not to mention it spherical shape which will also engender a unique mental state in us upon observation.

This collection of functional describers provide a more detailed and more meaningful idea of what it means to see and eat an orange, and by functionalism it serves as a more appropriate definition of what an orange is. This is a good example because it is strict enough to avoid having other objects with no business being compared to an orange, matching our description. It is also a good example because it allows for the orange to be multiply realized, that is to say, on functionalism, an orange can be realized in a number of ways.[[12]](#footnote-12) This is a major strength of this view as it escapes the species bias physicalists must deal with. Just the same, there are a number of fruits that vary in flavor, color and size that we would also call an orange. There is the common orange, the navel orange, the seville orange, and many more. Indeed, there is often a range of acceptable variation in our definitions of things. Functionalism addresses the need for this variation quite nicely. A general rule we can from these examples is that finding specific functional qualities that are common to all verities of an object you are describing is an essential part of using this method successfully. To highlight again how important this rule is we can examine Turing’s and Sparrow’s very broad functional requirement set forth in his Triage Test.

Turing’s Test would have us believe that is a machine can fool us into thinking they are human by successfully impersonating a human in a conversation, that we should consider this machine intelligent. Functionally Turing’s Test requires a machine to interact with a human such and causally influence states within the human that resemble perfectly such states that would appear if said human were speaking to any other human. Sparrow also insists that passing the test would also mean that this machine is self-aware and capable of forming projects and ambitions. There is, however, a stifling problem here. Is the ability to report on *some* internal state or *some* ambition or project (but not necessarily your own), be sufficient for us to suspect that a machine is intelligent, more remarkably is it enough for us to consider said machine self-aware? One thing is certain clear, by Sparrow’s own account, a machine could be developed that can pass Turing’s and his own Triage Test without necessarily having the faculties those tests aim to reveal. It is not hard to envision such a machine. A learning machine with enough data and enough time to practice could conceivably get a very good handle on the human language. If our machine had access to, for example, a database containing every conversation a man took part in over the course of his life, was tooled with an advanced learning algorithm, and was set aside for an indefinite period of time to train, whereby the machine is continuously given feedback on the quality of its responses and its ability to continue a conversation convincingly over time—it would only be a matter of time until this machine completes the intended course of its programming. Another example:

Imagine a machine capable of building a profile for its conversations based entirely off information it has collected from previous conversations. This profile would act as an immediate reference for questions like: “how are you doing today?” or “what are your plans for the year?” The machine would be capable of answering questions inquiring as to its internal states without any kind of observation on its true internal states ever occurring. Its projects would be simply an output value, fished out from millions of other potential responses.

There is no reason for us to think that such a machine could not exist. This example again demonstrates how designing functional requirements too broadly can ruin a functional definition altogether.

As for the requirements set forth by Sparrow’s Triage, they too could benefit not only from greater specificity but also from recognizing the necessity of unique causal roles. In his Triage, Sparrow requires that a machine interact with a human in a situation of moral difficulty such that it causally influences states within the human that resemble perfectly such states that would appear if said human were interacting with any other human. This test is stronger than Turing’s in at least one way: that it is seemingly more difficult to convince a human that allowing a machine to “die” is every bit as morally damnable as letting a human die than it is to convince a human that they are speaking to another human.[[13]](#footnote-13) This difficulty puts a heavier burden on what the machine must be capable of functionally performing. The test’s downfall, however, is its reliance on human sentiment. Much like Turing’s test, this Triage is making a claim that human sentiment can set some kind of standard for moral worth (in Turing’s case it was intelligence). This idea of course is very much at odds with the spirit of functionalist analysis—that is the capability of multiple realization and the avoidance of species bias. It may be the case that humans are not capable of extending equitable moral standing. It is easy to conceive of a situation where a human embraces there species bias and will not be overly burdened by the choice of a letting a machine die. Simply knowing that the machine is not human would be enough. Human already behave in this way; not with machines but with other humans, along lines far less controversial than species (race, economic status, familial relation, etc.). Even in the presence of a morally worthy machine, this test fails because humans in general cannot be relied upon to consistently make correct moral decisions. More worry some than this is the human who is fooled by a machine with no real claim to moral worth. Human bias is exploitable, and designing a robot to look exactly like a human speaks to the depths of this bias. This concern is led by the same issue that Turing’s test faces. What of machines that are designed specifically to illicit moral concern from us but in reality have no intelligence, no sense of self and no understanding of morality? Though they would be harder to design their prototypes already exists, in video game simulations. These simulations are designed to and succeed in evoking emotional attachment to “weak AI” avatars.[[14]](#footnote-14) Their narratives tug on our sympathies and motivate us to invest emotionally in these avatars. All the while, we realize that they are not human nor intelligent or aware. The human proclivity to sympathize liberally and the opposite should worry us, if our aim is to design a test for moral worthiness in other species. We cannot expect that what is unique about morally worthy beings is the reaction that moral worth triggers from those outside the being. Particularly if those reactions are of an inconsistent nature. For the sake of the test we must find causal roles and ultimately mental states that function with an algorithmic consistency.

For this reason, if machines are to achieve any kind of moral standing it needs to arise from a reasonable recognition of the functional capacities within them and not from their ability to fool or otherwise enchant their human observers. There are a few more reasons to agree with this. By exploring what is required of any person to be of moral worth we learn more about ourselves as a species and ideally we develop the ability to recognize it as a trait in other species. It should not matter that we are convinced via a machine’s human like performance. What is more important is the discovery of these causal roles that influence the states we cherish most in our human experience; those involved in moral duty, empathy, love and friendship, as well as many other.

II.

Using my model and the relevant qualities laid out by Sparrow we can at least begin to form a description of what such a being might require to be considered of moral worth. For one, this machine would require a self-awareness. We might describe this functionally as a mechanical state in which our machine is able to recognize itself as distinct from its environment, is capable of expressing self-interest and capable of spontaneously forming projects based on that expression, and finally that this state persists through the life of the machine. We might also require that this machine must have some states for pain and suffering as well as pleasure and contentment. We count develop a machine systems which mirror our own body’s organs to create this. For example, to reproduce neurological pain we install a synthetic nervous system which behaves like our own and initiates states of painful sensations or pleasing sensations according to our own highly detailed functional requirements. As for intelligence, we need persistent causal functions engaged in observation and general learning. Such a state would collect general and specific observations about the world and when connected to our functional state of self-interest would be able to causally trigger a state such that abstract design and strategy could be conceived and implemented.

The brilliance of complying with this model is that it we can continue to add functional details to a point of precision that will satisfy most people, even if at the end of the day this machine’s hardware and internal functions are physically very different from our own, their functional roles will be nearly the same.

III.

Functionalism, of course, is not without its weaknesses. Most quickly some will realize its most glaring issue is an attack via reductio. This spoils functionalism here in a few ways. First, no matter how close we can claim our functional description is to the truth there may always be an addition to make, a detail missed, a causal role overlooked. For example:

Pain, as we described earlier, might be simply described as a causal event between the firing of certain nerves resulting in an unpleasant neurological sensation or mental state. But alas, pain should also be memorable, to help avoid the cause of that pain in the future. Thus any pain state must have a causal relationship with our memory faculties. But hold on, pain should also, in some cases move us to tears, and it also needs a causal relation to our tear ducts—and so on.

We can keep building indefinitely and we may always end up lacking completeness. I cannot doubt the power of such a reductio. In my defense, however, the observable configuration of a human, her physiology and chemical make-up are finite. Which should mean that if this mental programming is ever perfected it must also have finite qualities.

The next argument from reduction is more troubling than the last. It suggests that no matter how specific we are with our functional requirements, imagining a machine who could imitate the outward expression of those states without ever experiencing them will always be possible.[[15]](#footnote-15) This is conceivably true, however, functionalism’s defense against this is simply its openness to being as descriptive as we can about what we expect from our systems functionally. The more detail we issue a definition the more difficult it is to create an exception. As stated previously, it allows us to create functional definitions with precision unbound; only limited by the content of our own observations.

IV.

Functionalism revolutionized contemporary theory of the mind by giving us an account of mental properties in terms of their function as opposed to their composition. This opened the door for empirical researchers of the mind as well as philosophers looking to form an account of the mind less reliant on human physiology. I have argues that Functionalism can provide a sturdy functional definition of not only intelligence within a machine but also a functional definition of moral worth within a machine.

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