

## Introduction

This essay explores the prospects of understanding the incarnation of God the Son in Jesus as a philosophically possible phenomenon in light of recent developments in the study of the philosophy of mind—the Extended Mind theory first put forward by Clark and Chalmers in 1998.

The question that the Extended Mind theory addresses is: ‘Where does the mind stop and the rest of the world begin?’ One’s mind, even in ordinary situations of everyday life, is enabled to carry out a variety of cognitive processes by relying on mechanisms or devices external to the brain; for example, when doing complex mathematical calculations using a calculator. The Extended Mind theory holds that in doing so (with qualifications to follow) the mind can, and indeed does, ‘extend’ beyond the outer limit of one’s skin and skull. *The mind ‘extends’ into the world.*<sup>2</sup>

Roughly put, the thought that motivates the present essay is that it might be fruitful to think of God the Son’s incarnation in Jesus along the lines of a **(p.206)** (divine) mind ‘extending’ onto an external device (Jesus) to carry out (some of) its mental activities (with qualifications to follow). It will be argued that there are possible cases of extension of the human mind into the world which raise metaphysical difficulties parallel to the difficulties we encounter in accounting for the incarnation. If so, there might be a common analysis of what is required for a solution.

For the purposes of this essay God the Son is here assumed to be an essentially spiritual—that is non-physical—being. The assumption is motivated by the orthodox requirement that God the Father and God the Son are divine. God the Father is essentially spiritual and hence non-physical, and his divine nature is shared by God the Son. Nevertheless, we need to find a way of relating physicality to God the Son, without compromising the nature he shares with God the Father on the one hand, while offering an explanation of the phenomenon of the incarnation of God the Son on the other. This essay looks at the incarnation from a philosophical perspective only, asking whether and how an essentially spiritual being can constitutionally partake of the material world.

The conclusion that will be argued for is that while God the Son cannot become physical, for he is essentially a spiritual being, he can become *entangled* with the physical in such ways that the nature of his mental activities and possibly his own nature may be *modified by the dependence*—through ‘extending’ into the world and onto Jesus. In this sense it is philosophically possible to hold that God the Son is both divine and human.

I will first examine, beyond what has already been done in the Extended Mind theory literature, various degrees to which a mind can extend into the world, and investigate whether *varying degrees of extension and ways of extending* the mind into the world is a matter of quantitative variation only or also qualitative variation. By ‘quantitative’ I mean that the number of extended mental activities or their range can vary. By ‘qualitative’ I mean that extension can vary with respect to the type of activity that is extended. Furthermore, I will explore the question of whether *variation in extension reaches a metaphysical threshold*.

I will focus in particular on cases of what I call ‘extreme extension’, the types of entanglement they give rise to, and the effect that the entanglements have on the nature and identity of what is entangled. I will investigate whether, and how, high degrees of extension affect the nature of the extended activity, and can also affect the nature of the extended subject itself. In particular, I wish to consider whether the *direction of extension* between the mind and the world can switch as we consider various cases of entanglement, resulting in the entangled entity having the nature, not of the mind, but of what the mind extends into.

(p.207) The analysis of various cases of extension that I offer in this essay is also a contribution to the philosophy of mind literature, for it examines the consequences of multiple extensions of one organism into its environment.

### The Extended Mind Theory

In their seminal and well-known article 'The extended mind' (1998), Clark and Chalmers explore whether systematic reliance on external mechanisms can extend the mind's cognitive states/processes into the world, by extending the boundaries of the body for the type of work that the brain and peripheral systems do for the agent.

The boundaries of the agent's body extend when the agent systematically relies on external devices which perform for the agent tasks that replace activities normally carried out within the boundaries of the body. In such cases the agent usually has the choice of whether to rely on inner or outer resources. But in other cases, the external activities may enable the agent to perform tasks that her/his body does not enable her/him to perform.

Clark and Chalmers offer the following example for the former type of case.<sup>3</sup> Consider three cases of human problem-solving in playing Tetris: how does one go about assessing whether a given Tetris block will fit in a socket of a certain shape? There are at least three ways:<sup>4</sup>

1. 1. By mentally rotating the Tetris blocks;
2. 2. By choosing either to rotate the images physically on the screen or to rotate them mentally;
3. 3. By having a neural implant which can perform the rotation (with choice of using it or not).

Clark and Chalmers comment: 'How much cognition is present in these cases? We suggest that all the three cases are similar' (1998: 7).

In further cases, the external activities may enable the agent to perform tasks that their body does not, contingently or even in principle, enable them to perform. The very well-known example Clark and Chalmers give to illustrate this point is Otto, a person who suffers from Alzheimer's disease.

Like many Alzheimer's patients he relies on information in the environment to help structure his life. Otto carries a notebook around with him everywhere he goes. When (p.208) he learns new information, he writes it down. When he needs some old information, he looks it up. For Otto, his notebook plays the role usually played by a biological memory...The information in the notebook functions just like the information constituting an ordinary non-occurrent belief; it just happens that this information lies beyond the skin.<sup>5</sup>

The conclusion Clark and Chalmers argue for in their 1998 article is that '*beliefs* can be constituted partly by features of the environment, when those features play the right sort of role in driving cognitive processes. *If so, the mind extends into the world.*'<sup>6</sup>

The original Clark and Chalmers hypothesis concerns cognitive processes; hence it has been called the Extended Cognition hypothesis. But Chalmers himself and others find it natural to apply the Extended Cognition hypothesis to a wider range of mental activities and states:

It is natural to ask whether the extended mind thesis might itself be extended. What about extended desires, extended reasoning, extended perception, and extended emotions? I think that there is something to be said for each of these.<sup>7</sup>

So from now onwards I will simply refer to the Extended Mind theory to include all the mental states and activities mentioned in the quote above.

The Extended Mind theory is a variety of Vehicle Externalism. Susan Hurley explains it thus:

Other varieties of externalism aim to explain how—by what processes or mechanisms or ‘vehicles’—mental states are enabled. Enabling processes can be explained in terms of computation, neural networks, dynamical systems, and so on. What are the boundaries of the relevant enabling processes? Can enabling processes extend beyond exclusively internal neural processes into the body and its environment? Enabling externalism (or how-externalism, or vehicle externalism) answers ‘yes’.

We should distinguish externalism about processes that enable intentional content from externalism about processes that enable phenomenal quality. Arguments for content-enabling externalism have often proceeded under the headings of ‘extended mind’ or ‘embodied, situated cognition’. For example, an Alzheimer patient’s cognitive processes arguably extend to a notebook he uses in place of reliable neural memory processes (Clark and Chalmers 1998...); an accountant’s cognitive processes may include her use of pen and paper in complex calculations. Arguments for quality-enabling externalism have tended to appeal to embodied, situated interactions with natural environments, often under the heading of ‘sensorimotor dynamics’ [e.g. Noë].<sup>8</sup>

**(p.209)** Pivotal to the Extended Mind hypothesis is the following *Parity Principle*:

If, as we are confronted with a task, a part of the world functions as a process which, *were it done in the head*, we would have no hesitation in recognizing as part of the cognitive process, then that part of the world is (so we claim) part of the cognitive process.<sup>9</sup>

The analysis of degrees of extension offered below will show that this principle requires qualifications.

Let us investigate further into what the Principle says. In Chalmers’s words:

A month ago, I bought an iPhone. The iPhone has already taken over some of the central functions of my brain...Friends joke that I should get the iPhone implanted into my brain. But if Andy Clark is right, all this would do is speed up the processing, and free up my hands. The iPhone is part of my mind already.

...[Clark] defends the thesis that in at least some of these cases, the world is not serving as a mere instrument for the mind. Rather, the relevant parts of the world have become parts of my mind. My iPhone is not my tool, or at least it is not wholly my tool. Parts of it have become parts of me.

This is the thesis of the extended mind: *when parts of the environment are coupled to the brain in the right way, they become parts of the mind*. My iPhone is not my tool, or at least not wholly my tool. Parts of it have become parts of me.<sup>10</sup>

What does ‘coupled in the right way’ mean? Clark and Chalmers explain it in the case of Otto thus:

First, the notebook is a *constant* in Otto’s life—in cases where the information in the notebook would be relevant, he will rarely take action without consulting it. Second, the information in the notebook is *directly available without difficulty*. Third, upon retrieving information from the notebook he *automatically* endorses it.<sup>11</sup>

The agent ‘extends’ into the world not when he/she is simply assisted in performing some functions and tasks by various external devices, but only, in short, when she/he *depends systematically* on the external mechanisms for the performance of these tasks. Otto, for example, extends his body onto the notebook by systematically depending on it for remembering information he cannot store in his biological memory.

The *systematic dependence* on such devices is such that one ceases to think of them as instruments which, for example, Otto uses, but comes to think of them as *parts* of Otto, on a par with the parts of Otto's body through which he engages in daily activities.

**(p.210)** What I want to draw attention to and further explore is that dependence between the agent and the device is *mutual* and comes in *degrees*, and accordingly different types of ontological entanglements come about.

### A Two-Way Ontological Entanglement

In the classic scenario by Clark and Chalmers the notebook is an enabler for Otto. It allows him to retrieve information he cannot remember on his own, and to act on it. What is more, he does so systematically; Otto has come to depend on the notebook for the provision of information he needs, and the notebook is part of his daily life plan. In that sense, the notebook functions as a part of Otto's body, enabling Otto to fulfil mental tasks, such as remembering an address, he would not have been able to carry out without it.

But *the notebook does not itself carry out Otto's mental activities*. It is not the notebook that has the belief that the Museum of Modern Art is on 53rd Street. Any mental activity that is performed is performed by Otto. Otto is and remains the thinking agent. To put it in general terms, the external item does *not* do the thinking for the agent. Rather, the external item makes available information that would normally be available to one through the use of their senses or other brain functions.<sup>12</sup> In Clark's and Chalmers's words:

The key claim...is that *a subject's beliefs* can be partly constituted by features of the environment, when those features play the right sort of role in driving cognitive processes. A bit more generally and precisely, the claim is that sometimes *a subject has a mental state* (e.g., believing that the Museum is on 53rd Street) partly *in virtue* of external processes, and in particular in virtue of these external processes playing the right sort of role in driving cognitive processes. Here, 'in virtue of' should be understood constitutively rather than causally.<sup>13</sup>

So, in Clark's and Chalmers's example, the notebook carries out tasks that would have otherwise been carried out by a part of Otto's brain. Otto thereby enhances his capacities and is able to perform tasks which he would not have been able to perform without the notebook. But the ownership of the relevant cognitive process/states remains with Otto, despite the functional involvement of the notebook.

**(p.211)** *The notebook also depends on Otto to be a vehicle of cognition*. The notebook has been taken over by Otto to serve as a memory vehicle. As if it were a part of Otto's body, the notebook becomes functionally if not organically engaged with his body. Yet, the notebook is not dependent on Otto in the way he is dependent on it. Otto is and remains what he is, namely the thinking agent—even when relying on the notebook. The notebook depends on Otto *to be what it becomes*, namely a memory/cognition vehicle. Through Otto's use of it, the notebook becomes part of his remembering process, *because of the purpose it serves*.

In more general terms, an *ontological entanglement* between an agent and an external device is formed. The external device becomes *constitutionally appropriated* by the agent, enabling her to carry out activities that she has either lost the capacity to carry out by herself, or which she could not have carried out without reliance on the device. On the other hand, the agent interferes with the device, determining what it becomes through the use she puts the device to.<sup>14</sup>

## The Metaphysics of Extension

In very general terms, in cases of extension the entity that is being extended engages in an activity that is enabled by some other activity in the external environment of that entity. In the original Clark and Chalmers case, Otto acquires a belief regarding the location of the Museum of Modern Art (namely, that it is on 53rd Street) by extending his belief-formation activity onto the notebook, which he uses to remember the address. So the extension of Otto's mind is determined by the *goal* of the extended activity (in this case, belief formation about the museum address), as well as by the *means* through which the activity is implemented in the environment (through the use of the notebook). The entanglement, for example, of Otto and the notebook, is ontologically bound together by one entity systematically providing the goal, and the other entity providing the means for the realization of an activity.

I will argue that the introduction of a *goal-means entanglement* in the activities of two entities can affect the identities of the activities,<sup>15</sup> and in extreme cases of extension even the nature and the number of the entities **(p.212)** themselves (meaning that one of the two entities engaged in the entanglement might become part of the other). The line of thinking behind this conclusion is that within a Kripkean metaphysical framework, which I assume, the identity of a substance depends on the sort or kind of substance it is, which is determined by the substance's constitution, activity, and functionality. Thus, for example, we know what a cat is when we know its make-up and its characteristic activities. If then an entity's activities are put to the service of the activities of another entity, this may interfere with the identity of the activities, and ultimately with the identity of the entities themselves.

In what follows I will address questions that arise from 'extreme' cases of extension. Do the extended agent and the device become parts, the one of the other? Is the task performed by the agent, by the device, by both, or by some new resulting entity? Does the nature of the extended and extending activities change? Does the nature of the extended and extending entities change?

I will discuss these questions by presenting a series of thought experiments to study the types of dependence, and hence the types of entanglement in which we are interested for the purpose of explaining the phenomenon of the incarnation.

## Deep Blue Versus Kasparov

Let us consider a series of cases of ontological entanglement brought about by 'extreme' extension that I take to bear analogies to the incarnation case. Deep Blue was a chess-playing computer developed by IBM, and was the first computer system to defeat a world champion, Garry Kasparov, in a match under standard chess tournament time controls, in 1997.<sup>16</sup> For the present purposes, I make the assumption that during that match Deep Blue and Kasparov played the same game.<sup>17</sup> Deep Blue beat Kasparov, just as it had been beaten by Kasparov in previous contests.

### **(p.213)** Kasparov being swapped with Deep Blue

What I wish to explore is whether Deep Blue and Kasparov can extend onto one another, and to which degree, while retaining their numerical distinctness, or whether either of the two can merge with the other. I will first consider a scenario that will allow us to clarify what sort of case we are interested in here, and what not.

Can Deep Blue become Kasparov? The assumption made is that Deep Blue can engage in the same activities as Kasparov and pursue the same goals as Kasparov, for example, to play and win a chess game. We can imagine now that Deep Blue could engage in carrying out certain further tasks of Kasparov's, such as to instruct as well as train young aspiring chess players and prepare them for

competing. Gradually, Deep Blue could learn to carry out, in appropriate set-ups, many of Kasparov's professional activities, becoming a '*virtual Kasparov*'.

Virtual Kasparov is basically an enhanced Deep Blue, which can engage in a wider range of chess-playing-related activities, which Kasparov would engage in. Let us then imagine this further enhancement of Deep Blue and swapping Kasparov for the further enhanced Deep Blue. We can suppose that an opportunist agent wishes to replace Kasparov in public life, as the old master is beginning to age. Let us further suppose that scientists build newer versions of Deep Blue, combining computing and robotics, in an attempt to create a machine that looks and acts like Kasparov. They use all the available medical and prosthetic know-how to imitate human behaviour as faithfully as possible, and even feed Kasparov's game tactics, personality traits, and memories into the further enhanced Deep Blue. The final product, let us call it *Deep Blue-K*, would be a robot that looked like Kasparov, behaved like him, and played chess like Kasparov. Let us further assume in this thought experiment that Kasparov retires from public life and the Deep Blue-K steps into his public role.

What exactly would the relation between Deep Blue-K and Kasparov be in this case? Clearly they would be numerically different substances, coexisting and possibly even interacting with each other. So the question is how similar the two could be. The stuff the two are made out of is different. The one is carbon-based and the other is silicon-based. Hence, their causal histories and origins are different as well. Within a Kripkean metaphysical framework, such cases are governed by metaphysical necessity. Kripke has shown that the type of constitution and the origin of natural kinds are essential to them.<sup>18</sup> His well-known example was the discovery of a 'tiger' that is not a mammal:

**(p.214)**

Suppose we discover an animal which, though having all external appearances of a tiger as described here, has an internal structure completely different from that of the tiger...We might find animals in some part of the world which, though they look just like a tiger, on examination were discovered not even to be mammals. Let's say they were in fact very peculiar looking reptiles. Do we then conclude on the basis of this description that some tigers are reptiles? We don't. We would rather conclude that these animals, though they have the external marks by which we originally identified tigers, are not in fact tigers, because they are not of the same species as the species which we called 'the species of tigers'.<sup>19</sup>

Humans are essentially organic, *qua* belonging to a natural kind of such a type, while Deep Blue-K is essentially electronic, *qua* artefact of such a constitution. So Deep Blue cannot become/be another Kasparov. On Kripke's argument, a human being *cannot be embodied* in a computer, since a human being cannot be constituted of silicon.

So, how similar can Deep Blue-K and Kasparov become? How close can Deep Blue get to being Kasparov? What Deep Blue and Kasparov can share in common are activities and states. But how *similarly* do they act with each other, when they engage in the *same* activities?

In the case under consideration, Deep Blue-K carries out the type of activities that Kasparov would have engaged in. By that I mean that at a certain level of generality, their activities are *functionally* the same. But for the purposes of our thought experiment we will assume that Deep Blue-K carries out these activities in the way that a super-computer-cum-robot could do them. That is, at the level of micro-causal activity, what goes on in Deep Blue-K is very different from what would have gone on in Kasparov in the same circumstances. The reason is that silicon circuitry activity is different from neuron activity. At that level of microstructure, the activities of Deep Blue-K and Kasparov are



different, even if at a higher level of description their activities are functionally the same. Can they, then, be engaged in exactly similar activities? *Macro-functionally, yes; micro-causally, no.*

A point of clarification. Instead of stipulating, as I am doing, that Deep Blue-K carries out Kasparov's activities in the way that a super-computer-cum-robot could do them, one can imagine that Deep Blue-K is so constructed that it replicates not only the macro-functional activities of Kasparov, but also that it exactly replicates his micro-causal activities. In this case, the similarity between Deep Blue-K and Kasparov is, of course, even stronger. On Chalmers's view of conscious experiences, which according to him arise from fine-grained functional organization, if Deep Blue-K replicated exactly the micro-causal (p.215) functionality of Kasparov, it would in principle be able to have a mental life just like Kasparov's mental life. Chalmers holds the following Principle of Organizational Invariance:

Given any system that has conscious experiences, then any system that has the *same fine-grained functional organization* will have *qualitatively identical experiences*. According to this principle, consciousness is an organizational invariant: a property that remains constant over all functional isomorphs of a given system. Whether the organization is realized in silicon chips, in the population of China, or in beer cans and ping pong balls does not matter. As long as the functional organization is right, conscious experience will be determined.<sup>20</sup>

On this view, with micro-causal identity, Deep Blue-K would have experiences that would be qualitatively exactly the same as Kasparov's experiences, not only the same in content, so it would be truly a Virtual Kasparov, although not a human being. The difference in make-up—carbon or silicon—between Kasparov and Deep Blue-K would be irrelevant to their being in qualitatively exactly the same mental states. *But this qualitative sameness, due to their micro-causal identity, would not suffice to make Deep Blue-K into a human being, for the reasons given by Kripke's argument.* It would, though, make Deep Blue-K much more similar to a human being and to Kasparov than envisaged above with mere macro-functional identity.

I do not pursue this high degree of similarity hypothesis here, and I stipulate that Deep Blue-K is different at the micro-causal level from Kasparov. This is because ultimately, I assume, micro-causal identity is not an open possibility in the case of God the Son and Jesus—which is the case I want to illuminate with the Kasparov–Deep Blue thought experiments. On the assumption that there is causation in the divine constitution of the Son, it seems plausible to assume that Jesus' physical structure cannot replicate the causal make-up of the Son. I am here assuming that divine mental life is not replicable by human mental life. I will come back to this point later.

We have so far seen that *functional sameness of activities does not guarantee sameness of kind of the agents*. The reason is that functional sameness does not come with a specified degree of coarseness/fineness level. Despite their functional sameness, Deep Blue-K and Kasparov are different in essential kind because of their constitutional (and micro-causal) differences. Kripke's argument shows that even though at some level of description the functions of two organisms (for example, reproducing, or playing chess) are the same, their internal (p.216) structure, origins, and causal history might set them apart in kind, as individuals of two different species (for example, a tiger and a tiger-looking reptile, or a human and Deep Blue-K).

### Prosthetic Deep Blue

How can the numerical gap between Kasparov and Deep Blue-K be bridged? In the thought experiment discussed above they remained numerically distinct, coexisting as two separate substances. Just increasing their functional similarity through different means would not undermine their numerical distinctness. To explore whether and how their numerical distinctness can be

compromised, we need to look at more entangled ontological complexes than the Deep Blue-K case described above.

A more intimate ontological entanglement can be envisaged starting with the following type of case that is standard medical practice. Consider the situation where a patient has a prosthetic arm attached to her body. Here the arm becomes an organ which the patient uses to carry out tasks of her own. The micro-activities are not of the same type as when the patient could use her arm, but they serve generally the same functions. The difference with the swapping scenario of Deep Blue-K given above is that here the prosthetic arm replaces a part of the body of the patient, thereby becoming part of the patient herself.

This is a type of extension of the body of the patient, by the inclusion of the prosthetic arm alongside the material organs that enable her to carry out daily life activities. The relation of the patient to the prosthetic arm is different from her relation to a percolator, for example, because of the intimate and direct causal connection between her body and the prosthetic arm; and because of her higher degree of dependence on the prosthetic arm for her daily activities.

Returning now to our thought experiment with Deep Blue and Kasparov, let us consider a future, aging Kasparov, whom his agent does not wish to let go of. So she puts into action a scheme whereby she implants and appropriately connects a mini version of Deep Blue in Kasparov. Gradually, Kasparov's chess playing and chess teaching and training abilities—as he weakens—will be totally due to Deep Blue's abilities. Let us further imagine in this thought experiment that the aging Kasparov gradually needs additional help to cope with life, and so the shrewd agent provides all the prosthetic and other devices that Kasparov needs, coordinated by Deep Blue in Kasparov, thereby enhancing or replacing the various life-sustaining powers and activities of Kasparov's constitution.

**(p.217)** Let us use from now on '*Deep Blue*' to refer collectively to the powerful computer implanted in Kasparov and all the prosthetic devices it coordinates in Kasparov's body. Let us use '*Kasparov/100*' to refer to Kasparov when he is around one hundred years old and progressively weakens even further. What is the metaphysics of Kasparov/100? He is constituted of the body of Kasparov, which is kept alive and active by Deep Blue. The functionality of Kasparov/100, his vital life activities and his actions, are due to Deep Blue.

When he becomes one hundred years old and more, who is he: Kasparov, Deep Blue, or neither? Has either taken over the other? Has either extended themselves into the other?

Since Deep Blue keeps Kasparov's body alive and functioning through its life-sustaining activities, Kripke's argument does not apply to Kasparov/100, because the constitution of Kasparov/100 is still a human constitution, his body, be it ailing and weakened. In other words, enough of the human internal structure remains in Kasparov/100 to be a human. But as increasingly more life-sustaining activities are passed on to Deep Blue, the body becomes an outer shell that has less and less functional role to play in the whole. It gradually becomes the 'clothing' of Kasparov/100. Ultimately, a robot will be the engine of a human cover.

I assume here, as mentioned before, that the way Deep Blue operates at the micro-causal level is different from the way Kasparov would operate at that level: their functions are the same only at a coarse level of description.<sup>21</sup>The reason why I make such stipulation is that, as said above, on the assumption that there is causation in the divine constitution of the Son, it seems plausible also to assume that Jesus cannot replicate the mental causal structure of the Son. If Deep Blue and Kasparov functioned in exactly the same way at the micro-level, this would not be a scenario that is relevant for the problem of the incarnation. When Jesus becomes a vehicle for the activities of the Son within



human society, Jesus' activity and functionality in society do not replicate the Son's mode of operation.<sup>22</sup>

In what follows, I will look at three cases of different degrees of extension and examine their impact on the identity of the extended entity. We have seen that extension is a type of systematic dependence, and it comes in degrees and in a variety of types. The difference in the degree and the type of extension has **(p.218)** an impact on the ontological entanglement that comes about as a result of the dependency relation. Extreme variations in the degree and the type of the dependence may even switch the roles of the *means* and the *end*, thereby switching the direction of dependency, and hence, of the extension.

### **1. Kasparov/100 is Deep Blue**

Let us imagine the following case involving Kasparov/100 and Deep Blue, the enhanced mini-computer implanted in him. Suppose that at first, Kasparov is extending only his chess-playing thinking onto Deep Blue, by making Deep Blue part of his enabling process. But as the years go by, the life activities as well as the decisions and social activities and actions of Kasparov/100 are orchestrated in their design and execution by Deep Blue. There comes a point when Kasparov/100 consists of a shell of flesh and bones plus Deep Blue, where the flesh and bones are kept alive on account of the activities of Deep Blue, and Kasparov/100 acts in the social domain as coordinated by Deep Blue. Is Kasparov/100 Kasparov? Is Kasparov/100 a human being at all?

Since the body of Kasparov is retained alive, the entanglement of Kasparov and Deep Blue satisfies the minimal requirements for constituting a human being. Both the constitutional and the historical features of Kasparov, which are essential to him, are preserved.<sup>23</sup>

What is significant for the current investigation is that gradually, and increasingly so, the functionality of Kasparov, which at first was only enhanced by Deep Blue, begins to be shaped by the abilities of Deep Blue.

The chess-playing thinking of Kasparov, his physical vitality, his social activity and interaction, will all be shaped by what is possible to enable him to carry out through Deep Blue. Even if he satisfies the minimal requirements for being a human being, increasingly less and less of Kasparov's characteristic activities will survive in Kasparov/100. More and more, Deep Blue will show its presence in the shape that the entanglement will be taking.

This is a scenario in which (nearly) total reliance of one substance on another for its survival and its functionality *reverses the direction of extension*. We saw above that the extended substance determines the extending activity by setting the goal to be achieved through the activity, while the enabling **(p.219)** substance determines the means for the implementation of the activity. But when the reliance of the extended substance on the enabler is considerable, or even nearly total, the nature of the activities and even to some degree the goal achieved by the activities are shaped and determined more by the enabler's capacities than by the extended substance's goals for this activity. *Extreme dependence of one substance on enablers endows the enablers with the power to shape the nature and goal of the activity that extends the substance.*

Hence, where the reliance on the enabler is nearly total, the effect of the enabler's abilities on the nature of the enabled extended substance is significant. The means eventually determine the goal and the nature of the activities. On this scenario, Kasparov/100 becomes increasingly a robotic organism, undermining not only Kasparov's personal identity but even his status as a human being.

## 2. Kasparov/100 is neither Kasparov nor Deep Blue

On the second scenario I propose to consider, Kasparov/100 does rely on Deep Blue, but the degree of reliance is more moderate than in the previous case. Kasparov's body is better preserved, allowing Kasparov/100 to determine more of the activities to be carried out by Deep Blue. It is still a human frame powered by a robot, but here it gives rise to a new compound with a *sui generis* constitution. On this view, Kasparov/100 is *neither* Kasparov nor Deep Blue, but a compound created by the combination of the two. Their roles are not symmetrical. The goal of the activities is set by the needs of Kasparov/100; but in this case, as opposed to the previous scenario, the nature of many activities remains what it has been, while for other activities, their nature is ultimately determined by the enabler—i.e., by what it is possible for Deep Blue to achieve. The result is an amalgam of Kasparov/Deep Blue activity, of *human/robotic* activity and nature.<sup>24</sup>

## 3. Kasparov/100 is Kasparov

On the third and last scenario, let us assume that medicine's developments during the Kasparov/100 period are such that they manage to keep Deep (p.220) Blue's role to the original, only partially enabling one. Here the goal of the activities of Kasparov/100 is set by Kasparov/100, but also, due to the stronger condition of his constitution, the nature of the activities is determined by Kasparov/100 as well. Deep Blue provides only the means for the pursuit of these activities. In such a scenario, there would be little reason to think that Kasparov/100 is any less a human being than Kasparov. Kasparov/100 would be like a person incapacitated by illness in the hospital, and being assisted by medical instruments to survive. In such a case there would be no reason to question the humanity of their nature. Similarly here, Kasparov/100 is fully a human being.

The three cases above also suggest what follows from repeated extensions of an organism into the environment. When nearly the totality of the mental activities of Kasparov are carried out by Deep Blue, it becomes a case of replacement rather than enabling. In replacement, if the causal network is exactly similar to the original one, then the phenomenal content of the experiences is preserved<sup>25</sup> but not the constitution of the organism.<sup>26</sup> Hence, even in the best cases of exact functional similarity, the organism does not survive, although its mental life does (for example, the person survives but not the human being). This presents a natural limit to the applicability of Clark and Chalmers Parity Principle. Although the enabling conditions are of the same type as the condition they enable (or replace), the original organism is lost.

Who is Kasparov/100? What is Kasparov/100? How many is/are Kasparov/100?

Each of the three cases considered above suggests a different set of answers to these questions. On the first scenario, for all intents and purposes, Kasparov/100 is Deep Blue. He is a single individual, a robotic organism. On the third scenario, Kasparov/100 is equally clearly a single individual, a human being. On the second scenario—neither Deep Blue nor Kasparov—the situation is more complex. The entanglement of Kasparov/100 and Deep Blue may be thought of as a single individual, a new kind, something in between a human and a robot. Alternatively, their compound might be thought of as two distinct but interdependent individuals, a human and a robot. Whether we count them as one or two will depend on the context within which we ask how (p.221) many they are, and the degree of detail in the description of their interaction. The closer we get, the more we distinguish the two, while the more remote our viewpoint, the more they seem to be one whole. In a different context, Chalmers notes what would apply in our case too:

As Clark suggests...we can flip back and forth between both ways of looking at things. We have a sort of Necker Cube effect, with mental states counting as extended or not depending on our perspective and our purposes.<sup>27</sup>

What we see, therefore, from our thought experiments is that *variations in the dependency relation* between the two substances, the extended one and the enabling one, *make an important difference to the ontology of their entanglement*. They make an important difference *to the identity and number of the entities in the entanglement*. In view of the fact that the differences between the three cases are gradual differences of degree, considering the connection, dependency, discontinuity, etc. in the entanglement gives rise to powerful considerations that support *alternative viewpoints on the identity and number of entities within it*.

It is far from clear that it would be possible in an actual situation to distinguish between these three scenarios, and decide which one of the three we are confronted with, if we were to meet Kasparov/100 with a mini Deep Blue implanted in him. The reason is that which scenario holds depends on how much the nature of how many activities in the entanglement is changed by the enabler to such a degree that it disqualifies them, individually or collectively, as human activities. Changing the nature of a large proportion of the activities to a large enough degree can have an effect on the resulting nature or natures in the entanglement, and hence on the identity and number of the substances involved in it.

I conclude that the arguments and considerations we have at our disposal in determining the identity of things around us are not designed to handle ontological entanglements of the kind we encountered in the case of Kasparov/100. We are divided as to who, what, and how many it is. But if this is how things are, we should recognize them to be such, and not expect a clear, firm answer to the ontological description of the entanglement. We are divided about the entanglement's identity and number, and will remain so for as long as we do not have a theory of the ontology of entanglements. The resolution of the puzzle requires *innovation* on the sortals and on the identity criteria we employ, rather than careful application of the existing ones.

### **(p.222) Incarnation Understood Through the Kasparov-Deep Blue Model**

I have assumed for the present purposes that God the Son is essentially a spiritual, that is, non-physical being. On this basis, it follows that the Son cannot *come to be* a material being, but has to come to be *in* a material being. I take this to be the problem of the 'Incarnation'. Substantial constitution, in the Aristotelian tradition that extends onto David Lewis and David Armstrong and that I endorse in this essay, treats the type of substratum of a substance as essential to the substantial unity. Thus a human being is essentially constituted of flesh and bones. And if God the Son is non-physical, then he cannot come to be constituted of something physical. The Son cannot come to be constituted of matter anymore than what is essentially made of flesh and blood can come to be constituted of cables and electronic chips. This means that the body of Jesus cannot come to *constitute* God the Son. This is not a metaphysically possible relation between Jesus and God. Incarnation cannot be understood as God the Son being constituted of the matter of Jesus.

What I propose in this essay is that it might be fruitful to think of the incarnation of the Son in Jesus in terms of extension, instead of constitution. Extension requires only the very weak functionalism captured by the Clark and Chalmers Parity Principle. Namely, extension requires only functional equivalence between the activity performed by the extended entity and the activity of the enabler it extends onto, even if there are different implementations of the activities, for example, thinking about a chess-game move or being directed by Deep Blue as to how to move the mechanical pawn. Depending on Deep Blue for the chess-game move does not change the nature of Kasparov into that of a robot, which would be his demise; rather, it enables Kasparov and thereby extends him. Although Kasparov, *qua* human, cannot be constituted of chips and electronic cables, his incorporation of Deep Blue's activity (which extends Kasparov) does implement Kasparov's 'chess playing' in electronic

circuitry. A tension results between Kasparov's nature and the nature of his extension, which is what I explored in the three cases I examined above. We saw in the entanglement cases above that extension can bring about, in extreme cases of dependence, *modification* of the *nature*, of the *number*, and of the *identity* of the entities involved.

In the following sections I will propose a way of understanding how God the Son and Jesus are ontologically related using the metaphysics of the entanglement of Kasparov/100 and Deep Blue as a model.

**(p.223)** It is difficult to engage in details about the nature of the *interdependence* between God the Son and Jesus, since the phenomenon of incarnation and the nature of God are significantly under described. The general directive in my investigation is that the Son has certain soteriological goals to fulfil with regard to humanity, which require him to engage with the human social reality. The type of involvement of God in the human social reality is speculative, due to the under described status of the incarnation phenomenon and of God's nature. But the purpose of the forthcoming sections is to give a framework within which various speculative ways of understanding the incarnation phenomenon could be examined and compared.

### 1. The incarnate Son is Jesus

On one conception of their relation, God the Son is extensively empowered by Jesus within the human social reality. Substantial empowerment could occur only if Jesus' constitution could ground the extension of a great variety of God the Son's mental activities. There are three metaphysical considerations in relation to this degree and variety of extension. The first is whether mental activities other than cognitive ones (e.g. emotional states) can be extended. The second is whether divine mental states can be constituted of (mental or material) human states. The third, and very speculative, is whether Jesus can enable the Son to have types of experience that the Son is not capable of having on his own, e.g. physical pain.

The first consideration regards the possibility of extension of non-cognitive experiences. This is a controversial issue and currently very much in the forefront of research in the area of the philosophy of mind. As I said above, the original Clark and Chalmers hypothesis concerns cognitive processes; hence it has been called the Extended Cognition hypothesis. But Chalmers himself and others find it natural to apply the Extended Cognition hypothesis to a wider range of mental activities and states:

It is natural to ask whether the extended mind thesis might itself be extended. What about extended desires, extended reasoning, extended perception, and extended emotions? I think that there is something to be said for each of these.<sup>28</sup>

On the second consideration, whether divine mental states can be constituted of human mental or physical states, according to Chalmers's Principle of Organizational Invariance quoted above it is possible to implement a mental state on a variety of grounds, and even replicate its phenomenal aspects so long **(p.224)** as the functional organization is the same, not just at the macro-, but also at the micro-levels. But the phenomenal aspects of divine consciousness are far too speculative a topic to consider. I know of no reason blocking our speculation that God's mental states could be at least in part constituted of Jesus' mental or physical states, just as Otto's beliefs were partially constituted of the notebook's, and Kasparov's of Deep Blue's, unless realizability is not a metaphysical option for God's states (as it is not for Aristotle's God, who is non-composite).

The third issue is whether Jesus can extend the range of experience of the Son. Can Jesus empower the Son to experience mental states that the Son is not on his own capable of experiencing, such as

physical pain? This too is very speculative, and I mention it only because it touches on questions that may become relevant to extension in the philosophy of mind. There is an experiment which has taken place in cognitive science which bears relevance to this question. A blind patient is fitted with TVSS as follows. A TV camera (mounted on spectacle frames) sends signals through electronic circuitry to an array of small vibrators which is strapped against the subject's skin. The pattern of tactile stimulation corresponds roughly to a greatly enlarged visual image.<sup>29</sup> In these experiments, blind subjects extend their perception through television cameras which generate *tactile* sensations that give rise to semi-*visual* experiences. There is, of course, a difference between this case and the pain case we are envisaging, since the subjects in this experiment had been *capable of sight* before becoming blind. It would be reasonable to assume that God the Son in the non-incarnate state is not capable of physical pain because (as per assumption) he is an essentially non-physical being. Nevertheless, this experiment shows a limited way in which one can enrich the types of experience by extension.

It is conceivable, I submit, that Jesus could enable God the Son to feel physical pain if two conditions were to be met. First God the Son would need access to a brain structure that has the micro-causal structure of pain. And this, Jesus can provide. But secondly, this brain structure would need to be (p.225) 'hooked up' to God the Son in a micro-causally identical way in which the pain parts of Jesus' brain are hooked up to his own brain. At this point we can proceed no further because we do not have any theory about the causal structure of God the Son's mind and what it would mean to talk about hooking up to a non-physical substance. But we can imagine this case applied to Kasparov and Deep Blue, with Deep Blue providing a chip with the micro-causal pain structure and connecting it appropriately to Kasparov, thereby enabling Kasparov to feel pain sensations.

As is clear, the limits of a significant empowerment of God the Son by Jesus, through a variety of extensions of the Son's mental states onto Jesus, are difficult even to contemplate. The reason is that they concern very speculative areas of what we can say about the incarnation, and also, they raise questions that have only just begun to be investigated in the philosophy of mind in relation to the extension of the mind. We shall therefore leave this scenario under described, and retain only that it is exploring the greatest degree of extension of the Son onto Jesus that metaphysical constraints would allow. Our interest in this scenario is that it has the potential of *maximally humanizing* the Son's mental life by possibly affecting the nature and range of experiences of the Son through extensive reliance on Jesus.<sup>30</sup>

## 2. The incarnate Son is neither Jesus nor God

On a second possible conception, there is a less intimate entanglement between God the Son and Jesus than described above. As a consequence, the extension of God the Son's mental activities onto Jesus does affect the nature of the activities, but not to the degree envisaged in the previous scenario. For instance, the Son's decisions are carried out through the human actions of Jesus, and are thus subject to human success and failure. This is a compromise on the activities of the Son, rendering them vulnerable in a human way. The result is that Christ is an entanglement that has a life characterized by both divine and human activities, or activities that are an 'amalgam' of the two.

## (p.226) 3. The incarnate Son is God

The third conception of the incarnation entanglement I want to suggest is one where God the Son's extension onto Jesus is limited. Jesus provides, strictly, means towards the fulfilment of certain goals of the Son. God the Son is assisted in some respects by Jesus in engaging with human reality, but the reliance on Jesus is very restricted, instrumental for the activities of God the Son. Here, the life of Jesus is external and parallel to the life of God the Son. Their entanglement is minimal, and hence the distinctness of the two individuals uncompromised.

## Conclusions

The suggestion put forward in this essay is to understand incarnation as an ontological entanglement brought about by the extension of one substance's activities onto another substance's activities. What I have tried to show above is that the extension, while systematic, can be to different degrees and in a variety of ways. The significance of the variation in degree and manner of extension is that the enabling substance can have varying effects on the extended substance. Minimally, it can simply assist it in carrying out certain tasks by making a partial contribution to the means for the realization of its activities. But maximally, it can contribute so extensively to the execution of the tasks that it can change the nature of the *activities*, although their function remains the same. If this happens to a maximal extent with respect to the majority of the activities of the extended substance, it can affect the *nature of the substance itself*. As a consequence, *extension can have an effect on the identity and distinctness of the substances involved in it, so that varying degrees, extent, and varieties of extension may result in different ways in which one can individuate and count entities in the entanglement*, whether this is Kasparov/100 or Christ.

Each of the three entanglement cases described above gives us a way of viewing the incarnation of the Son in Jesus. Yet, for each of the three cases, there are slippery slopes of ontological dependence which we encounter in attempting to individuate the entangled substances and evaluate their distinctness. The problem is that the incarnation entanglements fall in between clear-cut models of substance hood, because of the dependencies they involve between the entangled entities, and further because of the continuities or discontinuities between the entangled entities and what is external to the entanglement. Being in the borderlines, and sliding along the slopes, allows us (p.227) to evaluate the weightiness of various aspects of the ontology of the entanglements in *different* ways, and thereby follow different criteria of individuation in each case. The metaphysical slopes also generate epistemological slopes.

Ultimately what is needed in order to address questions of number in ontological entanglements is a theory of identity and individuation that explains how different types of dependency undermine or threaten the numerical distinctness of things. Such a theory would provide a *codification of ontological dependence* that would relate types of dependence to types of distinctness of things. But, of course, slippery slopes are known for defying codification.

None of the models described in each of the cases above delivers *the* metaphysics of the incarnation entanglement, because there is no such unique metaphysics. But what the entanglements give us is a way of understanding how *use* can affect the nature of the *user*. Instead of seeking to fit incarnation into the mould of constitution, which faces metaphysical difficulties, I sought to fit incarnation into the mould of user-used, or means-end, which the Extended Mind theory explores. But what we discovered along the way was that the relation is *reversible*: if the extension is radical, the means can determine the end—the vehicle can determine the extended. And that is sufficient to deliver an intelligible conception of incarnation, in which:

*The incarnate nature is affected by the means which realize the extension of all its activities.*

What is of further interest is that the incarnation problems are not restricted to the divine domain, but are vividly present in the human–computer entanglements as well, as they would also be in any number of scenarios of extensions.

Notes:

(1) The research findings presented in this essay are part of the output of a research project supported by the Leverhulme Trust and based at the University of Oxford. The author would like to thank for



helpful comments Brian Leftow and Richard Swinburne in Oxford, and the audiences of conferences at Notre Dame and Oxford, where versions of this essay were presented. (Thanks are owed in particular to Joseph Jedwab who responded to the presentation in Notre Dame.)

(2) The Extended Mind theory is also described by its own authors as *Active Externalism* (1998: 7, 8) because the environment plays an active role in driving one's mental activities. This is another aspect of the theory that might be helpful towards understanding the incarnation: Jesus is the device that God the Son uses for his mental activities, but *qua* device Jesus has an active role in enabling those mental activities—humanity contributes actively to its salvation.

(3) Clark and Chalmers (1998: 7–8).

(4) There may be more but not relevant to the present inquiry.

(5) Clark and Chalmers (1998: 12–13).

(6) Clark and Chalmers (1998: 12), my emphasis.

(7) Chalmers, Foreword to Clark (2008: xiv). Elsewhere Chalmers mentions 'the extension of our bodies, the extension of our senses, and crucially, the use of language as a tool to extend our thought' (Foreword to Clark (2008: ix)).

(8) Hurley (forthcoming).

(9) Clark and Chalmers (1998: 8).

(10) Foreword to Clark (2008: ix), my emphasis.

(11) Clark and Chalmers (1998: 17).

(12) Examples of this could be the use of a notebook rather than one's own memory to remember data; the use of prosthetic devices to gain information about the layout of the immediate environment around one; knowing the way to a place by looking at the road signs.

(13) Clark and Chalmers (1998: 12), my emphasis.

(14) The device might in some cases become simply qualified in a certain way, but in others it might become a different type of thing from what it was before.

(15) This is because the causal structure of the implementation of the activities is altered by the extension, and it can thereby change either the nature or the goal of the activities, or both.

(16) More details may be found on IBM's official website research pages: <<http://www.research.ibm.com/deepblue/>> .

(17) Deep Blue and Kasparov are both behaving like chess players. Whether it is the same or a similar activity they perform depends on how activities are individuated: at the level of their general function, or of their micro-causal network. For the purposes of this discussion I follow the spirit of the Parity Principle mentioned above, according to which reading the diary is an implementation of remembering for Otto. Correspondingly, were the activities of Deep Blue performed within the boundaries of skin and skull, on the Extended Mind hypothesis we would have no hesitation in

recognizing them as part of the chess-playing process. This point will be developed further in what follows.

(18) Being a tiger or a reptile is a natural kind; being non-physical is not a kind. No assumption is made that God is a natural kind by assuming that God is essentially non-physical. Nor are natural kinds arguments needed to establish that God is essentially non-physical.

(19) Kripke (1980: 120).

(20) Chalmers (1996: 249), my emphasis. Ping pong balls can deliver the same type of experience despite natural laws because the law connection is between functional organization and experience rather than substratum and experience.

(21) One line of thought which I will not pursue here is the possibility of molecule-by-molecule replacement of Kasparov's body with silicon chips done in such a way that preserves the exact patterns of causal interaction during the replacement process.

(22) For the same reasons, I will not consider scenarios where Deep Blue is programmed with the personality features of Kasparov, since we are not interested in the possibility of exact replication (of the Son by Jesus), but only in functional facilitation (at the level of social activity, as it were) of the Son by Jesus.

(23) Much more detail would need to be added to address the question of the preservation of the personal identity of Kasparov, but as I said earlier on, I shall not explore the question of personal identity as it is not relevant to my interests in this paper; the distinction between nature and personal identity does not apply to the Son. Although the Trinity involves three persons, all of whom have the nature of God, what makes each into a different person is not their personal identity, but the internal interrelations.

(24) Their ontological entanglement, in more Aristotelian terms, involves the final cause being set by the needs of Kasparov/100's frame and of his social persona, the formal cause being determined by either Kasparov's body or Deep Blue, and the efficient cause being supplied mainly by Deep Blue. Together they make up a compound that is constitutionally different from Kasparov and teleologically different from Deep Blue, while formally being a combination of both.

(25) See Chalmers's Principle of Organizational Invariance above, p. 215.

(26) See Kripke's argument above, pp. 213–14.

(27) Foreword to Clark (2008: xiii).

(28) Foreword to Clark (2008: xiv). Elsewhere, Chalmers mentions 'the extension of our bodies, the extension of our senses, and crucially, the use of language as a tool to extend our thought' (Foreword to Clark (2008: ix)).

(29) 'In a well-known series of studies by Bach-y-Rita (1972, 1984, 1996; Sampaio et al. 2001), blind patients are outfitted with a tactile vision substitution system (TVSS). Vibrators or electrodes on the back, thigh, or tongue receive inputs from a camera fitted on the subject's head or shoulder. Visual input to the camera produces tactile stimulation of the skin, which in turn gives rise to activity in somatosensory cortex, and to tactile experience. After a period of adaptation (as short as a few minutes), subjects report perceptual experiences that are distinctively non-tactile and quasi-visual.

For example, objects are reported to be perceived as arrayed at a distance from the body in space and as standing in perceptible spatial relations such as “in front of” or “partially blocking the view of,” etc. However, Bach-y-Rita emphasizes that the transition to quasi-visual perception depends on the subject's exercising active control of the camera (1984, 149). If the camera is stationary, or if someone else controls it while the subject passively receives tactile inputs from the camera, subjects report only tactile sensation' (Hurley and Noë 2003: 142).

(30) One scenario I will not discuss is that God the Son experiences Jesus' pain. The extended mind model does not explain such a change of subjects of a mental state. It would be possible to entertain such a scenario in connection with the three cases discussed here, but the under-determination of the incarnation phenomenon makes such speculation unfruitful.