Situated Cognition and Situated Holism

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Ever since Quine unceremoniously dismantled the analytic/synthetic distinction[1], worries concerning semantic and content holism have rippled through philosophy of language and mind. These worries have led different philosophers to various extremes in their appraisals of holistic theories. Some, like Davidson, have embraced content and semantic holism and argued that nothing short of a complete understanding of a language can truly tell you what a person means when they speak.[2] On the other hand, philosophers like Jerry Fodor have argued that the implications of holism lead us inevitably to the conclusion that "meaning holism is a *crazy* doctrine."[3] Regardless of whether one finds the implications of semantic or content holism to be distasteful, the arguments offered in favor of such theories are certainly compelling. My intention in *this* paper, however, is not to add my voice to either Davidson or Fodor's camp. Instead, I would like to draw our attention to a very particular kind of content holism, and a particular kind of worry facing it. Namely: The computational worries that face any theory of *belief* holism.

Belief holism can be understood, roughly, as the idea that "a belief has properties such as meaning and conceptual content, being confirmed or disconfirmed, justified or unjustified, only if there are other beliefs together with which it constitutes a system of beliefs."[4] If this is the case, then a belief is not meaningful in isolation, and cannot exist

apart from an entire system of beliefs. The problem with such a theory is that if a belief must be situated within a system to be meaningful, then for us to use that belief requires that we invoke the entire system. Given the limitations on our working memory, it is improbable, if not impossible, that we access our *entire* belief system whenever we perform a task. Yet, if we do not, then how can any of our beliefs ever be meaningful to us?

I believe that the solution to this problem is not to abandon holism, but to adjust it. To this end, I will offer a modified theory of belief holism which I believe can provide a plausible solution to this problem. This theory, which I term "Situated Holism", relies on current theories of *situated cognition* to provide a possible explanation for how our beliefs may be related and interconnected.

Before details can be fleshed out, some background will first be necessary. I shall therefore begin by elaborating further on the concept of belief holism. After which, I will examine what I take to be the computation problem for holistic theories of belief. Once this has been established, I will provide a very broad summary of situated cognition, which is foundational to the theory of situated holism I am advocating. After all this groundwork has been laid, I will sketch the theory of situated holism that I believe can avoid the computation problem. It should be noted that what I am presenting here is in an early and embryonic stage. At best, it is a rough sketch, but one which I believe holds merit.

1. Holism of Belief

In the past few decades, there have been arguments of all shapes and sizes in favor of content holism (and belief holism in particular), as well as numerous criticisms of such arguments. To provide a detailed examination of this debate would be unwieldy given the limitations on this paper and would ultimately prove unhelpful for our purposes today. Instead, a straightforward intuitive explanation and argument for belief holism will suffice.

Understanding Belief Holism

Let us suppose that at this very moment, I have the belief that "Canada is north of the United States". At first pass, it seems perfectly plausible to talk about this belief as though it were an individual, self-contained piece of information. A single fact I learned one day in geography class. Yet, when we look more closely, we see that the belief in question is not self-contained, and in fact relies on a number of other beliefs for its meaning. Beliefs about geography, direction, countries in general, Canada and the United States in particular, and others must all be connected together for this belief to meaningful. Similarly, additional beliefs will be necessary to provide *those* beliefs with meaning. My belief that Canada is north of the United States will therefore only make sense when placed within an entire system of beliefs. Put another way:

> "One cannot hold one belief without holding many beliefs, and the content of any one belief held by a speaker is always related to the content of other beliefs that speaker holds."[5]

It is only with a *system* of beliefs that we can interpret and make sense of the world and our experiences. For example, suppose that while reading this, you suddenly heard a strange and unusual noise coming from your attic. Believing yourself to be alone in the house, you stop and wonder what might be causing it. A number of explanations occur to you. Among them: An animal got into the house; the house is haunted; you are being robbed; monsters from the moon are invading.

As you go over the options in your mind, you quickly separate the plausible options from the implausible ones. Some of these explanations you consider likely, while others you dismiss outright. Yet, how do you determine which of the explanations to take seriously, and which ones to dismiss? Ultimately, the system of beliefs you have will determine the plausibility of each option. If, for example, you have a system of beliefs that incorporates notions of the supernatural, then the haunting option would seem perfectly plausible and would merit consideration. On the other hand, if you had a scientific and materialistic system of beliefs, then the haunting option would be thrown out. According to Quine,

> The totality of our so-called knowledge or beliefs, from the most casual matters of geography and history to the profoundest laws of atomic physics or even of pure mathematics and logic, is a man-made fabric which impinges on experience only along the edges. […] A conflict with experience at the periphery occasions readjustments in the interior of the field. Truth values have to be redistributed over some of our statements. Re-evaluation of some statements entails re-evaluation of others, because of their logical interconnections.[6]

In other words, when our experiences of the world force us to re-evaluate one of our beliefs, then this belief's position in the system needs to re-evaluated, and as such, so does the system itself. Imagine I had a materialistic system of beliefs, and thus believed

that ghosts did not exist. If I suddenly had an experience with a ghost that I could not deny, then I would need to revise more than just my belief that "ghosts do not exist". My entire materialistic framework and system of beliefs would need to be re-evaluated and revised. To revise one belief would require revising others, which would require revising others still. Now, a problem for this model of belief comes into play when we start to question *how* and *when* our beliefs influence our behavior.

The Computation Problem

It is fairly uncontentious to presuppose that our beliefs guide or determine our behavior. The mechanism by which our beliefs can do this is a far more controversial matter however. If belief holism is correct, then our beliefs only make sense in virtue of their position in a system of beliefs. As such, for any belief to be of use in a given situation, our entire system of beliefs must be applied. Yet, it seems implausible that our belief system is ever *entirely* present for us to work with. We have beliefs of all sorts, but many of them are inactive at any given moment. To illustrate, consider the following example by Andy Clark and David Chalmers:

> Inga hears from a friend that there is an exhibition at the Museum of Modern Art, and decides to go see it. She thinks for a moment and recalls [a belief] that the museum is on 53rd Street, so she walks to 53rd Street and goes into the museum. […] [This belief] was not previously an *occurrent* belief, but then neither are most of our beliefs. The belief was sitting in memory, waiting to be accessed.[7]

The idea that a great number of our beliefs are non-occurrent seems inevitable given the limitations on our working memory. Only so much information can be stored

in short term memory for us to work with. As such, not every belief we have can be available for use simultaneously.

The problem is that a holism of belief would seem to *require* that we access *all* our beliefs in order to use *any* of them. Since a belief only makes sense given its place in a system of beliefs, it cannot be used without being situated in that system. As such, to access and apply that belief is to access and apply the *entire system* of beliefs.

Given the computational work it would take to apply every belief we have to every situation, and the limits on short term memory, it is extremely implausible that our beliefs function in this way. How, then, can we hold onto a holism of beliefs without having this computational problem? The solution may be found in recent models of situated cognition.

2. Situated Cognition

Ever since materialism took a firm hold in cognitive science and the philosophy of mind, the brain has been considered to be the seat of consciousness and thought. To understand how we think, we need to understand how the brain works. In recent years, however, it has been suggested by a growing number of people that to limit our research strictly to the brain may not tell us everything there is to know about human thought and cognition. Our brains did not evolve in complete isolation from the world. They evolved specifically to help us *survive in* and to *deal with* the world around us. According to Jay Friedenberg and Gordon Silverman:

An important comment on cognitive science is that minds, unlike computers, exist

> in the context of a complex physical world. In this conception, mental activity does not occur in a vacuum, isolated from the surrounding world. Much of our thinking is directly connected to sensory inputs and motor outputs. It is devoted to interacting with the "outsides", as opposed to operating on complex forms of representation and computation generated from the "inside."[8]

Taking this into account, recent theories of "situated cognition" argue that the environment itself needs to be thought of as an integral part of the cognitive process. "In place of the intellectual engine cogitating in a realm of detailed inner models, we confront the embodied, embedded agent acting as an equal partner in adaptive responses which draw on the resources of mind, body and world."[9] The environment in which we find ourselves does not merely provide input for our cognitive system to process, but plays an active and dynamic role in cognition. Given the limitations on our cognitive system, we use our environment to store information and to help facilitate conceptual tasks. According to Andy Clark:

> In general, evolved creatures will neither store nor process information in costly ways when they can use the structure of the environment and their operations upon it as a convenient stand-in for the information-processing operations concerned. That is, know only as much as you need to know to get the job done.[10]

The environment itself can shape and alter the way we think and process information. And, since we are always embedded in one environment or another, it makes little sense to talk about cognition as though it can be abstracted away from such surroundings. As Miriam Solomon tells us, "Cognition is always situated. It is always concretely instantiated in one way or another. There are no disembodied cognitive achievements."[11] The question now becomes: how does this theory of cognition help us salvage a holism of belief?

3. Situated Holism

If belief holism is a theory worth keeping, then the question becomes not whether a belief can exist or be applied without a system of beliefs, but instead about what *kind* of system our beliefs fit into. To see our beliefs as all fitting into one internal system that we then apply to situations may greatly misrepresent how we function and go about the world. If situated cognition is correct, then the environment itself plays an active roll in cognition. As such, any story about how our beliefs help us navigate the environment should not exclude the environment itself as an integral part of that story. As Clark puts it:

> The internal representations the mind uses to guide actions may thus be best understood as action-and-context-specific control structures rather than as passive recapitulations of external reality.[12]

The brain together with the environment works to form a kind of conjoined cognitive system. Thus, when we find ourselves in different environments, we find ourselves part of different over-arching cognitive systems. These different systems can determine different kinds of behavior and even help to store different pieces of information. Given the contextually-sensitive nature of human cognition, it may be more plausible to think of our system of beliefs as being equally context dependant. Since our interactions with different environments results in our incorporation into different cognitive systems, the set of beliefs that we use may equally change depending on which larger cognitive systems we are a part of. This is why, as Solomon points out,

"knowledge is also, often, *domain specific*."[13] We do not merely have a set of beliefs simpliciter that is acted upon. We have *sets* of beliefs *given certain contexts and environments*.

This being the case, it would be a mistake to think that *all* our beliefs must fit into *one* system in order for them to be meaningful. Much smaller holistic systems of beliefs, which are context specific, can provide beliefs with the meanings they need for us to navigate *that particular environment*. Situational and environmental cues can trigger a small system of beliefs that is useful for dealing with that environment. We reduce our cognitive workload and get past the computation problem by using the environment to help in the selection of small computationally manageable systems of beliefs. As long as these contextually sensitive pockets of beliefs are effective in helping us navigate and solve contextual problems, it doesn't matter whether the pockets themselves are part of a connected whole that links all our beliefs together.

Consider the classic philosophical analogy of beliefs as maps of the world. Instead of thinking of our beliefs as cohering together to form one giant map of the world, what we have are many different maps of very specific parts of the world. Just so long as these maps help you to navigate the parts of the world that they represent, it ultimately doesn't *matter* whether they fit together neatly to form one giant map. Some of your maps may overlap with others, while some may conflict with others. What is important is that, *in the relevant environments*, the appropriate maps help you get by.

Of course, assuming that holistic systems of beliefs are small and computationally manageable does have its own problems. Specifically, how do beliefs on the periphery of these systems get their meanings? Suppose that in order to solve a particular contextual

problem, a holistic system of beliefs is cued which contains a number of beliefs that are of paramount importance to solving the problem. In order for these necessary beliefs to be meaningful, there must be other beliefs in the system to give them meaning; and other beliefs to give *those* beliefs meaning. Yet, if the holistic system is small, we will quickly run out of beliefs. What is to give the beliefs on the edges of this contextual system *their* meaning? In response, I would suggest that the closer a belief is to the periphery, the less robust, complex, and explicit it needs to be.

In any given situation, some subset of beliefs from my contextual belief set is going to be the focus of my attention so as to help me perform some task. The other beliefs in this system are going to provide context and meaning for this subset. These additional beliefs need not be as fine-grained as the ones that are the focus of my attention. The further we go to the periphery, the vaguer and more nebulous the beliefs become. The beliefs on the absolute edge will be simplistic enough to not require beliefs outside the system for meaning. The vagueness of these beliefs will go completely unnoticed by us, since the moment we were to think about one of these peripheral beliefs, *it* would become the focus of attention and a completely different set of beliefs would be used for context, with different beliefs on the periphery.

Conclusion

Our beliefs do not exist in isolation from one another. Beliefs make sense only in relation to the other beliefs of a given system. It is the *nature* of this belief system that we must concern ourselves with. By adopting a situated model of cognition, we have a

means of better understanding how beliefs are connected that avoids the computation problem. Systems of beliefs are small and context dependant. This explains our ability to compartmentalize beliefs or hold conflicting beliefs (the conflicting beliefs are simply not contained within the same contextual groups). Belief holism, like cognition, is therefore best understood as being situated.

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