

The Effect of Representationalism on Religion

Dick Stoute dick.stoute@gmail.com Oct 2014

Abstract

Representationalism is often examined from a non-representationalist position and found to be counter-intuitive. However, taking a non-representationalist position, before it can be shown that non-representationalism is the case, puts the cart before the horse. There seems to be a dilemma here in that either a representationalist, or non-representationalist, position has to be adopted before we can debate the representationalist/non-representationalist issue and so we cannot debate this issue without some bias.

Representationalism is supported by science and needs to be examined carefully and so instead of taking the usual non-representationalist approach with its natural bias in favour of non-representationalism I assume a representationalist position and examine some philosophical issues from that perspective.

When this is done a significantly different model of how we perceive, think and communicate about our environment has to be adopted. This affects how we conceptualize language and consequently how we interpret ideas about religion expressed in language.

In the representationalist model I propose language cannot convey meanings; all that can be conveyed by language is a linguistic code, and the readers/listeners have to interpret this code and supply their own meanings. For example the sentences, "God is good" and "Allah is great" tend to be interpreted, from a non-representationalist perspective, to suggest that God and Allah are different entities. However, from a representationalist perspective the words "God" is a reference to a representation that the speaker has created in his own mind, as is "Allah". There is much less certainty that these refer to different entities (they may be aspects of the same external entity).

In addition, the language God and Allah use when issuing their instructions cannot convey meanings; these meanings have to be supplied by whoever is listening/reading/experiencing the language. As a result no one can claim to "know" what God/Allah said or meant; they can only "know" the meanings they have attached to whatever they have read/heard/experienced. The effect of this way of interpreting language is to reduce certainty about the meanings of religious teachings while emphasizing the role of the interpreter. This can have a profound effect on religion.

Another consequence that can have an important impact on religion is the tendency for representationalism to encourage us to think of ourselves as using concepts to construct representational models, much as our perceptual systems is thought to construct representations using information gathered from the environment. This has the effects of changing the tone of a discussion on religion to one of constructing, testing and modifying representations, rather than making conflicting claims about what "is" the case.

The Effect of Representationalism on Religion

Representationalism (I will refer to this as perception via representation - PvR) is a term used to refer to any theory that requires human perceptual systems to create representations of the external environment. It is often contrasted with naïve direct perception (DP), which holds that we see or perceive our environment directly, without the help of representations. DP is supported by a very strong intuition that is very difficult to set aside. We tend to go through our daily lives without paying much attention to how perception works and, generally speaking, do not challenge this DP intuition that in effect makes us believe that the world **is** as we see it.

However, when we move to a more detailed level and examine our visual perceptual process we find that naïve direct perception is simply not possible. According to the science of visual perception, electromagnetic radiation (EMR) is focused on our retinas where neurons are stimulated. Signals from these neurons are carried to various parts of our brain and we become conscious of forms that, at best, can only represent the external environment. These forms are referred to as “representations”. These representations must be created, there is no feasible alternative, and this leads to the PvR intuition that what we become conscious of are the representations created by neural activity.

This creates an interesting conflict between intuitions resulting from the science of perception and the very strong DP intuition. This perception issue has been widely discussed in philosophy¹ and in this paper I do not propose to engage in this debate, as I want to focus attention on the consequences of accepting PvR. I will assume that PvR is a good representative model of perception and discuss the restrictions imposed by PvR on how we interpret language using an example drawn from Genesis. I then examine how a PvR theory of meaning can direct attention to how we create concepts and apply this to the creation of the concept “god” before briefly commenting on the methodology used and its wider implications.

Getting Familiar with PvR

The version of PvR supported by science requires an inner phenomenal world, a model or representation, created by brain activity. This model often represents an external noumenal² world. Taking this PvR perspective requires recognizing that the phenomena we are conscious of; colours depicting shapes, sounds, smells, emotions, feelings, pains... are different from, but representative of, our noumenal environment. In this PvR model, consciousness is limited to consciousness of the internal phenomenal model provided by perception and complemented by thoughts, emotions, qualia...

While we easily accept that thoughts and emotions are internal it takes some effort to resist the very strong DP intuition that encourages us believe that the

phenomenal model created by our visual perceptual system “is” the external noumenal world this model represents. However we can, with some effort, dismiss this DP intuition and adopt a model in which our complete conscious phenomenal world is an internal neural creation that is different from the external noumenal world^{3,4}. This is what I encourage you to do while reading this paper. To develop this perspective, it may be helpful to imagine what it must be like to be blind and have to mentally construct a representation of your surroundings without the help of vision.

If we simply close our eyes and try to recall a representation of our surroundings, chances are we will be able to recall some of it, but much detail will not be available. We can think of this less detailed representation as an abstraction in which the general form of our surroundings is available, but details are missing. We can extend this idea to the images we are conscious of when we use normal vision. These images also have limited detail, as very fine details, such as those available with a microscope, are not available. Instead we are presented with a representation that omits these details and so normal vision can also be thought of as an abstraction; a representation that is less detailed than the external noumenal world it represents, but is still adequate for most purposes. Once we adopt a system that uses representations, we can vary the level of abstraction (LoA)⁵ of our representative models to create more or less detailed representations as we see fit⁶.

This ability to vary the amount of detail in our representations provides great flexibility and allows us to use our limited mental resources to create a range of representations with different levels of detail (or LoA). At the most detailed level we can create detailed models of very small objects, such as molecules, while at the highly abstracted level we can create models to represent the whole universe.

When we consider the effect of this on perspective it seems apparent that as PvR limits consciousness to creations of our brain, it removes our ability to make objective claims about our noumenal environment and so restricts us to subjective claims that indicate how we represent that environment. All claims about the noumenal environment are subject to the way we represent it and in this sense are subjective. We must create a representation to be able to think about the noumenal world and it is this representation (rather than the noumenal world itself) that we think about and discuss⁷. As a result, all the claims we make are about the representations that we create and so, to avoid appearing to make subjective claims, we have to find ways to avoid implying a DP perspective when we use ordinary language⁸. This restriction must be imposed on PvR itself. For example, we cannot claim that in the noumenal environment PvR is the case, as such claims are not permitted once PvR is adopted. However, while we cannot claim that this is how perception actually works, we can claim that the PvR model of perception is a good representation of the perceptual process.

Claims that “xxx is a good representation of YYY” are often simplified to “xxx is YYY” and so appear to be DP claims, but accepting PvR requires that we interpret such apparently objective claims about the noumenal world as claims about how

we represent that world, rather than being objective claims about the noumenal world that are independent of how we represent it. It seems therefore that once PvR is adopted our thoughts and the language we use to express our thoughts must be considered to be providing representations at varying levels of detail.

This is quite a severe restriction, as it seems to isolate our conscious world from the noumenal world in which we live⁹, but after exploring this issue for some time, I believe that it is not an impossible restriction. However it does create a need to rethink how we interpret language and how we should structure a philosophical inquiry.

A Representationalist Interpretation of Religious Texts

Adopting a PvR model limits us to a subjective point of view and encourages us to think of ourselves as constructing mental models to represent the things we think about. It also encourages us to think of language as assisting with the construction and communication of these mental models. From this PvR perspective, perception provides abstracted representations of our noumenal environment and science and religion create abstracted models to represent how the world works. In the following I show how this limits the claims we can make and encourages us to adopt a less conflictual approach to scientific and religious topics.

Whereas from a DP perspective science reports on what actually happens in the noumenal world, PvR limits scientists to representational claims about the noumenal world. For example, from a PvR perspective the equation $F = ma$ (force equals mass times acceleration) is a representation expressed as a mathematical equation. The equation constructs a relationship that is a good representation of what happens in the noumenal world¹⁰. PvR stops there and makes no claim about what actually happens in the noumenal world. Generalizing this, scientific knowledge becomes the set of interlocking theories that go together to represent the noumenal world. I don't think that scientists would object to this, as they are familiar with models and often refer to models in their discussions. Scientists sometimes talk as if they have adopted a DP perspective, but when they are pressed on the issue they tend to revert to talk about models.

This restriction to a subjective perspective also applies to religion. Instead of interpreting religious texts as if these made objective claims, according to PvR we must interpret them as being subjective creations, or constructs, or views of human beings. For example, we are all familiar with the Biblical story of the Garden of Eden, where Adam and Even were instructed not to eat from the "tree of knowledge of good and evil", but they do and are banished from the Garden. This story invites multiple interpretations and I propose to use some of the ideas discussed above to provide some insights as to what is being done as we interpret this story in various ways.

This story has traditionally been interpreted, from a DP influenced objective perspective, as supporting the application of the concept of good and evil. God

seems to have created this concept (possibly for his own exclusive use) and once man, represented by Adam, begins using it, he is banished from the garden. But if we take a subjective perspective it could also be interpreted as a warning not to apply the concept of good and evil.

Direct perception supports an objective perspective where the author of the story has unlimited access to all the thoughts of all the characters and reports these as well as what is happening around them as if the author has direct access to all this information. This gives the reader the impression that the author is omniscient and they are being told “the truth”. At the level of abstraction used in this perspective no attention is paid to who the author might be or how he/she obtained the knowledge they are revealing.

However, when we move to the more detailed PvR perspective we are restricted to a subjective perspective, one that is created within the conscious world (mind) of the author. The story must be the creation of such a mind and so must be restricted by the resources that are available to such a mind. Even if it is argued that the story teller’s ideas are inspired by a divine source these must still be channeled through the mind of the story teller. They must, therefore, be subject to limitations in relation to the availability of concepts and words that are familiar to the storyteller. They must also be limited by the ability of the story teller to find ways to express the ideas they wish to express. Thus restricted, the story tends to become a story created by its human author, and subject to the author’s environment and ideas, rather than a story that is told by an omniscient being.

Once the story is seen as the product of someone’s imagination, in addition to considering the circumstances under which the story is being created, we can also consider the intentions of the author. If we locate this story in the context of the best models we have of the ancient world, we could possibly interpret this story as being created by a wise sage with the intention of warning his tribe of the dangers of thinking in terms of good and evil. The sage’s warning could be something like, “if you judge other people to be good or evil, you can expect dire consequences”. Put in a PvR context, this becomes; “if you use the simple model in which you represent the people around you as being either good or evil, this will likely result in conflict”. Interpreted in this way it suggests that we should avoid rather than champion the concept of good and evil.

This subjective interpretation locates the concepts “good” and “evil” in the mind of the observer, rather than imposing these on the people observed. It is up to the human thinker or observer to use, or not use, these concepts. In contrast, the objective DP interpretation suggests that it is the noumenal people being referred to that are good or evil. DP externalizes, rather than internalizes good and evil; in DP they are a part of the external environment rather than a part of the conceptual model being used by the observer. While in the DP context people themselves are good evil, in a subjective PvR context it is the observer that represents the people as being good or evil.

This PvR interpretation has several effects, one of which is to place control of the good/evil concept in the hands of the observer, rather than rendering them impotent in this regard. In the PvR model the individual has the capacity to decide how he or she will model the people around them and can, if they wish, avoid using the concept of good and evil. This interpretation is fundamentally different from the DP influenced interpretation adopted by some mainstream religions, in which the human race is doomed to forever be sinners by the act of Adam and Eve. If we take the PvR perspective we are in control and can choose not to apply this good/evil concept, while if we accept the DP interpretation we slaves to our fate.

This is a significant change in interpretation. Following the subjective interpretation discussed above instead of this Old Testament story appearing to be in contradiction with New Testament teachings it is now aligned with teachings that encourage us to avoid applying the good/evil concept to those around us (turn the other cheek etc.). It seems therefore that by insisting a subjective perspective, PvR can have a significant effect on how we interpret some religious texts.

While this on its own can have a profound effect, there are other ways that PvR influences our interpretation of language that can also be very influential. One of these is connected with how we assign meanings to the words we use.

Meanings in a PvR context

It is often proposed in philosophy that words have specific meanings that somehow accompany them when the words are communicated¹¹. However when we take a closer look at the communication model that follows from PvR it becomes apparent that it is not possible for meanings to accompany words. The mechanisms for communicating words all involve some noumenal process, either vibrations in the air, or shapes inscribed on some medium, or electrical pulses etc. but none of these mechanisms can convey meanings in addition to the words¹². How then do we communicate meanings?

Just as the conscious mind is in-formed of the external environment via our senses, communication in-forms us via our system of communication. This system is limited to the transmission and reception of codes that stand for, or mean, whatever the sender and receiver agree is the meaning of the code. In this system a sender encodes a message using a coding system (language) that both the sender and receiver have learnt. The intended meaning stays with the human sender and the human receiver has to interpret the code to determine the sender's meaning. When someone receives the string of code sent by someone else they use the coding system to interpret it. When they want to send a message to someone else they encode it in language, transmit it, and rely on the person receiving the code to interpret it. Such a system seems quite capable of modeling how we communicate, without requiring that meaning accompany the code. However, by paying more attention to the detail of how the system works we can identify some weaknesses in it.

This system works well when it is used to communicate about common everyday items that we can perceive, recognize and classify, and we easily get the impression that our language can work just as well for everything else. But a closer examination shows that this is not the case. When the conversation is about new ideas, or concepts that are difficult to imagine, we can expect that each party will supply a meaning that is unique to them and possibly quite different from the meanings applied by others. Under these circumstances there is little assurance that a speaker's meaning will be correctly communicated by the code he or she uses and as a result communication will be compromised. It is apparent that, while language can be specific under some conditions, it faces severe limitations under others.

Much of our daily communication relies on our senses to complement what we do communicate. For example, if I refer to a cup, ball, or minivan, I expect that the person I am talking to will have memorized perceptual and other sensory details of these items and so I do not have to communicate these details. However religious discussions tend to communicate ideas about things that cannot be perceived using our senses and so we cannot rely on sensory perception to provide details. We nevertheless tend to expect that we can communicate religious concepts as easily as we can communicate about everyday items.

An example is the word "god". According to PvR this word must, in the first instance, refer to some construct in the mental world of the person using the term. Each person has to create their own construct and label this "god" so that they can communicate about it. When a speaker, let's call him John, uses the term "god" he probably intends that his listeners call to mind the construct John has created in his own mind, but the listeners can only recall a construct that they have created for themselves and this could be quite different from John's construct.

The PvR communication model provides an explanation as to why this is the case; there is not enough commonly available information for users to establish a unified interpretation of the term. Our perceptual system provides a lot of information about common everyday objects and this allows everyone to attach very similar meanings to the terms that we use to refer to them. However when it comes to words that refer to concepts that are not representative of perceived forms, we have much more difficulty ensuring that the meanings each person associates with these words are common to a community. PvR suggests that, in some circumstances, this is not a failure that can be corrected by simply improving the definition of a word as it is due to an unavailability of more detailed information.

How can we address this problem? Taking a PvR approach suggests that we should construct a conceptual model, but before doing this we need some system for constructing concepts. In this regard it seems feasible to think of ourselves as constructing concepts by a process of abstraction. Starting with many different experiences of trees we create the concept "tree" by removing detail until we are

left with a blank form that is the concept “tree”. This blank form “tree” can then be filled in, if we wish, with various details about its height, its branches, its leaves etc. We can think of this blank form as if it were the type of form we fill out when opening a bank account. It has space for a range of details, but it is not completely general. There is for example, no space for “eyes” in the form “tree”. This model of concept creation seems flexible enough to account for how we create concepts of normal everyday items and it can, I think help us gain some insights as to how we create concepts that are more theoretical, such as scientific and religious concepts.

We can think of physicists as abstracting from much detail to isolate what they call energy and think of this as being stored, as in a battery, or in potential energy, or in heat etc. This gives us an idea that energy is something that can be stored. We can also measure energy. However, while various noumenal entities, such as electromagnetic radiation (EMR) convey measurable quantities of energy, it is not possible to say what this energy “is”. We can store it and quantify it, but we cannot say what it “is”. When we conduct a more detailed search for energy we find molecules, motions, particles, potentials, fields etc. but it does not seem possible to find energy and it seems as if there is no specific noumenal entity that is identified by the concept “energy”. This concept “energy” seems to be a simplified representation of several diverse and more complicated noumenal situations. However, despite the concept “energy” not representing a noumenal entity, it nevertheless is a very useful concept and it is tempting to think that there is a noumenal entity that we call energy.

We can also use abstraction to arrive at the concept “time”. After observing many different events we abstract the details until we are left with this concept, but again there is no noumenal entity that is represented by the word/concept “time”. This absence of noumenal entities that correspond to or are picked out by concepts is not unusual, many of the theoretical entities we create and find useful seem to have no noumenal equivalent.

Using the DP intuition we can think of energy and time as having a noumenal presence, but PvR insists that we separate concepts from noumenal entities and results in the considerations discussed above. In PvR, once we have created the concepts “energy” and “time” we can use them in our mental world to create simplified models to represent a very diverse world, but we cannot claim that there are noumenal entities that are represented by these concepts. While we can use the concept “time” in our mental world where we use it to think of past, present and future, in the noumenal world there is only an everlasting “now” and so there is no noumenal equivalent to the concept “time”.

Similarly while the concept “energy” is indispensable for physics, there is no noumenal equivalent to it. Physics gives us various equations that provide quantitative measures of energy, but nothing (or very little) on the qualitative side and it seems that once physicists can account for an amount of energy, they tend not pursue the matter further. They are interested in equating quantities of energy, rather than making claims about what energy “is”. In some of these equations energy is “whatever it is” that heats objects, while in others it is

“whatever it is” that is stored in batteries, but when we try to find this energy all we find are fields, motions, potentials and the like. It seems as if the concept energy is a gloss, an abstraction, that while being very useful is not representative of any specific noumenal entity.

PvR provides a structure that can help us account for this as it provides a mental world that accommodates forms, concepts, theories and the like and a noumenal world that can be represented by the forms and concepts. The concepts “energy” and “time” are a part of the conceptual world along with concepts such as “tree”, “ball” etc. but while the latter two can refer to the noumenal entities “tree”, and “ball” there are no noumenal entities for energy and time to refer to. The PvR structure in which a word refers to a concept and that concept may refer to a noumenal entity can account for this.

It seems at least possible that this PvR structure can help us understand how we create and use scientific concepts, and it also seems possible that this structure can help us understand how we create and apply religious concepts. It seems feasible therefore that, like the concept “energy” some religious concepts, such as “god” can be very useful without there being any noumenal or spiritual entity to correspond to it. This focuses attention on the concept “god”, rather than a noumenal or spiritual god and suggests that we can gain some insights by modeling how we create the concept. If, for example, we think of ourselves as using abstraction, what observations do we abstract from to arrive at the concept? We can pursue this idea by using abstraction to create several different concepts of god and test these in various ways.

Using a different approach, we can think of ourselves as creating the concept “god” by combining several different concepts, perhaps taken to extremes. We can for example combine extremes of the concepts “good”, “powerful” and “knowledgeable” to create the concept “god” and then find ways to test it. This suggests an approach that distances itself from assuming that there is a noumenal or spiritual god until we have conceptual clarity and some consensus about what we mean when we use the term “god”.

The separation between the conscious conceptual world and the noumenal world that follows from accepting PvR seems quite feasible in a number of instances. If this separation is pursued systematically it provides a structure for us to separate concepts from noumenal entities and following this process we can possibly identify some religious concepts that are representative of the noumenal and some that are not and so get a better idea of what we mean when we use some critical terms. While this approach is quite different from traditional research, it seems relatively easy to accomplish as we have little difficulty differentiating between concepts and noumenal entities. PvR seems to encourage us to examine what goes on in our mind, rather than examine what goes on in the noumenal environment and so instead of encouraging a debate about the existence of a noumenal or spiritual god, it encourages the construction of models to explain how we create, and apply the concept “god”.

Exercises of this nature would, I believe, help to clarify what we mean when we use religious concepts and so improve our accuracy of communication.

Some Closing Remarks

So far I have introduced and applied PvR without discussing this model in any great detail, but as applying PvR seems to result in several significant effects, it seems prudent to say some more about this approach.

One aspect of PvR that should not escape our attention is its methodology. In providing an approach that is significantly different and it introduces a perspective from which we can better examine more traditional philosophical approaches. More specifically, by assuming a model building approach it draws attention to what is missing; what is often assumed, but not mentioned, when applying the more traditional analytical methods.

PvR indicates that we cannot trust the DP intuition; one of our strongest and most fundamental intuitions, and so undermines the whole process of determining facts and deducing conclusions from these. Does this mean that all the philosophical work that has been done using this methodology now has to be thrown out? I don't think so.

I think we can put these two different methodologies in perspective using the concept "abstraction". PvR provides a more detailed methodology, and I think we can show that the DP methodology is, in effect, an abstraction of the more detailed PvR methodology. If we start with the PvR methodology and make some simplifying assumptions we easily arrive at the DP methodology. If for example, we assume that some specific PvR model is adequate for purpose, we can forget that it is a model and treat it as if it were identical to what it represents. There are some caveats, as doing this can be misleading, but once we are aware of the background PvR model, it is likely that we will be able to avoid being misled by switching to the more detailed PvR model.

It also provides a tool that can be used to analyze concepts. Using this tool can help when a DP analysis runs into difficulty. For example, DP runs into difficulty with the relationship between brain and mind; if one is material and the other is not there is no way for them to interact. However if we think of the concepts "mind" and "brain" as being created by a process of abstraction, we would expect that there is no specific "thing" that "is" mind, and similarly there is no specific "thing" that "is" brain. When we examine mind closely we find phenomena, thoughts, emotions, feelings, qualia etc. and when we examine "brain" closely we find brain parts; white matter, grey matter, neural networks, axons, blood vessels, etc. and so there is no specific "thing" that corresponds to mind or brain.

In addition, PvR allows for the possibility that the same "thing" can be modeled in several different ways. We can, for example model a working computer as a heat source, or a physical object, or as a calculating machine. None of these models exclude the others, nor is there any conflict between them. We can if we

wish also use the hardware/software model, if that is appropriate for purpose, but if we have conceptual difficulty with this we can shift to a more detailed LoA.

All these models are partial representations; according to PvR no model can be a complete representation. We can have partial representations that are quite different from each other and use these to represent particular aspects of whatever it is that we are modeling. In this way, having a partial representation we call “mind” and another that we call “brain” should not pose conceptual difficulties. However PvR does seem to suggest that any model we create should be workable and so when we create a mind/brain model we should be able to offer an explanation as to how this model works. This brings us back, face to face, with the mind/brain problem, but we now have the suggestion that we should enhance or modify the model to deal with this problem, rather than taking the more traditional deductive approach.

We can modify the model to include the idea that, “Mind is a combination of energy field created by brain activity”. An energy field is not composed of atoms, but can interact with atoms and this seems to provide a structure for modeling the interaction of mind and brain. In this model mind is a combination of energy fields¹³ rather than a “substance”. We can complement this with the idea that these energy fields are sensitive to each other and it is this sensitivity that leads to consciousness. In this model, the concept “mind” is representative of the energy fields and so in this model consciousness “is” an energy field, while the concept “brain” is representative of the parts that are made of atoms and similarly brain “is” a collection of atoms. This provides a mind/brain model in which mind can interact with brain, while being fundamentally different. It follows the example where Newton invented the energy field concept of gravity in order to explain action at a distance and I follow Newton in claiming that the conceptual model is representative and no ontological claim is intended.

Even though these mental models may have to be radically altered or discarded as we develop more detailed models of brain function and better representations of how our minds work, they do suggest a different approach to this long debated issue and this in itself is helpful. I conclude therefore with the claim that the PvR approach discussed here can be applied to religion and more generally to philosophy and that doing this can lead to better understanding of how we create concepts, interpret language and become more knowledgeable.

Notes and References

¹ Articles on perception and representationalism, such as those cited below tend to discuss the subject from an objective perspective. However, as such a perspective is only available if one assumes something like naïve direct perception, these discussions assume a perspective that tend to bias them towards direct perception even as they seek to be unbiased. It does not seem possible to have an unbiased discussion on perception as one has to assume

either an objective perspective and be biased towards direct perception, or assume a subjective perspective and be biased towards indirect perception.

Lycan, William, "Representational Theories of Consciousness", *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/fall2008/entries/consciousness-representational/>>.

Crane, Tim, "The Problem of Perception", *The Stanford Encyclopedia of Philosophy* (Fall 2014 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/fall2014/entries/perception-problem/>>.

² I am following Emanuel Kant in using the terms "noumena" and "phenomena" (Critique of Pure Reason, Cambridge, 1998 pg. 338). In my PvR model "phenomena" are created by our neural circuits and are what we become conscious of. Phenomena are not made of atoms while "noumena" include "stuff" made of atoms.

³ Gregory Bateson, a scientist, anthropologist and cyberneticist discusses this issue in "Pathologies of Epistemology" published in Steps to an Ecology of Mind. Chicago, University of Chicago Press. 2000. pg. 486.

⁴ Chris Frith examines this issue from a psychological perspective in Making Up The Mind How the Brain Creates our Mental World, Blackwell, Oxford, 2007

⁵ I have followed Luciano Floridi in using the term Level of Abstraction. Floridi, L. and J. Sanders (2008). "The Method of Levels of Abstraction." *Minds and Machines* **Vol: 18**(No: 3): 303-329

⁶ The abstraction I discuss is based on the idea that this abstraction can be achieved by neural activity. Research into how neural activity achieves abstraction is continuing. ref: <http://www.ais.uni-bonn.de/behnke/papers/ijcnn98.pdf>

⁷ This leads to constructivism, the concept that we have to construct knowledge rather than discover it. <http://www.univie.ac.at/constructivism/EvG/papers/169.4.pdf>

⁸ Alfred Korzybski develops this concept in Korzybski, A. (1933). *Science and Sanity An Introduction to Non-Aristotelian Systems and General Semantics*, European Society for General Semantics. www.rodsmith.org.uk/alfred-korzybski/

⁹ This division between the phenomenal and noumenal, that I have been discussing is conceptual. I conceive of a phenomenal world and a noumenal world and use these concepts in my discussion. I assign properties to these worlds and create or construct more detailed models on the basis of this division. Several different approaches can and have been used over the years, but all are

subject to whatever concepts are initially created/constructed by the language user.

¹⁰ Various issues about scientific representationalism are discussed by Craig Callender and Jonathan Cohen [http in this article](http://aardvark.ucsd.edu/science/representation.pdf). It is interesting that while scientific representation is discussed, the more general topic of linguistic representation is not ://aardvark.ucsd.edu/science/representation.pdf

¹¹ Luciano Floridi discusses this in section 1.7 of the article cited below. Floridi, Luciano, "Semantic Conceptions of Information", *The Stanford Encyclopedia of Philosophy* (Spring 2014 Edition), Edward N. Zalta (ed.), URL = <<http://plato.stanford.edu/archives/spr2014/entries/information-semantic/>>.

¹² This is discussed by Donald Mackay in chapter 3 of *Information Mechanism and Meaning*. MacKay questions prevailing theories of meaning and argues that meanings have to be created by the human beings involved in communication as meanings cannot be communicated along with words. MacKay, D. M. (1969). *Information, Mechanism and Meaning*. Cambridge Massachusetts, London, The M.I.T. Press.

¹³ Dr. Susan Pockett discusses various field theories of consciousness in this article. http://www.scholarpedia.org/article/Field_theories_of_consciousness