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The Functional Contextual a-ontological stance and Bas C. van Fraassen's Constructive Empiricism

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ABSTRACT

Functional Contextualists use a pragmatic truth criterion that is based on successful working. When applying their truth criterion they maintain an agnostic stance with respect to ontology; that is, they maintain an a-ontological stance. Scientists from other areas of behavior analysis and psychology who primarily operate from a perspective of Scientific Realism have criticized this stance on several grounds. In this paper, the reader is introduced to Bas C. van Fraassen's Constructive Empiricism. This introduction allows for the development of a strong philosophical base which is then used to mount a defense of the a-ontological position.

1. The a-ontological stance and Bas van Fraassen's Constructive Empiricism

1.1. Introduction

Functional Contextualism (FC; Hayes, 1993) is the philosophical base of Contextual Behavioral Science (CBS). One central feature of Functional Contextualism is its a-ontological position or its agnosticism with respect to ontology. To adopt an a-ontological posture is to embrace a successful working truth criterion rather than a correspondence one, and to do so without regard for any other epistemic matters. This posture has been widely misunderstood, and often scorned, since it was first mentioned in the CBS literature in the chapter "Behavioral epistemology includes nonverbal knowing" by Hayes (1997). It has also been the subject of much debate (e.g., Barnes-Holmes, 2000; Barnes-Holmes, 2005; Marr, 2009; Tonneau, 2005).

There are several reasons the a-ontological position has been poorly understood and met with disdain. These reasons include, but are not limited to: (1) widespread undervaluing of the importance and relevance of philosophy of science on the part of many psychological scientists and (2) the fact that the philosophical literature is often difficult for the philosophical layperson to comprehend. These reasons have led to a pervasive knowledge deficit with respect to the philosophy of science literature, and when knowledge is present, understanding is superficial at best.

Most scientists, including psychological scientists, if they attend to philosophy of science matters at all, would identify themselves as Scientific Realists. Multiple formulations of the Scientific Realist position exist, so it is important to articulate a clear working definition in this manuscript. Specifically, we will be working from Bas C. van Fraassen's definition of Realism (1980). His definition is fair, responsible, and avoids a straw man conceptualization of the Scientific Realist position, which he defines this way: "Science aims to give us, in its theories, a literally true story of what the world is like; and acceptance of a scientific theory involves the belief that it is true" (van Fraassen, 1980, p. 8). Unfortunately, many scientists who consider themselves Realists, especially when they did not arrive at that stance through conscious deliberation, remain largely unaware of the difficulties associated with adopting this position. The a-ontological stance, as I will argue, is more logically sound, stays closer to scientific data, and is less risky than the Realist's position with respect to beliefs about theories.

A prerequisite to comprehending the strengths and weaknesses of philosophical assumptions is an awareness that one has assumptions, whether one realizes it or not, and what the logical consequences of those assumptions are. The assumptions underpinning Realism and van Frassen's Anti-Realism, as well as their consequences, as they pertain to Functional Contextualism's a-ontological stance, will be discussed in this manuscript.

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The purpose of this paper is to introduce a philosophical perspective that is new to the CBS literature and to apply this perspective to criticisms leveled at Functional Contextualisms a-ontological stance. More specifically, the work of van Fraassen (1980), who has produced a mature and robust philosophy of science, is surveyed for the reader, and references to important works are included so that interested readers may pursue them further.

1.2. Bas C. van Fraassen and Constructive Empiricism

Bas van Fraassen fully presented his position, which he labeled Constructive Empiricism,[1] in his 1980 book *The Scientific Image.* Prior to the publication of this work, Anti-Realism was considered deceased within philosophy of science, but following van Fraassen's publication, he received widespread credit for salvaging this perspective.

As we shall see, his work is compatible with Functional Contextualism and, notably, contains concepts that provide strong support for Functional Contextualism's a-ontological stance. As with most mature philosophical and scientific matters, van Fraassen's Constructive Empiricism has survived decades of peer review and philosophical argument. He has produced extensive and robust counter arguments to many existing criticisms, provided clarification of misunderstood positions, and has made conservative modifications to the approach. As a mature system, Constructive Empiricism is a valuable formulation to apply to an evaluation of a-ontology and its criticisms[2].

As follows, discussion is confined to key concepts in van Fraassen's Constructive Empiricism that relate specifically to our concern with a-ontology and its criticisms.

1.2.1. Empirical adequacy

The central tenet of van Fraassen's position is that scientists should only be interested in producing and accepting theories that are empirically adequate. An empirically adequate theory, according to van Fraassen, is one that accurately describes observable parts of the world. While empirically adequate theories may be simultaneously describing the "real" world, he suggests that we need not be concerned with this epistemic matter because it has no practical value. It is worth noting that for theories to be empirically adequate they must describe all observable phenomenon within a domain. Van Fraassen chose the term "constructive" to emphasize the fact that scientists do not discover the real world, but rather they construct theories that accurately describe scientific observations. His approach is an empirical one, which prevents the scientist from going beyond what is known by experience, hence the "empiricism" in "Constructive Empiricism."

1.2.2. Attitude

van Fraassen articulates the attitude one should take in relation to a theory that works. He labels this attitude "acceptance" and suggests that one should accept a theory when one believes it to be empirically adequate. No further beliefs about the theory are necessary in order to accept it. Accepting a theory also involves a commitment to rely upon the theory's concepts when addressing future problems. When a Constructive Empiricist accepts a theory, they do not assert that they are accepting a literally true story about the world; they "display" it and specify pragmatic advantages associated with it.

van Fraassen's approach is sometimes misidentified as an Instrumentalist one. Though his position shares many concepts with Instrumentalism, it contains a key difference: it concedes that theories could be true in the way Realists use that term, but since the scientist will never know one way or the other he suggests that the best stance for a scientist to adopt is one of agnosticism.

In essence, when van Fraassen suggests we discriminate between accepting and believing a theory, he is recommending that we take an agnostic stance with our theories with respect to whether they say anything that's literally true about the world. He states it this way:

> To be an empiricist is to withhold belief in anything that goes beyond the actual, observable phenomena…to develop an empiricist account of science is to depict it as involving a search for truth only about the empirical world, about what is actual and observable" (van Fraassen,1980, pp. 202–203).

1.2.3. Virtues

van Fraassen suggests that theories have two kinds of virtues: epistemic and pragmatic. To his mind, epistemic virtues are made up of empirical adequacy, which we have already discussed, and empirical strength, which refers to the amount of information about the observable world that the theory contains. Thus, if one were required to choose between two empirically adequate theories one would make the selection based on which was the more empirically strong (note: empirical strength is synonymous with "scope" as typically used in the CBS community). van Fraassen emphasizes that when examining his suggested agnostic position, it is unlikely that the Realist will have much disagreement around pragmatic dimensions. The primary disagreements are in the epistemic realm.

Realists will make use of non-epistemic dimensions when engaging in theory selection - however, it is evident that pragmatic dimensions are also important to them (i.e., it is not just about mapping the true world). When engaging in theory selection they do consider a theory's parsimony, scope, unity, etc.

1.2.4. Observability

Understanding the Constructive Empiricist's view on observability is crucial to understanding their view of empirical adequacy. First, in contrast to some Realists, they believe that there are two kinds of entities in the world that can be discriminated: observable and unobservable. They suggest that confusion on this point often arises when presuming that language can be divided into theoretical and observational categories. This is problematic because describing things with theoretical language can hide the fact that the things being described are observable. Second, they acknowledge that specifying the precise boundary between observable and unobservable entities can be tricky. van Fraassen referred to observability as a "vague predicate" and noted that it exists on a continuum. Many entities can be classified easily

[1] Many terms used in this paper, which are derived from the philosophy of science literature, are used differently in clinical behavior analysis. Clinical behavior analytic readers should keep this in mind when reading this material.

[2] Many critical discussions of Constructive Empiricism have appeared in philosophical journals. Most notably, a collection of papers entitled "Images of Science" were published in 1985 and contained a thorough evaluation of van Fraassen's position as well as his responses to those evaluations (van Fraassen, Churchland & Hooker, 1985). For a thorough understanding of his work, the reader is referred to this collection of papers, ideally after reading *The Scientific Image*. It is also recommended that readers subsequently access *Scientific Representation: Paradoxes of Perspective,* which he published in 2010 and in which he argues for a modification of his approach to accommodate an appropriate notion of representation. His suggested modifications retain his central epistemic commitments (which pertain to the concerns addressed in this paper) while conferring new advantages. In this work he directs the reader to a thoroughly pragmatic conception of science. Finally, the reader is referred to *The Empirical Stance* (van Fraassen, 2008) for a thorough discussion of empiricism from the vantage point of Constructive Empiricism