CAMBRIDGE
UNIVERSITY PRESS

ORIGINAL ARTICLE

By what measure? A signpost theory of the truth of doctrine

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Abstract

This article proposes a novel theory of the truth of doctrine. A signpost theory of the truth of doctrine is informed by practice-based philosophy of science. I argue that a theory of the truth of doctrine needs to explain the construction, use, and judgement of doctrine. So, I raise questions about the truth of doctrine in reference to the relation between a theory of the truth of doctrine and the role of doctrine in the religious practice of believers. I argue that a signpost theory of the truth of doctrine learns from an empirical understanding of measurement and modelling in scientific practice. The examples of entropy and time provide insights into the construction, use, and judgement of measurements and modelling in scientific practice. An empirical understanding of measurement in scientific practice provides resources for linking representations with reality without ignoring the contextual construction, use, and judgement of representations. I conclude with a brief articulation of how a signpost theory of the truth of doctrine learns from an empirical understanding of measurements and models in scientific practice by highlighting the similarities and differences between the construction, use, and judgement of doctrine and of scientific representations.

Keywords: truth; empiricism; measurement; doctrine; scientific representation

In this article, I introduce a signpost theory of truth and propose a novel theory of the truth of Christian doctrine that is informed by practice-based philosophy of science. A signpost theory of the truth of doctrine (SPTD) learns from an empirical understanding of measurement in scientific practice because of the similarities between the construction, use, and judgement of scientific representations and the role of doctrine in religious practice. Because it is informed by measurement in scientific practice, a signpost theory of truth (SPT) is able to account for the contextual construction, use, and judgement of doctrine in religious practice, as well as the ability of doctrine to point towards the reality of God.

In order to articulate an SPTD, I begin with an introduction of an SPT and argue that all representations (doctrinal and scientific) can be used as aids to point towards the reality that is beyond them. Then, I interpret the identification of God with truth according to an SPT as an introduction for examining the role of doctrine in religious practice. The role of doctrine in religious practice highlights the importance of accounting for context as well as linking doctrine with the reality of God. Using the examples of entropy and time, I

argue that an empirical understanding of measurement in scientific practice provides resources for linking representations with reality without ignoring the contextual construction, use, and judgement of representations. I will conclude with a brief articulation of how an SPTD learns from an empirical understanding of measurements and models in scientific practice by outlining the similarities and differences between the construction, use, and judgement of doctrine and of scientific representations.

A signpost theory of truth

An SPT defines truth as the adequate relation between human thoughts and things (by things, I mean events, entities, processes, etc. (EEP).[1] According to an SPT, truth resides in human intellects by means of an adequate relation between thoughts and things (EEP).[2] The relation between human thoughts and things (EEP) can be described as adequate (as opposed to isomorphic relations, relations of correspondence or resemblance) because of the limitations of human faculties. An adequate relation between thoughts and things (EEP) occurs when humans use their faculties actively to judge whether a representation can point towards things (EEP) in reality. Additionally, the term 'adequate' helps to indicate the constraints of using representations as practical aids for relating human thoughts to mind-independent things (EEP).

An SPT accepts a basic semantic realism about all representations. By semantic realism I mean that representations are able to link with reality because representations are not just metaphorical, instrumental, and/or fictional. Instead, all representations (linguistic, maps, measurements, models, etc.) are able to be used as aids to point towards things (EEP) in reality. For the purposes of this article, I focus on doctrine as a linguistic representation and the examples of time and entropy as scientific representations. There are similarities as to how all representations are constructed, used, and judged because the ability of any representation to point towards a thing can be exemplified by a signpost.

Like a signpost, the capacity for a representation to point towards or away from things (EEP) does not depend on correspondence. A signpost is a type of representation that indicates a direction and a destination while implying some distance.[3] So, a representation is judged as true if it points towards a thing as a means for aiding a human intellect in obtaining an adequate relation between thoughts and things (EEP). A signpost points towards or away from a destination. A signpost is true if it can be used to point towards a thing (DeLaquil 2023). In other words, 'if the sign is pointing the right way, then by following it you are approaching [your destination], and you are getting further . . . if [the signpost] is pointing the wrong way' (Geach 2005, 363). So, a road sign that says 'to Edinburgh' is true if it points towards the city. A signpost is an aid for a journey towards a destination.

A signpost does not correspond with its destination. Similarly, a signpost indicates but does not correspond with the path towards a destination. Signposts are not identical with paths or destinations. The practical experience of using signposts in daily life might not be common.[4] However, most might be able to relate to the experience of being in a new country or city (or hiking in a new area or finding a genre section in a new bookshop).[5] Going to a new country and/or city captures the experience of using signposts as practical aids to arrive at a destination. Most people might rely on a combination of signposts and a map. Maps, even digital maps, are used as means to aid travellers on their journey towards a destination. As anyone who has used a map in a new city has experienced, a map does not perfectly correspond with reality. Instead, maps are useful representations for attempting to relate human thoughts and reality.

Like maps, scientific representations are used to adequately relate human thoughts and things (EEP) without corresponding with reality. The contextual construction, use, and

judgement of the measurement of time is a helpful example for demonstrating how measurements point towards reality without corresponding with it. In this article, I will focus on the measurement of time in scientific practice and a model-based approach to the standardization of time.[6] Clocks are used to point towards reality without corresponding with it because, like maps, clocks are constructed as practical aids for interacting with reality. Solar and lunar clocks are constructed with reference to the motion of the earth in relation to the sun and the moon respectively. There are some historical examples of clocks that combined solar and lunar motion (Falk 2020). Still, the measurement of time is like a signpost because time points towards the reality that is beyond it without corresponding with it.

Historically, the measurement and standardization of time was contextual, localized, and influenced by the pragmatic concerns of humans. In *The Light Ages*, Seb Falk recounts some of the history of the use of clocks in monasteries in the United Kingdom and argues that the construction and use of solar and lunar clocks contributed to the development of agricultural sciences (Falk 2020). The use of clocks and standardization of time in monasteries shows how time can be used to aid different human concerns. The monks used clocks for the standardization of liturgical time as well as using clocks as practical aids for food production. The use of solar/lunar clocks for the measurement and standardization of time aided agricultural development and production while also helping Friar Jacques know when to wake up to ring the bells for matins.

In subsequent sections, I will continue to examine the construction, use, and judgement of measurement in scientific practice with the examples of time as well as entropy in physics.

Additionally, I will expand on my claim that representations point towards reality without corresponding with it. Next, I will examine the Christian claim that God is truth in order to set the stage for the role of doctrines in religious practice.

The identification of God with truth

Since there is no correspondence in an SPT, it is worth briefly articulating how the identification of God with truth can be understood with the aid of an SPT.[7] For example, in John 14, Jesus tells his disciples that he is going to the Father to prepare a place for them. In response, Thomas said, 'Lord, we do not know where you are going, so how can we know the way? Jesus said: "I am the Way; I am Truth and Life." No one can come to the Father except through me' (New Jerusalem Bible, John 14:5–6). There are two parts to the question Thomas asks.

The first part of the question identifies a lack of knowledge concerning Jesus' destination.

The second indicates a lack of knowledge concerning the way to arrive at such a destination. Thomas asserts that he does not know where Jesus is going and that he does not know how to get there. Jesus answers Thomas by saying, 'I am the Way; I am Truth and Life.' Since Jesus says that he is going to the Father, the additional line, 'No one can come to the Father except through me', can be seen as reinforcing the uniqueness of Jesus' relation with the Father. The context of what Jesus says implies a connection between theory and practice that can support an SPT.[8]

In these verses, the identification of God with truth is articulated in the context of a journey. A journey with a destination, distance, and direction. Jesus identifies himself as the truth, the way, and the life because Jesus is identifying himself as the means for arriving at the divine destination. Unlike an inanimate representation and because of his uniquely divine relation of unity with the Father, Jesus (truth) provides the means (life) and the direction (way) for arriving at the destination (the Father).[9] According to

an SPT, the identification of God with truth is contextual because it points towards God as the beginning and final destination of creation.

According to an SPT, the construction, use, and judgement of representations need to account for distance, direction, and destination in the sense that all representations point towards things without corresponding with reality. So, the claim that God is truth points towards the reality of God without corresponding with God. I argue that an SPTD can assert the truth of doctrine as well as account for the construction, use, and judgement of doctrine in religious practice. In the next section, I will focus on the use of doctrine in religious practice because I am arguing that an SPTD learns from the construction and use of measurements in scientific practice.

Truth and the use of doctrine in religious practice

In a recent article, Kalmykova highlights the connection between a theory of the truth of doctrine and the use of doctrine in practice by introducing 'a puzzle' in response to some empirical studies of religious belief (Kalmykova 2021, 231) For Kalmykova, there are three parts to this puzzle, that '(1) religious believers do not understand the entailments of their doctrinal commitments; (2) they are apparently unaware of many of the doctrines that are deemed important by religious authorities; and (3) they hold to doctrinal claims independently of counter-evidence and apparent contradictions' (Kalmykova 2021, 236). The answer that Kalmykova provides to this puzzle is to treat doctrines as artefacts used by believers as one part of their religious experience (Kalmykova 2021, 231). In this section, I will examine the answer Kalmykova articulates as well as the thought of Lindbeck in order to highlight the uniqueness of an SPTD and the benefit of learning from measurement in scientific practice.[10]

In order to account for the role of doctrine in religious practice, Kalmykova claims that 'doctrinal statements are often treated by believers as sacred artefacts, on par with material artefacts such as icons and relics' (Kalmykova 2021, 231). For Kalmykova, the use of doctrines as artefacts provides an explanation of the role of doctrinal claims in religious practice (Kalmykova 2021, 236). Kalmykova says that there are four 'similarities between artefacts and doctrines as they feature in lived religion: 1. Holding . . . 2. Acceptance . . . 3. Formation . . . 4. Role in practice' (Kalmykova 2021, 243). Out of the four similarities, I want to focus on the fourth, the 'role in practice' (Kalmykova 2021, 243).

In general, Kalmykova provides a helpful and intriguing proposal about the role of doctrine in 'prayer, liturgical behaviour, and meditation' as well as 'the profession of creeds' (Kalmykova 2021, 243). Yet, one way to strengthen the understanding of the construction, use, and judgement of doctrines would be to account for historical studies of the development of doctrine, the role of *sensus fidelium*, and the maxim *lex orandi, lex credendi*.[11] The history of religious practice and of the formulation of doctrines presents examples showing that worship, liturgy, doctrine, and historical circumstances are mutually dependent.[12] In other words, the history of the formation and acceptance of religious doctrines would provide a wealth of material for engaging with the use of doctrines in religious practice in general, and specifically with the ideas behind Kalmykova's similarities between artefacts and doctrines.[13]

To explain the role of doctrine in religious practice, Kalmykova claims that there is a parallel between the use of artefacts and the use of doctrines in religious practice because religious practices 'involving doctrinal statements, such as prayer, meditation, and the profession of creeds, need not require any engagement with the propositional content of the doctrines' (Kalmykova 2021, 243). Kalmykova has made an interesting point about the potential for various degrees of intellectual engagement with the propositional content of doctrines. Yet, according to an SPTD, a doctrine can be used in religious

practice with various degrees of engagement because doctrines are constructed, used, and judged as aids to point towards God in various contexts.

An SPTD insists on some degree of intellectual engagement because truth resides in human intellects. There are various degrees of intellectual engagement. As Newman says in *Grammar of Assent*,

> of the Holy Trinity in Unity . . . it is . . . never spoken of as a Mystery in the New Testament, which is addressed far more to the imagination and affections than to the intellect. Hence, too, what is more remarkable, the dogma is not called a mystery in the Creeds; not in the Apostles' nor the Nicene, nor even in the Athanasian. The reason seems to be, that the Creeds have a place in the Ritual; they are devotional acts, and of the nature of prayers, addressed to God; and, in such addresses, to speak of intellectual difficulties would be out of place. (Newman 1903, 132–133)

If someone accepts what Newman says concerning a distinction between devotion and intellectual difficulties, then it is perhaps possible to (partially) agree with Kalmykova in the sense that the philosophical and theological analysis of the propositional content of doctrines is out of place in the context of prayer, meditation, and liturgy. Nevertheless, in *Grammar of Assent*, Newman argues that believers do have intellectual engagement with doctrines in a qualified sense of assent. Similarly, for an SPTD, religious practice does include a qualified type of intellectual engagement because truth resides in human intellects and intellectual engagement is not the same as confronting intellectual difficulties.

In their own ways, Newman and Kalmykova identify how a theory of the truth of doctrine needs to account for the construction, use, and judgement of doctrine in religious practice. But for Kalmykova, the contextual role of doctrines as artefacts means that a doctrine can be accepted as true/factual without any engagement with the propositional content (Kalmykova 2021, 246). Like Kalmykova, Lindbeck tries to affirm the importance of context for the use of doctrine in religious life as well as the truth of doctrine (Lindbeck 2009, 201).

Lindbeck provides a helpful contrast with an SPTD. More than Kalmykova, Lindbeck highlights the importance of a theory of the truth of doctrine and discusses the differences between a correspondence theory of truth and a coherence theory of truth (Lindbeck 2009, 201). According to Lindbeck, an 'intrasystematic truth' (truth of coherence) is possible without correspondence (Lindbeck 2009, 50). But there can be no truth of correspondence without the truth of coherence (Lindbeck 2009, 50). So, Lindbeck prioritizes the contextual use of doctrine and the truth of coherence.[14]

To demonstrate the uniqueness of an SPT, I will examine an example from Lindbeck.

According to Lindbeck, the claim 'Jesus is Lord' can be affirmed as true because 'the particular individual of which the stories are told is, was, and will be definitively and unsurpassably the Lord' (Lindbeck 2009, 49–50). For Lindbeck, the claim 'Jesus is Lord' is true according to correspondence between Jesus and Lordship. Simultaneously, Lindbeck thinks that the truth of the claim 'Jesus is Lord' is affirmed according to coherence when it is used in the 'relevant context' of Christian Lordship (Lindbeck 2009, 50). So, Lindbeck says the claim 'Jesus is Lord' can be false if it is used in an inappropriate context. For Lindbeck, the claim 'Jesus is Lord' is false when it is used in a way that contradicts Christian Lordship (Lindbeck 2009, 50). So, according to Lindbeck, the truth or falsity of a claim is dependent on the contextual use of the claim. Like Kalmykova, Lindbeck appears to prioritize the importance of context over content.

An SPTD differs from Kalmykova and Lindbeck because the contextual construction, use, and judgement of representations implies a degree of intellectual engagement with

doctrinal content due to the use of doctrines as aids in the attempt to adequately relate human thoughts and things. The misuse of representations can hinder the adequate relation between human thoughts and things by not pointing towards reality. So, the misuse of the claim 'Jesus is Lord' can hinder the adequate relation between human thoughts and things by pointing away from the person of Jesus. According to an SPT, it does not follow that representations are made true or false by contextual use or misuse, because representations are constructed, used, and judged as means to establish an adequate relation between human thoughts and things.

A misuse of a representation does not automatically mean that the representation is false because truth is the adequate relation of human thoughts and things (EEP). For example, the contextual use or misuse of a map does not make the map true or false. Instead, according to an SPT, humans have to construct, use, and judge the use of representations as aids or hindrances for adequately relating their thoughts and things. A representation is constructed, used, and judged in reference to significant parameters. So, a representation might involve an intentional distortion but still be judged as useful in the right context (for example, a subway map or a caricature) (van Fraassen 2008). On the other hand, an intentional distortion might be malicious in the sense of misdirecting/ misleading or an intentional distortion might result from a blatant disregard for the use of representations as tools to aid the adequate relation between human thoughts and things. Setting aside malice, a representation can be successful and include distortions because an SPTD affirms a basic semantic realism that links representations and reality without insisting on correspondence.

An SPTD learns from the construction, use, and judgement of measurements and models in scientific practice because the significant parameters that link representations and reality without correspondence are present in practice. Indeed, to dispel apparent threats to the link between reality and measurement outcomes, it is best to look at scientific practice instead of vaguely referencing the influence of theories or contexts. In other words, measurement outcomes that account for significant parameters are still capable of providing empirical data. So, for a model-based epistemology of measurement,

> theoretical and statistical models of measuring systems are necessary preconditions for inferring measurement outcomes from indications, for establishing the objectivity of measurement outcomes, and for evaluating accuracy, precision, error, and uncertainty. Tracing these epistemic roles in detail affords a richer and more exact conception of measurement and its relation to theory and observation than do general statements about the 'theory-ladenness' of measurement (Tal 2016, 332).

Now I will examine measurement and modelling in scientific practice to show how an SPTD is informed by the construction, use, and judgement of scientific representations.

An empirical understanding of measurement in scientific practice

In this section, I articulate an empirical understanding of measurement in four subsections. First, I introduce some assumptions of empirical realism. Second, I reference the example of entropy to discuss the role of sentient observers. Third, the relation between measurements, practice, and reality is examined with the help of a model-based approach to the measurement of time. Lastly, I argue that scientific representations point towards reality without corresponding with it. These four subsections show how an SPTD learns from measurement in scientific practice.

Assumptions of empirical realism

Approaching measurement and modelling in scientific practice from an empirical stance means that I am assuming a type of basic empirical realism (van Fraassen 2002). As previously mentioned, I am assuming semantic realism. For the sake of this article, there are three other assumptions I want to affirm. First, empirical realism assumes that observation by humans as humans can be unproblematic with respect to observable reality like 'rocks, seas, stars, persons, bicycles' etc. (van Fraassen 2008, 3). In this sense, empirical realism is contrary to any basic scepticism. Second, empirical realism assumes that humans as 'sentient observers play active, rather than purely passive, roles' in the construction of conceptual representations, measurements, and knowledge in general (Poon and McLeish 2023, 16). Third, to say that sentient observers play an active role in the construction of measurements and models is not an excuse to prioritize human constructs of reality because empirical realism is contrary to idealism (Poon and McLeish 2023, 15). Unlike idealism, empirical realism always prioritizes reality over the constructs of human minds. So, saying that measurements and models are constructed within scientific practice is not an excuse to open the door to scepticism or idealism.

Underlying these three assumptions of basic realism is the assertion that reality cannot 'be fully explained in terms of the attributes that science explicitly counts among its significant parameters' (van Fraassen 2008, 281). Nevertheless, the significant parameters of the sciences help determine what is measurable. 'Measurement is the means through which data, and subsequently a data model, are obtained' (van Fraassen 2018, 267). Any attempt to understand measurements, models, and the conditions of their use in practice requires an explanation of the importance of indexicality because all measurements in science are constructed in reference to specific contexts (the significant parameters of the sciences) (van Fraassen 2008, 2).

Indexicality, from semantics, is a concept that conveys the important role of context for understanding meaning. In other words, the meaning of the content of measurements and models in science is dependent on the context in which they are used because an experiment requires significant parameters that determine the potential for recording a measurement, and constructing a model assumes there is an applicable context for that model (van Fraassen 2018, 267). In other words, the construction, use, and judgement of measurements and models in scientific practice is contextual. Yet, their contextual construction, use, and judgement does not diminish their ability to point towards reality. The concept of entropy is central to classical statistical mechanics (CSM) and provides an example of the contextuality of measurements.

Entropy

Entropy describes 'the efficiency of turning heat flow into work (as in the steam engine) . . . Most university physics courses (and textbooks) today give the impression that entropy is an unequivocal property of the physical world' (Poon and McLeish 2023, 9). Yet, the example of entropy helps to highlight the role of the significant parameters of scientific practice as well as the importance of the role of a sentient observer (Poon and McLeish 2023, 9).

> The entropy of a system is actually a description of the degree of ignorance that an *observer* entertains vis-à-vis the variables . . . Put another way, the entropy assigned by physical models of thermodynamic systems depends on how coarse- or fine-grained those models are, and is calculated by summing over all possible states of variables whose values are not known, or chosen to be ignored, by the observer constructing the model. (Poon and McLeish 2023, 9–10)

In other words, understanding how entropy is assigned by models relies on accepting the relevant parameters as well as the role of measurement in scientific practice. The example of entropy shows that the contextual nature of scientific measurements combined with the decisions that scientists make in practice are indicative of the complexities that arise when trying to adequately relate human thoughts and things in reality by means of the construction, use, and judgement of representations.

According to an SPT, the complexities in measurement and modelling are not evidence against the potential for a representation to point towards reality. Instead, an SPT accepts that scientific practice raises vital questions that are too easily glossed over by general reflections (van Fraassen 2018, 271). Indeed, scientific practice involves decisions by experimenters concerning 'both the identification of parameters and the physical operations suitable for measuring them' (van Fraassen 2012, 773). The complexities that arise in the construction, use, and judgement of measurements can be seen in the important 'interplay of theory, modeling, and experiment' (van Fraassen 2012, 773).

The interplay of theory, modelling, and experiment is important for an empirical understanding of scientific practice because of the ability of scientific representations to point towards reality. Measurements are theory-laden. A 'theoretical representation, in which no object state is localized in a finite region of space for more than an instant, is only a theory' (van Fraassen 2008, 308). A theory is accountable to observable reality as represented by the measurement outcomes and models that are constructed in practice (van Fraassen 2008, 308). So, an empirical understanding of the role of measurement in scientific practice prioritizes observable reality without ignoring the context of scientific theory.

As sentient observers, we can see measurements and models 'only through theory-colored glasses' (van Fraassen 2018, 304). Nevertheless, an empirical understanding of measurement and modelling in scientific practice asserts that theories are accountable to reality without insisting on correspondence with reality. So, an empirical understanding of measurement and modelling might mistakenly appear to threaten the link between scientific representations and reality (van Fraassen 2012, 773). Likewise, an SPT asserts that representations point towards a reality that is beyond them without corresponding with it. As the example of time indicates in the following section, an SPT does not have to be seen as a threat to the connection with reality because representations are distinct from the reality that they point towards.

Modelling time

To dispel apparent threats to the connection between reality and measurement outcomes, it is best to look at scientific practice instead of vaguely referencing the influence of theory and/or contexts on measurements because a model-based epistemology of measurement is still able to provide empirical data (Tal 2016, 332). The measurement of time requires the choice of processes (an inertial system).[15] Any standardization of time involves the choice of an inertial system as well as parameters set by relevant human goals, whether those are agricultural, religious, global and/or local travel or communication, etc. Our current standardization of time differs from historical projects because of its global scale. The measurement and global standardization of time does not negate the link between representations (measurement outcomes) and reality.

In pre-relativity physics, the notion of absolute time is not relative to an inertial system. There are two different understandings of time in pre-relativity physics. Newton distinguished between 'absolute, true and mathematical time' that 'flows uniformly', from 'relative, apparent, and common time', which is a measure 'of duration by means of motion' (Newton 2016, 408). The absolute notion of time in pre-relativity

physics meant that time was seen as independent 'of the choice of the inertial system' (Einstein 2003, 28). In other words, absolute time was the measurement of duration without any reference to measurable inertial systems.

The notion of absolute time is useful as a scientific representation within pre-relativity physics, but it proposes a notion of time that is independent of human experience and lacks 'any physical significance' (Einstein 2003, 28). On the other hand, the notion of time found in the theory of special relativity (SR) accounts for the construction and choice of an inertial system. The measurement of time relies on a clock that is at rest relative to an inertial system, but 'we cannot fix the time by means of this clock . . . for there are no instantaneous signals that we can use in order to compare the time of the event with that of the clock' (Einstein 2003, 27). So, 'in order to measure time, we have supposed a clock, U, present somewhere, at rest relatively to K [a definite inertial system] . . . In order to complete the definition of time we may employ the principle of the constancy of the velocity of light in a vacuum' (Einstein 2003, 27). In SR, time can be measured by using the constancy of the velocity of light in a vacuum by placing similar clocks at points within K and at rest relative to K (Einstein 2003, 27). The clocks can be regulated by sending a ray of light through the vacuum from one clock to another. 'At the instant when this ray meets the [second] clock the latter is set to indicate the time' (Einstein 2003, 28). So, in SR, time is a measurement that has physical significance and that depends upon the choice of an inertial system.

Our current measurement and global standardization of time relies on atomic clocks.[16] Atomic clocks are 'instruments that produce an electromagnetic signal that tracks the frequency of a particular atomic resonance' (Tal 2016, 300). Clocks are set in relation to that frequency. So, time is not the measurement of astronomical phenomena, but clocks are used to count the hours in a day and it does not matter what natural process is used for measurement (Einstein 2003, 28). The measurement of time based on the use of atomic clocks can be understood through an SPT because scientific representations like the measurement of time are used as practical aids to point towards reality. As previously mentioned with the example of the construction of clocks in monasteries, the standardization of time involves the pragmatic concerns of humans (agriculture, religion, travel, communication, etc.).

The choice of an inertial system for measurement and the pragmatic concerns of standardization do not threaten the link between the measurement of time and reality because all representations can point towards reality without ignoring the contextual influence of theory and the pragmatic concerns of humans (Tal 2016, 319). In other words, the measurement and standardization of time is an example of how the construction, use, and judgement of a measurement consists in 'the selective relevant depiction of the phenomena by the user of the theory required for the possibility of representation' (van Fraassen 2008, 253). Still, the contextual construction, use, and standardization of measurements and models in scientific practice do not prevent scientific representation from pointing towards reality without corresponding with reality.

For an SPT, the notion of correspondence is not needed for representations to point towards reality. For example, if I say that the current time in Edinburgh is 10:35 a.m. or 6 p.m. (UTC + 1) then I am making a contextual judgement about the use of 10:35 a.m. or 6 p.m. as an adequate measure for the time of day. Most likely, I am using the current time as a tool to make a contextual judgement about whether it is too early for lunch/dinner or if I need to attend a meeting. During January in Edinburgh, it is helpful to use the measurement of time to distinguish between 7:30 p.m. and 11:30 p.m. because the sun sets before 5 p.m. In other words, the construction and use of a scientific representation links measurements and models with reality through the identification and choice of significant parameters that enable the formation of a contextual judgement.

The measurement and standardization of time are constructed and judged as tools to be used for pointing towards reality.

Pointing towards reality without corresponding with it

A lack of identification or correspondence does not hinder the use of signposts as aids to point towards reality because truth is the adequate relation between human thoughts and things (EEP). An adequate relation between thoughts and things (EEP) occurs when humans use their faculties to actively judge whether a representation can point towards things (EEP) in reality. A representation is judged as true if it points towards a thing as a means for aiding a human intellect in obtaining an adequate relation between thoughts and things (EEP) because truth resides in human intellects. The construction and use of representations as well as our contextual judgements do not threaten a basic empirical realism because truth resides in the adequate relation of human thoughts and things (EEP). So, truth is not dependent on the ability of a representation to correspond with or resemble reality.

As signposts, representations are not judged in terms of resemblance because all representations are distinct entities from what they are representing. The use of a signpost as an aid for a journey implies distance, direction, and a destination. On a journey, a signpost points towards a destination that is beyond the signpost without corresponding with a destination, direction, or distance. Likewise, representations are not judged in terms of resemblance because representations are not copies (van Fraassen 2008, 12). A copy is meant to minimize any distortions between copies and original things, whereas a representation might include a distortion because a 'lack of resemblance in some respect may in general be crucial to the success of a representation' (van Fraassen 2008, 13). A distortion in representation is not as radical as it might sound because distortions might be a necessary result from representing a thing in a medium. A distortion is only detrimental when the goal is isomorphic resemblance or correspondence, or if the representation is constructed and/or misused with malicious intent.

According to an SPT, since the goal is to use representations as tools to aid the adequate relation of human thoughts and things by pointing towards reality, distortions of representations are not detrimental.

An empirical understanding of measurement and modelling in scientific practice, the example of entropy as well as the measurement and standardization of time indicate that the role of sentient observers (observation by humans as humans), the importance of significant parameters, the contextuality of measurements, and the contextual judgements of the use of scientific representations are vital for understanding the role of measurements and models in scientific practice. According to an SPT, measurements and models are true when they point towards reality as aids for the adequate relation between human thoughts and things. Now, I will conclude by indicating how an SPTD learns from an empirical understanding of measurements and models in scientific practice by outlining the similarities and differences between the construction, use, and judgement of doctrine and of scientific representations.

A signpost theory of the truth of doctrine

I will begin by articulating some of the key similarities between doctrine and measurement in scientific practice. Then, I reintroduce basic empirical realism as well as the distinction between what is observable/unobservable as starting points for examining the dissimilarities between doctrine and scientific representations. Highlighting the similarities and dissimilarities between doctrine and scientific representations makes it clear

that an SPTD learns from an empirical understanding of measurements and models in scientific practice. In this way, an SPTD is an example of the benefits of engaging with practice-based philosophy of science.

According to an SPTD, the construction, use, and judgement of doctrine is similar to the construction, use, and judgement of measurements and models in scientific practice because all representations (doctrinal and scientific) can be used as aids to point towards the reality that is beyond them. As previously mentioned, semantic realism and the notion of indexicality provide resources for affirming the ability of representations to point towards reality (semantic realism) without ignoring the vital importance of context (indexicality). Since truth resides in human intellects, all representations are constructed, used, and judged as potentially useful aids to adequately relate human thoughts and things (EEP). Scientific representations are used as signposts within the theory-laden context of scientific practice. Similarly, doctrines are used as signposts within the value-laden context of religious practice. The theory-laden contextuality of measurements and models does not threaten the links between measurements and reality.

Similarly, the contextuality of doctrine does not have to be seen as a threat to the ability of doctrine to point towards the unobservable God. In this way, doctrine is fundamentally similar to measurement and modelling in scientific practice.

It is beyond the scope of this article even to attempt a reasonable summary of the numerous potential sources of dissimilarity between religious and scientific representations (faith, belief, methodology, naturalism, etc.).[17] Instead, I will conclude by arguing that an empirical understanding of scientific representations includes a helpful starting point for a systematic examination of the similarities and differences between scientific and religious representations. As previously mentioned, an SPT and an empirical understanding of scientific representations assume a basic empirical realism that accepts the distinction between what is observable and what is unobservable to humans as humans. The meaning and application of the observable/unobservable distinction are open questions.[18] Nevertheless, the distinction between what is observable and what is unobservable provides a beneficial starting point for examining the similarities and dissimilarities between religious and scientific representations.

The distinction between what is observable and what is unobservable to humans as sentient observers is connected with the assumption of a basic empirical realism. A basic empirical realism combined with semantic realism affirms that humans have the potential to observe and measure things (EEP). At the same time, a basic empirical realism does not have to be seen as a denial of the ability for representations to point towards unobservable things, such as an unobservable God.[19] Instead, the observable/unobservable distinction highlights the importance of considering what it means to represent and point towards something that is unobservable.[20] An SPTD is helpful because the distinction between what is observable and unobservable requires an account of the significant parameters of various contexts. The significant parameters of a context might provide indications as to whether it is even suitable to attempt to construct, use, and judge a representation that points towards an unobservable. So, the distinction between what is observable and what is unobservable as well as the assumptions of a basic empirical realism are important starting points for examining the similarities and differences between religious and scientific representations.

In conclusion, my focus on (scientific and religious) practice allows an SPTD to highlight the similarities and dissimilarities between scientific and religious representations. Because it is informed by an empirical understanding of scientific practice, an SPTD can affirm the link between representations and reality without ignoring the importance of context. So, a signpost theory of the truth of doctrine (SPTD) is a novel theory of the truth of Christian doctrine that is informed by practice-based philosophy of science.

The examples of entropy and time indicate how an empirical understanding of measurements and models in scientific practice informs a signpost theory of truth (SPT). In the end, this article was constructed with the intention of pointing towards reality.

Notes

1. Instead of the singular term 'thing', I use the term 'things' = entities, events, and processes, etc. (EEP) to emphasize how any relation between human faculties and things in reality is dynamic.

2. A signpost theory of truth is inspired by Aquinas in the sense of understanding truth in terms of human intellects and things or the relation between human minds and reality (*STh* I q. 16 a. 1). A signpost theory of truth is not an interpretation of Aquinas. So, an adequate relation is not meant to imply *adaequatio* as found in Aquinas. For a recent analysis of adequation see Müller (2019).

For those interested in interpretations of Aquinas that account for grammatic and practical use, please refer to what Simon Hewitt (2021) calls grammatical Thomism.

3. A very rough articulation of a signpost theory of truth can be found in my reflections on the thought of John Henry Newman (DeLaquil 2023). In this article, my primary focus is on a theory of the truth of doctrine informed by practice-based philosophy of science. It is outside the scope of this article to explore other theories of signs/symbols in Christian theology, such as Augustine's *On Christian Doctrine*.

4. I am grateful to Christopher Nelson for discussing the (common/uncommon) experience of using signposts.

5. I have Tessa C. DeLaquil to thank for providing feedback and the example of genre sections in bookshops.

6. Importantly, this analysis of time as a measurement in scientific practice leaves aside all questions of the psychological experience of time as well as philosophical theories of time that do not account for contemporary scientific practice.

7. According to a signpost theory of truth, the identification of God with truth points towards the relation between God and creation. I am in basic agreement with what William Wood says: 'any theist who affirms that God creates all things will find much of what Aquinas says about God and truth to be thoroughly unsurprising' (Wood 2013, 23). Yet, I cannot develop this further at present.

8. Alternatively, it can be said that the language of way and life could be more metaphorical than the identification of God and truth (Wood 2013, 21). The importance of language should not be ignored, but I cannot examine it thoroughly in this article.

9. An anonymous reviewer indicated possible similarities with Athanasius in *On the Incarnation*. Unfortunately, it is beyond the scope of this article to develop reflections on incarnation.

10. I would like to thank David Fergusson for mentioning the potential relevance of Lindbeck to me. Additionally, my thanks to an anonymous reviewer who encouraged the inclusion of Lindbeck in this article.

11. One recent reference might be, Rush (2017).

12. To better understand the construction and use of doctrine, it would be informative to examine connections between theories and uses of doctrine in the Orthodox Churches, the Catholic Church, the Scottish Episcopal Church, and the Anglican Church.

13. See Ayres (2004) for an example of the historical complexities surrounding the construction of doctrine.

14. See Lim (2021) for a thorough analysis of Lindbeck.

15. See Riehle (2017) and Caldwell et al. (2023).

16. On the possibility of nuclear clocks, see Pálffy (2023).

17. As an example, I reflected on the methodological implications that a version of naturalism, from Fiona Ellis, might have on the knowledge of God by means of faith and/or reason (DeLaquil 2021).

18. I do not intend to provide any hint of an answer. Any attempt to answer could involve resources from psychology, cognitive science, and epistemology. Still, it is possible to debate the details of what is observable and/or unobservable without denying the distinction. It is possible simultaneously to accept a basic empirical realism that affirms the distinction between what is observable and unobservable to humans as humans because I think that the observable/unobservable distinction is descriptive and does not have to be normative. For example, humans and bees observe different ranges of colours; humans, bats, and canines have different capacities for

hearing sounds; falcons and humans have different capacities for sight, etc. In other words, the physiology of human perception provides a description of the general capacities for human perception (the use of our senses).

19. Any examination of the ability or inability of constructing, using, and judging the ability to religious representations to point towards an unobservable God already assumes questions about the limitations of representations and language as are raised by theories of analogy and discussions of the limitations of using human language to talk about God.

20. One obvious question would be whether what is unobservable can be said to be 'thing(s).' Again, without attempting to explore the metaphysics of unobservable(s) an SPTD provides the observable/unobservable distinction as a starting point. For example, see Marion (2012).

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