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THEMES FROM ELGIN

# Veritism refuted? Understanding, idealization, and the facts

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**Abstract**
Elgin offers an influential and far-reaching challenge to veritism. She takes scientific understanding to be non-factive and maintains that there are epistemically useful falsehoods that figure ineliminably in scientific understanding and whose falsehood is no epistemic defect. Veritism, she argues, cannot account for these facts. This paper argues that while Elgin rightly draws attention to several features of epistemic practices frequently neglected by veritists, veritists have numerous plausible ways of responding to her arguments. In particular, it is not clear that false propositional commitments figure ineliminably in understanding in the manner supposed by Elgin. Moreover, even if scientific understanding were non-factive and false propositional commitments did figure ineliminably in understanding, the veritist can account for this in several ways without thereby abandoning veritism.

**Keywords** Scientific understanding · Veritism · Truth · Idealizations · Ideal gas law · Epistemic value

## 1 Introduction

Catherine Elgin offers an influential and far-reaching challenge to what she typically calls 'truth-centred epistemology' or 'veritism', which is seemingly comprised of two theses:

> **(Value-of-Truth)** some factive state (e.g. true belief, knowledge) is the fundamental epistemic value; and

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> **(Goal-of-Truth)** truth is the norm and the aim of belief (e.g. for any *p*, one should intend to believe that *p iff p* is true; *or* that for any *p* one considers, one should believe that *p iff p* is true).[1]

While (Value-of-Truth) and (Goal-of-Truth) are far from being unanimously held, both claims have seemed attractive to many philosophers. However, Elgin argues that 'veritism is unacceptable' (Elgin 2017, p. 9). It cannot adequately make sense of our greatest cognitive successes, most notably as they are manifested in scientific understanding. Accordingly, veritism should be rejected and 'truth ought not to be our paramount epistemic objective' (Elgin 2017, p. 9).

Elgin's primary target seems to be (Value-of-Truth) and Elgin's central challenge to veritism or truth-centred epistemology seems to be best understood as follows. First, Elgin argues that 'a factive conception [of scientific understanding] cannot do justice to the cognitive contributions of science' (Elgin 2007, p. 34).[2] Secondly, Elgin argues that there are many false 'propositional commitments' (e.g. Elgin 2007, p. 33; 2017, p. 37) whose falsehood is no epistemic defect and that are in fact more conducive to scientific understanding than any truths (e.g. Elgin 2004, p. 122; 2007, pp. 36–38; 2017, pp. 23–32).[3] As Elgin puts it:

> The problem comes with the laws, models, idealizations, and approximations which are acknowledged not to be true, but which are nonetheless critical to, indeed constitutive of, the understanding that science delivers. Far from being defects, they figure ineliminably in the success of science (Elgin 2004, pp. 113–114).

In these contexts, Elgin often speaks of 'felicitous falsehoods' (cf. 'epistemically useful falsehoods', Elgin 2019), which may be glossed (although not, perhaps, defined) as being such that 'nothing in the world exactly answers to them, so as descriptions, they are false. But they are felicitous in that they afford epistemic access to matters of fact that are otherwise difficult or impossible to discern' (Elgin 2007, p. 39; cf. Elgin 2017, p. 23).[4]

[1] The term 'Veritism' is often applied to the axiological thesis, i.e. (Value- of- Truth), on its own (especially when *true belief* is taken to be the fundamental epistemic value). Its most influential exponent is arguably Alvin Goldman (e.g. 'the cardinal value, or underlying motif, is something like true, or accurate, belief' Goldman 2002, p. 52). Elgin seems to take veritism to also be constituted by (Goal- of- Truth) (e.g. Elgin 2004, pp. 114–115; 2017, p. 9) and is not alone in doing so. However, it is ultimately not clear to me whether Elgin wishes to reject (Goal- of- Truth), sideline *belief*, or pursue some other option (cf. Elgin 2017, pp. 17–18). (Goal- of- Truth) is widely shared by many theorists of belief, but how it should be formulated is controversial (cf. David 2001, 2005; Wedgwood 2002; Piller 2009).

[2] While several philosophers would allow that understanding may tolerate some falsehoods (notably among so-called *peripheral propositions*)—and thereby view scientific understanding as being 'quasi-factive' (e.g. Kvanvig 2003; Mizrahi 2012; cf. Grimm 2006)—Elgin argues that numerous falsehoods may exist even among what the aforementioned philosophers would regard as *central* propositional commitments (so too de Regt 2009, 2015). The distinction between central and peripheral propositions is difficult to draw (Kvanvig 2003 offers an influential articulation of the distinction but rightly worries about it elsewhere, e.g. Kvanvig 2009, p. 341). For discussion, see also Mizrahi (2012, pp. 239–240, 250–251).

[3] E.g. 'Deviations from truth are epistemically valuable—often more valuable than the unvarnished truth about the phenomena would be' (Elgin 2017, p. 16).

[4] 'Understanding is often couched in and conveyed by symbols that are not, and do not purport to be, true. Where such symbols are sentential, I call them felicitous falsehoods' (Elgin 2004, p. 116). Elgin's

On Elgin's view, felicitous falsehoods improve epistemic access in various ways, for instance by facilitating inferences to truths about the relevant phenomena (e.g. Elgin 2007, p. 40; 2019), unifying information (e.g. Elgin 2007, pp. 40–41), and making salient relevant features of their targets (e.g. Elgin 2004, p. 126; 2007, p. 40; 2017, pp. 5, 249). Elgin takes the prevalence of false propositional commitments in science to indicate that 'truth is not required for epistemic acceptability' (Elgin 2004, p. 128) and maintains that veritism struggles to accommodate non-factive scientific understanding. Moreover, Elgin proposes that 'to accommodate science, epistemology must relax its commitment to truth' (Elgin 2017, p. 14) and that 'it is epistemically responsible to prescind from truth to achieve more global, and more worthy cognitive ends' (Elgin 2004, p. 113; 2017, p. 14).

In what follows, I examine what I take to be Elgin's central argument against veritism and argue that while Elgin rightly draws attention to numerous features of scientific practice that are often neglected by veritists, veritists may accept many of Elgin's central insights concerning the epistemic value of false propositional commitments without thereby abandoning veritism. In Sect. 2, I clarify what I take to be Elgin's central argument against veritism while rendering precise the manner in which (I think that) she allows for falsehood in our propositional commitments and takes false propositional commitments *not* to be epistemically defective. In Sect. 3, I argue: that there are various ways a veritist or defender of a quasi-factive account of understanding can defend the accuracy of the relevant propositional commitments; that Elgin's reasons for rejecting these are not persuasive; and that there are truths that can perform the same function as those falsehoods that Elgin thinks figure ineliminably in understanding.

Finally, in Sect. 4, I argue that *even if* Elgin is right about scientific understanding being non-factive and there being false propositional commitments that figure ineliminably in scientific understanding, this should not be seen as an objection to veritism for two principal reasons. First, the veritist can distinguish between *belief* and *non-doxastic acceptance* in more or less the same manner as Elgin does and allow that false propositional commitments may be non-doxastically accepted but nonetheless should not be believed. This does not require abandoning veritism. Secondly, the veritist may argue that it is not a consequence of veritism that any non-factive state lacks epistemic value or that *any* factive state has greater (final) epistemic value than any non-factive state. However, reflecting upon this last issue does, I suggest, reveal certain significant challenges that veritists ought to face.

## 2 Elgin's argument(s) against truth-centred epistemology

Although she herself does not put things quite like this, I think that Elgin's central argument against veritism is best understood to have something like the form of the following *modus tollens*:

Footnote 4 continued
discussion of 'felicitous falsehoods' includes discussion of numerous non truth-apt items and Elgin herself notes that the term can thereby appear to be a misnomer (e.g. Elgin 2017, p. 23). I am here concerned with false propositional commitments and I focus primarily upon idealizing claims and approximations (notably those 'preferable to the truths they approximate', Elgin 2004, p. 122).

(1) scientific understanding is non-factive and there are epistemically useful falsehoods that figure ineliminably in scientific understanding whose falsehood is no epistemic defect and that should be accepted;[5]
(2) if some factive state (e.g. true belief, knowledge) is the fundamental epistemic value and some factive state (e.g. true belief, knowledge) is the epistemic goal, then it is *not* the case that scientific understanding is non-factive and there are epistemically useful falsehoods that figure ineliminably in scientific understanding whose falsehood is no epistemic defect and that should be accepted;[6]
∴ (3) it is *not* the case that some factive state (e.g. true belief, knowledge) is the fundamental epistemic value and some factive state (e.g. true belief, knowledge) is the epistemic goal.

If this argument is sound, then it takes (VALUE-OF-TRUTH) as its primary target and tells decisively against it. In what follows, I will focus on Elgin's case for (1) and (2). Before doing so, I should note that Elgin's discussion of *felicitous falsehoods* frequently considers various items—most notably certain models, images, diagrams, and some other items—that are not propositional and are thereby neither true nor false (e.g. Elgin 2017, p. 23).[7] Due to my focus on Elgin's case against veritism, I will be concerned primarily with propositional items and the relevant propositional commitments whose grasping is taken to be constitutive of or conducive to scientific understanding.

In considering (1), it seems that there are various distinct claims that may be usefully distinguished but are in fact rarely carefully distinguished. In order to tease these apart, let us assume that scientific understanding is such that scientifically understanding ξ requires φ-ing a series of propositions ($p_1$, $p_2$, …, $p_n$). (Let 'φ' be a placeholder for the relevant propositional attitude, e.g. belief, knowledge, acceptance; let 'ξ' be a placeholder for the item which is to be understood on the basis of φ-ing the relevant series of propositions).[8] If we wish to make a more fine-grained distinction among the relevant claims, then it seems that Elgin is best understood as holding that there are propositional commitments that constitute or manifest scientific understanding such that:

[5] E.g. Elgin (2004, pp. 113–114, 120; 2007, p. 34; 2017, pp. 15, 37).

[6] 'Strictly, it seems, veritism requires accepting the data only if we are convinced that they are true' (Elgin 2017, p. 24); 'veritism is unacceptable. For, if we accept it, we cannot do justice to the epistemic achievements of science. Truth ought not be our paramount epistemic objective' (Elgin 2017, p. 11). Cf. Elgin (2017, pp. 2, 9, 11, 14, 17–18, 24, 37–46).

[7] 'Nonpropositional models and diagrams are not, strictly speaking, false. But if interpreted as realistic representations of their referents, they are inaccurate in much the same way that false descriptions of an object are inaccurate. All represent their referents as they are not. So despite the fact that it is a bit of a misnomer, for ease of exposition, I label all such models falsehoods; if despite (or even because of) their inaccuracy they afford epistemic access to their objects, they are felicitous falsehoods' (Elgin 2017, p. 23). Cf. Elgin (2017, pp. 23–32, 85–89, 195–196, 206–220).

[8] Note that 'ξ' may act as a placeholder for something of the form *why p*, some 'body of information' (e.g. Elgin 2007, pp. 34–35; 2017, pp. 44–46), 'the natural order' (2004, p. 114; 2017, p. 15), topics or disciplines (2017, p. 43), items like the New York City subway system (2017, pp. 42, 62), or something else. In discussing factivity I am not here concerned with whether ξ is true (in fact, I am not even assuming that ξ is propositional). Instead, what I am here concerned with is the truth or falsehood of *those propositional commitments on the basis of which one understands* whatever it is which one understands. I emphasise this point because it is one concerning which numerous existing treatments have not been clear.

**(i)** most of the propositions ($p_1, p_2, \ldots, p_n$) need not be true;[9]
**(ii)** some of the (central)[10] propositions ($p_1, p_2, \ldots, p_n$) are recognised (by those who are φ-ing the relevant propositions or representation) as being false;[11]
**(iii)** some of the (central) propositions ($p_1, p_2, \ldots, p_n$) are such that their being false is not a cognitive defect;[12]
**(iv)** some of the (central) propositions ($p_1, p_2, \ldots, p_n$) are such that their replacement with *any* more accurate propositions would be cognitively disadvantageous (e.g. result in less scientific understanding of ξ).[13]

It seems that (i)–(ii) concern scientific understanding being non-factive while (iii)–(iv) claim that false propositional commitments need not be construed as epistemic defects and may indeed 'figure ineliminably in the success of science' (Elgin 2004, p. 114; 2007, p. 39; cf. 2017, p. 15). Elgin offers numerous examples in support of these claims. Thus, for instance:

> The ideal gas law, $PV = nRT$, represents the relation between pressure, volume, and temperature in a gas comprised of dimensionless, spherical molecules that exhibit no mutual attraction. There is no such gas; indeed, if our fundamental theories are even nearly right, there could be no such gas. All material objects have spatial dimensions. Being subject to gravity, all attract one another. No molecules are spherical. Nonetheless, the ideal gas model is integral to thermodynamics. To be sure, there are more defined models, such as the van der Waals equation and the virial equation, that incorporate some of the features of actual gases that the ideal gas model omits; but they too are idealizations, not accurate representations of any actual gas. Yet these models, which are true of nothing real, figure is a genuine understanding of how actual gases behave (Elgin 2017, p. 15).

On Elgin's account, the ideal gas law is an idealization. It manifests scientific understanding but is not accurate.[14]

[9] 'If "understanding" is factive, all or most of the propositional commitments that comprise a genuine understanding are true' (Elgin 2007, p. 33; 2017, p. 37). Thus, if understanding is not factive, then it is not the case that all or most of the propositional commitments need be true (cf. Elgin 2007, pp. 33–36; 2017, pp. 14–15, 37–44). As her discussion of the understanding manifested by children and in ancient theories suggests, Elgin might even allow (though this is not entirely clear) that *all* the propositional commitments might be false.

[10] As noted, the distinction between *central* and *peripheral* propositions is difficult to aptly draw.

[11] 'A variety of components of cognitively acceptable theories neither are nor purport to be true' (Elgin 2004, p. 128). Cf. Elgin (2017, pp. 35, 120).

[12] 'Some sentences that figure ineliminably in tenable theories make no pretense of being true, but are not defective on that account' (Elgin 2004, p. 114). Cf. Elgin (2004, p. 114; 2007, pp. 36–40; 2017, p. 16).

[13] 'A felicitous falsehood thus is not always accepted only in default of the truth. Nor is its acceptance always "second best". It may make cognitive contributions that the unvarnished truth cannot match' (Elgin 2004, p. 122). Cf. Elgin (2004, pp. 113–114; 128; 2007, pp. 40–41; 2017, pp. 1, 16, 30–31).

[14] Cf. Elgin (2004, p. 118; 2007, pp. 38–41; 2017, pp. 61, 244, 259, 269). I am here focusing on the relevant propositional commitments (e.g. of the *ideal gas law*), but may nonetheless here note that, on Elgin's view, ideal gases themselves are *fictions* and exemplars. In the relevant contexts, they make salient features of real gases which are otherwise difficult to notice (Elgin 2007, p. 40; cf. 2004, pp. 124, 126–127). Elgin's notion of exemplification (e.g. 2004, pp. 124–127; 2007, pp. 39–41; 2009; 2017, pp. 183–203) is inspired

As per (iii) and (iv) (i.e. the claims that some of the relevant propositional commitments are such that their being false is not a cognitive defect and their replacement with *any* truths would be cognitively disadvantageous), Elgin thinks that felicitous falsehoods 'are typically epistemically preferable to the unvarnished truth, for they prescind from factors that threaten to mislead […] their utility lies not in their facilitating inferences despite their falsity, but in their facilitating inferences because of their falsity' (Elgin 2019). According to Elgin, the relevant inaccurate scientific representations and false propositional commitments often promote or constitute scientific understanding in virtue of the fact that they 'distend, distort, exaggerate, and even introduce elements that answer to nothing in the target' (2017, p. 265). Thus, for instance, she claims:

> effective idealizations are felicitous falsehoods […] Nothing in the world exactly answers to them, so as descriptions, they are false. But they are felicitous in that they afford epistemic access to matters of fact that are otherwise difficult or impossible to discern (Elgin 2007, p. 39; cf. Elgin 2017, p. 268).

On Elgin's view, 'understanding is not mirroring' (2009, p. 77; 2017, p. 3) and any attempt to replace inaccurate propositional commitments with more accurate ones needn't result in an increase in scientific understanding and in many cases will not. (Similar views have been put forward by others, notably de Regt 2015).[15] Thus, for instance, while some approximations are second-best epistemic citizens, others 'are preferable to the truths they approximate' (Elgin 2004, p. 122). Equally, if we attempt to make an inaccurate generalization more accurate by introducing restrictions, *ceteris paribus* clauses, or specifications about the conditions in which it holds, then—the thought goes—(e.g.) the ideal gas law will no longer provide understanding of the behaviour of gases in general but only of certain gases in certain conditions (Elgin 2017, pp. 25–26, 263–267).[16] As a result, Elgin thinks that 'there is no expectation that in the fullness of time idealizations will be eliminated from scientific theories […] Elimination of idealizations is not a desideratum' (Elgin 2007, p. 38; cf. 2004, p. 127; 2007, pp. 40–41; 2017, pp. 15, 31, 62). Simply put, there are false propositional commitments which manifest, constitute, or are conducive to greater scientific understanding than any truths and we should not aim at their elimination.

Elgin's arguments for (2) may be more briefly discussed. According to Elgin, the veritist can only grant epistemic value or the status of scientific understanding to false propositional commitments through ad hoc courtesy (Elgin 2007, pp. 37, 41; 2017,

Footnote 14 continued
by Goodman (for whom 'exemplification is possession [of a property] plus reference [or denotation] […] exemplification is the relation between a sample and what it refers to', Goodman 1968, p. 53) and the account of *representation-as* offered by Hughes (1997) (cf. Elgin 2009, pp. 84–86; 2017, pp. 252–271). There are several complications (e.g. about how fictions instantiate properties) which I cannot discuss here. For discussion of exemplification and representation-as, see Frigg and Nguyen (2017). For discussion of fictions in science (with some attention to questions concerning truth), see Godfrey-Smith (2009) and Frigg (2010).

[15] Thus, de Regt holds that models are best viewed as being 'productive' rather than representational (e.g. 2015, p. 3787) and exploits an analogy—elsewhere offered by Giere—with maps, suggesting that great accuracy would preclude easy use (e.g. de Regt 2015, p. 3791).

[16] 'Expressly restricting the scope of the law implicates that it affords no insight into cases where the restriction does not obtain' (Elgin 2017, p. 25; cf. 2017, p. 264).

pp. 30–31, 59–61; cf. Kvanvig 2003, p. 201). Veritism is (wrongly) committed to viewing false propositional commitments as being unacceptable and veritism can allow for the acceptance or employment of recognised falsehoods only by being inconsistent (e.g. Elgin 2004, p. 113; 2017, pp. 28–29, 118) or by implausibly seeing such recognised falsehoods as approximations which should be replaced with truths (e.g. Elgin 2017, pp. 28–30, 61–62). Elgin deems such options implausible for reasons already discussed.

## 3 Truth-centred epistemology, idealizations, and accuracy

The first premise of what I have taken to be Elgin's argument against veritism is that scientific understanding is non-factive and that there are epistemically useful—indeed ineliminable—falsehoods that should be accepted and whose falsehood is no epistemic defect. I will argue that there are several possible means by which one might defend the accuracy of the relevant purportedly inaccurate propositional commitments or eliminate the relevant falsehoods with no epistemic loss and that Elgin's reasons for rejecting these measures are not presently persuasive.

In considering issues concerning accuracy, it is worth trying to get slightly clearer on where, precisely, accuracy and inaccuracy might lie. Following Elgin, and numerous other discussions, I will momentarily focus on using the ideal gas law to understand the relation between certain properties of gases.[17] The ideal gas law ($PV = nRT$) is often taken to summarise and be derived from:

- Boyle's law: the pressure of a fixed amount of a gas is inversely proportional to the volume it occupies ($P \propto 1/V$), i.e. the pressure of a fixed amount of a gas multiplied by the volume it occupies gives a constant ($PV = k$);
- Charles's law: the volume of a fixed amount of gas is directly proportional to the temperature of the gas ($V \propto T$), i.e. the volume of a fixed amount of a gas divided by the temperature of the gas gives a constant ($V/T = k$); and
- Avogadro's principle: the volume of the gas is directly proportional to the number of moles of the gas ($V \propto n$), i.e. the volume of a gas divided by the number of moles of the gas gives a constant ($V/n = k$).

Boyle (and his collaborators), we shall assume, arrived at Boyle's law through observation of experiments involving J-shaped tubes aimed at investigating the relation between pressure and volume. Charles and Avogadro (and their collaborators and fellow-thinkers), we shall assume, arrived at the relevant laws through similar methods of experimentation and empirical observation. Combining the three, we obtain $V = R(Tn/P)$ (where '$R$' is the universal gas constant), and—from there—the more familiar forms of the ideal gas law.

[17] Sometimes Elgin suggests that the ideal gas law itself describes *real gases* inaccurately (e.g. the ideal gas law represents gas molecules as perfectly elastic spheres that occupy negligible space', 2004, p. 118; cf. 2017, p. 14). Other times it seems the ideal gas law is taken to describe *ideal gases* (e.g. Elgin 2007, p. 40; 2017, p. 252). One might argue that neither of these glosses is quite correct and that the ideal gas law merely states the relation between certain properties of gases (without explicitly representing the gases as, e.g. dimensionless), but I shall here streamline the discussion slightly.

The ideal gas law can also be derived *theoretically*, for instance, from the kinetic theory of gases (i.e. by thinking about gas particles colliding with the walls of a container and applying Newtonian laws). Thus, we may suppose that, within a container, there is a gas particle of a certain mass travelling at a certain velocity along a certain axis (so that when it collides with the wall of the container, the wall of the container will be perpendicular to the axis). When the particle hits the wall of the container it does so with a certain force. Applying Newton's second law, we can see that the force is equal to the mass multiplied by the change in velocity divided by the change in time or to the change in momentum divided by the change in time. Because it is assumed that the particle is spherical, the collision is elastic (i.e. no kinetic energy is lost), that there is no friction, and that there are no other forces at work, there is no change in the magnitude of the velocity, but only in its direction. If we continue in this manner, calculating the force exerted on the walls of the container by a particle, then—by calculating the sum of the individual forces of each of the particles (which are assumed to have the same mass)—we can derive the ideal gas law.

Where, then, does the accuracy and inaccuracy of the ideal gas law lie? Well, the ideal gas law is accurate insofar as it represents the relation between pressure, volume, and temperature and how gases behave at low pressures or non-low temperatures with *some accuracy*. Moreover, several of the assumptions required for *theoretically deriving* the law are true. For instance, gas particles do indeed enter into collisions with the wall of the container, and they do indeed do so with a certain force, and the pressure exerted on the walls of the container by the gas is identical to this force, and so on.

However, the ideal gas law is also inaccurate in several ways. The ideal gas law itself is *predictively* inaccurate insofar as real gases deviate significantly from what is predicted by the ideal gas law at high pressures or low temperatures. Moreover, many of the assumptions employed for *theoretically deriving* the ideal gas law (at least in the manner done above) are false. It is (within the relevant parameters) approximately true, but strictly false that the motion of gas molecules is frictionless and that the relevant collisions are elastic. And it is false (and not even approximately true), for instance, that gas molecules are dimensionless. For these reasons, Elgin thinks that:

(a) the ideal gas law *inaccurately* describes certain entities, i.e. *real gases*, as if they had no volume, were composed of perfectly spherical molecules, etc.;

Moreover, Elgin thinks that the relevant *false* propositional commitments (e.g. that gas molecules are dimensionless, that there are no attractive or repulsive forces between gas molecules) are productive of or manifest scientific understanding and should not be construed as epistemic defects.[18]

A veritist might wish to accept several of Elgin's claims about how idealizations facilitate inferences, unify information, and so on. However, it seems that veritists

[18] There is a worry that the object of understanding has shifted here (from using the ideal gas law to understand the relations between certain properties of gases to using certain idealizing claims, such as that there are no attractive or repulsive forces between gas molecules, to understand the ideal gas law) and, as noted by Mizrahi (2012, p. 245), one might think claims like the ones mentioned—which are often used to theoretically derive the ideal gas law—are not themselves parts of the ideal gas law. However, as mentioned above, I am streamlining the discussion slightly.

may do so without thereby endorsing the grasping of falsehoods. Notably instead of accepting (a), the friend of veritism (or anyone else wishing to defend the accuracy of the ideal gas law) might instead think that when used to understand the behaviour of gases, the ideal gas law itself is such that:

(b) the ideal gas law *approximately accurately* describes the relation between certain properties (e.g. pressure, volume) of real gases;[19]
or

(c) the ideal gas law accurately gives a *partial description* of the relation between certain properties (e.g. pressure, volume) of real gases with less than full generality.[20]

It seems that (b) would be a plausible move for a veritist to make and this may easily be done in such a way as to render the relevant propositional commitments *true*. Thus, for instance, instead of taking $PV = nRT$ to be the ideal gas law, one might take the relevant propositional commitment to be $PV \approx nRT$ or think that $<$*approximately*, $PV = nRT>$. These approximation claims, introduced perhaps by means of a propositional operator (cf. Bird 2007, p. 77), are true.

Elgin briefly considers this possibility (Elgin 2017, p. 29), but rejects it. While she allows that it might work for certain claims, she points out that many false propositional commitments in science are such that they are not even approximately true (2017, pp. 29–30; cf. 2004, p. 122). (Consider, for instance, the false propositional commitment that gas molecules are dimensionless). Accordingly, (b) would have the status of a somewhat ad-hoc solution and be limited in its application.

However, another move is also open to the veritist: the kind of approach suggested in (c) according to which the ideal gas law 'tells a partial, true story about the behaviour of certain gases under specified conditions' (Mizrahi 2012, p. 245). Elgin rejects (c) by appealing to Gricean views about implicature. On Elgin's view, introducing restrictions, qualifications, or *ceteris paribus* clauses upon the relevant generalizing laws (e.g. the ideal gas law, Snell's law, cf. Cartwright 1980, p. 160; 1983, pp. 46–47) is counterproductive and limits scientific understanding:

> The reason is Gricean: expressly restricting the scope of the law implicates that it affords no insight into cases where the restriction does not obtain. Snell's law [without explicit restrictions of its domain to optically isotropic media] is more helpful. Even though the law is usually false, it is often not far from the truth (Elgin 2004, p. 117).

> One might wonder why physicists don't restrict the scope of the law […] The reason is Gricean: expressly restricting the scope of the law implicates that it affords no insight into cases where the restriction does not hold (Grice 1989). Snell's law is more helpful (Elgin 2017, p. 25).

Elgin thus seems to argue that articulations of (e.g.) Snell's law or the ideal gas law that include the relevant qualifications or restrictions in scope might be accurate but will

[19] Cf. Psillos (1999, p. 268), Bird (2007) and Greco (2014, pp. 295–298).

[20] Cf. Mizrahi (2012, pp. 245–248).

implicate that—outside of the domain specified—the relevant law cannot be applied. On Elgin's view, this implicatum limits the scope and explanatory power of the relevant statement and thereby limits scientific understanding.

Equally, Elgin thinks that employing a more complex equation (for instance the virial expansion) where a simpler one (for instance, the ideal gas law) would be more or less empirically adequate also limits scientific understanding:

> Suppose we are in a context where $pV = nRT$ would be appropriate. Instead, we might use the virial equation,
>
> $$PV/NkT = 1 + B/V + C/V^2 + D/V^3 + E/V^4 + \ldots,$$
>
> and ignore the bits we don't need. But if we don't need them, why are we given them? What is the point of all the additional bells and whistles? […] To include multiple terms is to implicate that they have a bearing on the issue. This follows from Grice's second maxim of quantity [….] In including unnecessary details, we court misunderstanding; we invite the audience to conclude that the details are in fact necessary (Elgin 2017, p. 269).

Thus, Elgin thinks that utterances of the virial equation unhelpfully implicate that *all* the relevant terms appearing in the equation are suitably relevant in all cases. This implicatum may—depending upon the sense of 'relevant'—be false and fail to make salient which things *really matter*.

Elgin's remarks about the second maxim of quantity (Elgin 2017, p. 269), indicate that she has in mind the conversational (rather than, e.g. conventional) implicature of *utterances of the relevant claims* (e.g. utterances of the virial equation, Snell's law, etc.).[21] In each case, Elgin rejects defences of accuracy of the kind suggested in (c) by claiming that any defender of (c)—i.e. anyone who wishes to defend the accuracy of the circumscribed ideal gas law or something like it (e.g. the van der Waals equation, the virial expansion)—must be committed to the view that:

> (α) the relevant statements are accurate, simple but restricted in scope, and if they are restricted in scope, then it is implicated that the relevant statements have no bearing on cases beyond their scope; or
> (β) the relevant statements are accurate and non-simple or not restricted in scope; and if they are non-simple or not restricted in scope, then it is implicated that *all* the terms in the statement are always relevant or that the statement has bearing in all cases.

However, Elgin's reasons for rejecting (c) by appealing to unacceptable implicatures of the relevant utterances are not convincing for two main reasons.

First, even if we suppose that Elgin correctly identifies the conversational implicatures of the relevant utterances of the relevant statements, the relevant implicatures

[21] Following Grice (1989), conventional implicatures are typically construed as implicatures that are part of the linguistic meaning of the relevant sentence but do not affect the truth conditions of the sentence. Conversational implicatures depend upon the features of the conversational context and not just the meaning of the relevant words that comprise the relevant sentence. Conversational implicature is a pragmatic notion governed by the cooperative principle and the relevant maxims of quantity, quality, and so forth.

are *explicitly cancellable* (cf. Grice 1989, p. 44). Thus, for instance, if Snell's law is introduced as though its domain were unlimited, then some relevant restriction (e.g. 'for any two optically isotropic media') may be introduced later on and be viewed as an instance of explicit cancellation. Equally, if one's statement includes the relevant restriction (e.g. 'for any two optically isotropic media'), and the implicatum is that the statement has no bearing in other cases, then one may add a remark to indicate the applicability of Snell's law in other cases ('it is a good rule of thumb in other cases also', or 'it is generally useful because many media that one encounters in these contexts are isotropic or nearly isotropic', etc.). This cancels the implicature which is Elgin's source of worry and preserves the accuracy and truth of what is conveyed while incurring no epistemic defect as a result. The truth, thus conveyed, arguably results in greater scientific understanding (because it gives some indications of the domain and what the relevant factors could be).

Secondly, it seems that the pragmatics of utterances of the relevant claims (e.g. the pragmatics of an agent's utterance of '$PV = nRT$', '$PV \approx nRT$', etc.) and the fact that in saying that $p$ some agent may have implicated that $q$ are irrelevant. The conversational implicature of certain utterances in certain conversational contexts seems relevant for issues concerning *the communication* of scientific understanding, but doesn't seem to be relevant to an agent's grasping of the claims. *Even if* one were to suppose that understanding requires an ability to explain what is understood to someone else (cf. Hills 2016), we would still measure the scientific understanding of agents by the *contents* they had grasped and what was going on in their minds and not by the pragmatics of their utterances. Similar concerns indicate that *conventional* implicatures are also irrelevant. In sum, it is not clear that the relevant implicatures are relevant and even if they are relevant, there are ways in which the relevant conversational implicatum (which Elgin thinks is unhelpful or limits scientific understanding) may be cancelled or avoided while preserving accuracy.

Moreover, it deserves attention that the veritist has two further moves to make to resist the first premise of Elgin's argument against veritism (i.e. that scientific understanding is non-factive and that there are epistemically useful falsehoods which figure ineliminably in scientific understanding whose falsehood is no epistemic defect and which should be accepted). First, the veritist may appeal to moves akin to those made in (b) and (c) (or to both combined) to argue that any false propositional commitment is eliminable because for any false propositional commitment of the relevant kind, there is always a true propositional commitment that is epistemically superior to it (which runs counter to (iii) and (iv), see Sect. 2).[22]

There are various ways in which this argument might be made. One might argue that (e.g.) the van der Waals equation always provides superior understanding of some particular case to the ideal gas law (cf. Mizrahi 2012). However, this does not seem especially propitious. Instead, it seems that perhaps the most straightforward way of pressing the defender of accuracy's case is formal. Namely, by arguing that the recognition of idealizing claims *as idealizing claims* is more epistemically valuable than simply taking the idealizing claims to be straightforward truths (which they are

[22] As discussed above, on Elgin's view, many idealizations, including the ideal gas law, are such that they cannot be rendered accurate or de-idealized without incurring an epistemic cost (cf. Elgin 2007, pp. 38, 41, pp. 40–41; cf. 2004, p. 127; 2017, pp. 15, 31, 62).

not) and that recognising an idealizing claim of the relevant kind *as an idealizing claim* involves truly recognising that some lower-order claim is not strictly true. Thus, consider:

(A) $PV = nRT$
(B) approximately, $PV = nRT$

Suppose that (A) is false and (B) is true. Now, consider an agent who grasps (e.g. *believes*, *accepts*, or has some relevant propositional attitude towards) (A) but is unaware that <$PV = nRT$> is not strictly true. It seems difficult to deny that the measure of scientific understanding that agent possesses increases when they come to appreciate that (A) is not strictly true, but—*at most*—a claim with approximate accuracy. How might they do that? Well, by grasping (B), which is a truth, or something akin to (B).[23]

Perhaps a reader will be unhappy with treating <$PV = nRT$> as even an approximate truth and will thereby see (B) as false or else will argue that this approach can only be applied to some idealizing claims because many idealizing claims are not even approximately true. This is not a problem for my proposal. The crucial point that I want to make is that very similar moves are available with regards to other kinds of idealizing claims. Thus, for instance, in understanding the ideal gas law, instead of accepting <gas molecules are dimensionless>, which is false, one may grasp <it is not strictly speaking true that gas molecules are dimensionless, but their dimensions are irrelevant in conditions $c_1$, …, $c_n$> or <at low pressures and high temperatures one may ignore factors α, β, …>.

In each of these cases, instead of simply grasping some false idealizing claims, one can and should grasp some *more complex content* or *higher-order* claims. These claims 'correspond to' the false propositions they replace (e.g. <$PV = nRT$>) in the relevant respects (e.g. facilitating calculations, highlighting the most salient factors) but have the added virtue of being true and *of conveying the idealizing nature of the relevant claims* (e.g. <$PV = nRT$ is a useful idealization>). Thus, in grasping an idealizing claim *as an idealizing claim*, it seems that one in facts grasps a truth.

As long as recognising an idealization *as an idealization* has greater epistemic value than simply treating it uncritically, then it seems that for any false idealizing propositional commitment, there will always be a true propositional commitment that has greater epistemic value than it. In this way, a veritist may take on board the spirit of some of Elgin's claims (and agree that in certain cases, we may wish to ignore some variables or not know some value to an ever greater number of significant figures) while not accepting the letter of Elgin's claims. Even if we suppose that (e.g.) the ideal gas law is false and yet enables an understanding of certain things which (e.g.) the virial expansion does not, one can gain all the value of a falsehood by means of a truth that performs the same function.

Secondly, at least as far as the ideal gas law is concerned, the veritist can point to the fact that the ideal gas law (like Boyle's law, Charles's law, and Avogadro's principle) is often described within chemistry as a *limiting law*, i.e. a law which is true within a

[23] Bird (2007, p. 77) appeals to an approximately operator for a different use. Inspired by Bird, Mizrahi (2012) offers a similar suggestion but also puts it to a slightly different use (namely, defending the factivity of understanding).

certain limit, i.e. $P \rightarrow 0$ (e.g. Zumdahl et al. 2017, p. 174). Thus construed, the ideal gas law is not so narrowly circumscribed so as to be inapplicable in the real world and the fact that gases should increasingly deviate from conforming with the law in certain conditions (e.g. at higher pressures) does not threaten its accuracy. When described as a *limiting law*, the relevant idealizing claim is accurate. Similar moves seem to available elsewhere when generalizations of the relevant kind are *restricted* in some way (for examples outside of physics and chemistry, cf. Kitcher 1993, pp. 118–124; Bird 2007, p. 81; Mizrahi 212, p. 247). Veritists or those who defend factive or quasi-factive accounts of understanding might systematically develop these points in their accounts. For my purposes, it merely suffices to show how this might be done.

## 4 Truth-centred epistemology, acceptance, and epistemic value

I have so far focused on Elgin's case for scientific understanding being non-factive and there being epistemically useful falsehoods which figure ineliminably in scientific understanding whose falsehood is no epistemic defect and that should be accepted. I now turn to consider premise (2) of Elgin's argument against veritism. On Elgin's view, because veritism takes some factive state (e.g. true belief, knowledge) to be the fundamental epistemic value, it cannot endorse the employment, acceptance, or positive epistemic evaluation of recognised falsehoods and it cannot make sense of how false propositional commitments may be more valuable than some true propositional commitments. My contention is that the veritist can and should resist Elgin on these points. Even if scientific understanding turns out to be non-factive, or one rejects the attempts to defend accuracy suggested in Sect. 3 and thinks that certain epistemically useful falsehoods figure ineliminably in scientific understanding, this does not in itself pose an objection for veritism. Veritism *can* appeal to a distinct propositional attitude and urge the *non-doxastic acceptance* of said false propositional commitments and *can* recognise epistemic (both *instrumental* and final) value of non-factive states while claiming that scientific understanding promotes the fundamental epistemic value (i.e. some factive state(s)). These issues are best dealt with in turn.

### 4.1 Acceptance

Following Cohen (1992), Elgin marks a distinction between *acceptance* and *belief* (e.g. Elgin 2004, pp. 115–116; 2017, pp. 18–23, 95–99). According to Cohen's influential distinction, *accepting* that $p$ is usually taken to involve treating $p$ as a given and using $p$ as a premise in the relevant context (cf. Cohen 1992, p. 4). Non-doxastic acceptance (i.e. *accepting* that $p$ without *believing* that $p$) is in some strong sense context-bound and is often taken to be squarely within our control (e.g. Stalnaker 1984, pp. 80–81; Cohen 1992, pp. 13–14). One can *accept* claims which one regards as implausible, impossible, lacking evidence, and so forth.

In contrast, *believing* that $p$ is a matter of being disposed to certain 'credal feelings' (e.g. Cohen 1992, p. 9–11) and it is often thought that belief is regulated for truth (i.e. belief is such that a belief that $p$ is correct *iff* $p$ is true) while acceptance is not. In

contrast to mere *acceptance*, belief is not squarely within our control (we cannot, on most matters, simply spontaneously and directly decide what to believe, e.g. Cohen 1992, pp. 16–20; Van Fraassen 2002, pp. 89–90; Shah and Velleman 2005; Elgin 2017, pp. 97–98). In most cases it is neither rational nor indeed possible to simply decide to believe what seems to us to be false. Elgin accepts this kind of distinction between acceptance and belief (e.g. 2017, pp. 18–21, 95–99) (with some minor modifications)[24] and recommends that *acceptance* (and *not belief*) is the attitude one should adopt towards the relevant epistemically useful falsehoods (e.g. Elgin 2004, p. 116; 2017, pp. 3, 18–19, 96–99).[25] This seems eminently reasonable.

However, Elgin seems to think that veritism's commitment to truth precludes the veritist giving their blessing to the acceptance of propositional commitments that are recognised as false (e.g. Elgin 2017, p. 24).[26] This is not so. There is no reason to deny the availability of the same distinction between belief and acceptance (or other similar ones)[27] to the veritist.[28] Veritists are not committed to the view that belief is the only form of epistemic acceptance and what veritism frowns upon is *belief* in false propositions, not the *non-doxastic acceptance of false propositions*. The veritist may not only allow but *encourage* the (non-doxastic) *acceptance* of false propositional commitments *if* they have instrumental epistemic value (for instance, by facilitating inferences so as to arrive at *true beliefs*).

Thus for instance, if the relevant content of the ideal gas law is in fact recognised as false, the veritist may nonetheless urge that one should *accept* the relevant falsehoods (while *not believing them*) in order to arrive at *accurate* beliefs about the behaviour of gases. In understanding the ideal gas law (e.g. through a theoretical derivation) one might *non-doxastically accept* (e.g.) that gases are composed of dimensionless point particles and that there are no attractive or repulsive forces between gas molecules. However, given our other evidence, one should not believe these claims. Any attempt to say otherwise would land us in the realm of Moorean paradox. Regardless of whether

[24] On Elgin's view, 'to accept that $p$ is to be willing and able to take $p$ as an assertoric premise, epistemic norm or rule of inference in one's reasoning or as a basis for action when one's ends are cognitive' (2017, p. 19; cf. 2017, pp. 96–98). What is usually termed 'belief' is called 'conviction' by Elgin (2017, p. 19) and 'to be *convinced* that $p$ is to be disposed, when attending to issues raised or items referred to by $p$, normally to feel that it is true that $p$ and false that $\neg p$' (Elgin 2017, p. 19). I here use 'belief' in line with (e.g.) Cohen's use rather than with Elgin's.

[25] 'I do not contend that we should believe felicitous falsehoods […] I maintain that we should *accept* them. This is a matter of being willing and able to use them as a basis for inference or action when our overarching interests are cognitive' (Elgin 2017, p. 3; cf. 2004, p. 116).

[26] 'Veritism would seem to require accepting the data only if we are convinced that they are true' (2004, p. 116; 2017, p. 24). 'If veritists are right, then at least insofar as our ends of cognitive, we should accept only what we consider true, take pains to ensure that the claims we accept are in fact true, and promptly repudiate any previously accepted claims upon learning that they are false' (Elgin 2017, p. 10). Cf. Elgin (2004, p. 116; 2017, pp. 2, 11, 14, 17–18, 24, 37–46).

[27] Precisely *how* to distinguish belief and non-doxastic attitudes, such as non-doxastic acceptance, is a delicate matter. Some are inclined to see belief as a kind of acceptance (e.g. Stalnaker 1984, pp. 79–81), while others are inclined to distinguish belief and acceptance as different kinds in such a way that one may accept that $p$ without believing that $p$ and one may also believe that $p$ without accepting that $p$ (e.g. Cohen 1992).

[28] Khalifa (2017, pp. 169–173) briefly appeals to the possibility of accepting false idealizing claims in the course of defending a quasi-factive conception of explanation and understanding.

or not *believing* false propositions in order to arrive at further true beliefs *might* be a problem for veritism (cf. Berker 2013), *accepting* falsehoods is not a problem for veritism (and Elgin's case is limited to indicating the need for the *acceptance* of false propositional commitments).

Moreover, any account of understanding that allows that the grasp of false idealizing claims that *are recognised as false* may be constitutive of understanding will be forced to say that the propositional attitude (i.e. the 'grasp' or the 'φ-ing' mentioned in (i)–(iv) above) one adopts towards these propositions is not belief but non-doxastic acceptance. That is to say, Elgin might think that non-factive understanding is constituted by *belief* in certain false propositions, but she cannot maintain that non-factive understanding is constituted by *belief* in false propositions *which are recognised as false*. Instead, she must say that non-doxastic *acceptance* of propositions recognised as false is conducive to or constitutive of understanding. However, veritism does (or should) urge exactly the same attitude towards propositions that are recognised as false. Veritism does not forbid *using* (e.g. by *non-doxastically accepting*) false propositions, it merely frowns upon *believing them*. Elgin might be right that *acceptance* is something that epistemologists (and veritists in particular) should say more about, but even if falsehoods figure ineliminably in scientific understanding, their non-doxastic acceptance is entirely consistent with veritism.

### 4.2 Epistemic value

There is also a response available to worries that veritism cannot adequately account for the epistemic value of false propositional commitments (e.g. Elgin 2007, pp. 37–38; 2017, pp. 58–62).[29] Simply put, veritism requires that some factive state or other (e.g. true belief, knowledge) is *the fundamental* epistemic value, i.e. that only some factive state or other has epistemic value for its own sake. However, veritism should not be taken to claim that *only* some factive state(s) (e.g. true beliefs, items of knowledge) have *any* epistemic value whatsoever. Instead, veritism claims that anything that has epistemic value is either identical to or constituted by the relevant factive state or stands in some suitable relation to the relevant factive state(s). Two simple considerations should suffice to show how this addresses the relevant worries.

First, items which are not factive states may have non-final epistemic value, such as *instrumental epistemic value* or other kinds of *derivative epistemic value*. Thus, for instance, by being the kind of thing which reliably promotes or brings about the relevant factive states, an item might have *instrumental epistemic value*. A means which is conducive to the formation of factive states, such as a sensory mechanism or a reliable method of forming true beliefs might have instrumental epistemic value in this way. Equally, by being the kind of thing which is the product of a process which reliably promotes or brings about the relevant states, non-factive states (e.g. *justified false beliefs*) may have some *non-final* epistemic value (either *instrumental*

[29] Like some others (e.g. de Regt 2015; de Regt and Gijsbers 2016), Elgin (e.g. 2007, pp. 37–38; 2017, pp. 58–62) thinks that truth-centred epistemology and factive (or quasi-factive) accounts of scientific understanding struggle to give an adequate account of why the epistemic value of one false account (such as Copernicus's theory that the Earth has a circular orbit around the Sun) might be epistemically superior to another false account (such as the Ptolemaic theory).

or *derivative*, depending upon how we characterise these). Supposing that there is non-factive understanding, the veritist may argue that it has either instrumental epistemic value (it is conducive to, e.g. true beliefs) or some kind of derivative epistemic value (e.g. it is attained in an epistemically responsible manner).

Secondly, while the veritist takes false beliefs to have epistemic *disvalue*, even false beliefs may have instrumental epistemic value by standing in a suitable instrumental relation to true beliefs.[30] Moreover, the veritist might allow that certain false propositional commitments have greater (*final*) epistemic value than other false propositional commitments (and perhaps certain *true* propositional commitments) because they 'contain' truths. Thus, consider for instance the two following claims:

(A) Paris is the capital of France and Waterford is the capital of Ireland
(B) Paris is the capital of France and Lisbon is the capital of Portugal and Stockholm is the capital of Sweden and Waterford is the capital of Ireland

Since (A) and (B) are conjunctions with at least one false conjunct, both (A) and (B) are false. However, while both (A) and (B) also have at least one true conjunct, (B) is composed of the same true conjuncts as (A) and more true conjuncts besides (without having any more false conjuncts). It seems intuitively correct to say that, according to the veritist, (B) (or rather a belief with (B) as its content) would have greater epistemic value or less epistemic disvalue than (A).

The example is simplistic, but it shows that even if truth is not straightforwardly gradable, various other relevant properties closely associated with truth (e.g. *accuracy*, *informativeness, truthlikeness*, and *truthconduciveness*) are gradable. Thus, for instance, suppose that the Shard is 310 m high. Someone who believes that the Shard is 305 m high thereby has a false belief. However, the belief is *fairly accurate*, it is *close to the truth*, and it has some measure of truthconduciveness in that it has as a consequence many true beliefs (e.g. that the Shard's height is over 300 m, that its height is between 300 and 315 m, etc.). Arguably, the relevant falsehood even has greater epistemic value than certain seemingly tautological truths (e.g. that either the Shard has a height of over 1 m or that it is not the case that the Shard has a height of over 1 m).

Veritism is not committed to the view that any false propositional commitment has the same epistemic (dis)value as any other false propositional commitment. However, although veritism might account for the epistemic value of false propositional commitments in this way, examples of this kind make salient that veritism owes an account of *how much value* different propositional commitments have, how to account for differences in epistemic value among truths and falsehoods alike, and how to render our epistemic goals more precisely. Verisimilitude has received some attention from

[30] Berker (2013) argues that this is a problem because certain accounts of instrumental epistemic value thereby countenance unacceptable trade-offs for future goods whereas epistemic evaluation is and should be concerned with responding appropriately to evidence (with no eye towards prospective consequences). One might respond by arguing that unacceptable trade-offs are, at most, a consequence of *certain* consequentialist assumptions and suggest that a veritist need not be a consequentialist, or else that certain indirect forms of consequentialism (such as rule-consequentialism), certain satisficing forms of consequentialism, or certain limitations on which consequences are considered preclude the unacceptable trade-offs. However, there is considerably more to say on these issues. For discussion, see Berker (2013) and Ahlstrom-Vij and Dunn (2014, 2018).

philosophers of science who have attempted to give accounts of how accurate or close to the truth some particular proposition is (e.g. Niiniluoto 1987; cf. Kuipers 1992) and formal epistemologists working on epistemic utility have given significant attention to developing appropriate scoring rules for measuring how rationally an agent responds to evidence in terms of how close the agent's credence function comes to the ideal credence function (in that situation).[31] However, existing attempts to precisely define verisimilitude face significant objections (cf. Psillos 1999, pp. 252–266),[32] and so do attempts to incorporate considerations of propositional accuracy into epistemic utility theory (Oddie 2019). These are genuine issues of concern for veritists and deserve far more in the way of attention. However, such concerns suggest the need to refine and develop truth-centred epistemology, rather than abandon it.

## 5 Conclusion

On Elgin's view, truth should be 'sidelined' (2017, p. 2) and truth-centred epistemology or veritism should be abandoned because science is the paradigm of a successful epistemic enterprise (2007, p. 34; 2017, p. 1) and yet 'current science is riddled with epistemically felicitous falsehoods' (Elgin 2017, p. 31). On Elgin's view, truth-centred epistemology cannot suitably accommodate such epistemically felicitous falsehoods. I have clarified what I take to be Elgin's central argument against veritism and have argued that the veritist may accept some of Elgin's insights without thereby abandoning veritism or sidelining truth. The veritist can accept the need for idealizations while arguing that there are truths that may perform the same function as the relevant epistemically useful falsehoods and that are epistemically superior to them. Equally, *even if* the relevant false propositional commitments were ineliminable in the manner Elgin suggests, the veritist may nonetheless argue that one should *non-doxastically accept* (and not *believe*) the relevant falsehoods. Moreover, distinguishing between final and instrumental epistemic value and allowing that truths may be 'contained' in falsehoods gives an indication of how the veritist may account for the differing epistemic value of false propositional commitments. Accordingly, Elgin's claims about the important role of epistemically useful falsehoods can thus be admitted by the veritist without thereby abandoning veritism or relaxing one's commitment to truth.

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[31] The literature is large. For a seminal treatment, see Joyce (1998) and for an influential recent treatment, see Pettigrew (2016).

[32] Psillos himself suggests an informal 'intuitive approach' to verisimilitude (1999, pp. 266–269).

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