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***Truth and the Absence of Fact***, by Hartry Field. Oxford: Clarendon Press. Pp. xv + 401. H/b £45.00, \$65.00, P/b £16.99, \$24.95.

In *Truth and the Absence of Fact* we have a detailed record of the trajectory of Field's thinking over the last twenty-five years, from the hyper-realist of 'Tarski's Theory of Truth' to the Quinean anti-realist of today. The factors driving Field's evolution merit close attention, since Field's case provides, in capsule form, a picture of the dominant trends in twentieth-century analytic philosophy. The book is divided into three parts, dealing with truth, vagueness, and objectivity, and each part is organized chronologically.

Many suppose that ontological and epistemological commitment are inversely related: the slimmer one's ontology, the greater rational confidence one can have that it is largely free from error. However, the cases of both Quine and Field reveal the relationship between ontology and epistemology to be more complex: if one's ontology is severely impoverished, one may lack the resources to sustain a vigorously realist epistemology.

Quine himself was a Jamesian empiricist, giving epistemological privilege to our experiences of apparent success. Quine gave an anti-realist account of everything else, but never of the pragmatist's bottom line. Today's Field is no pragmatist: he is thoroughly anti-realist, just as the Field of 1975 was a thoroughgoing realist. For today's Field, the rationality of science is not a matter of fact to be grounded in other facts (such as the facts about apparent deliverances of sense experience or surface stimulations); it is rather a matter of attitude. We *regard* science as rational, and we should not postulate some distinctively epistemic fact that makes it objectively correct for us to regard it so.

Field's newfound anti-realism about the categories of epistemology (reasonableness, knowledge, warrant, and the like) is of a familiar kind, paralleling attitudinal accounts in metaethics such as Stevenson's emotivism, Hare's prescriptivism, or Gibbard's projectivism.

In part one, we witness Field's movement from a correspondence theory of truth and reference to deflationism. It begins with Field's classic paper, 'Tarski's Theory of Truth', in which Field argued that Tarski had provided only pseudo-reductions of the properties of truth and satisfaction. Field introduced the analogy between Tarski's account of truth and a 'reduction' of the property of valence that consisted in simply assigning, by brute force, a valence number to each element. Field argued that a physicalist must require that Tarski's account be supplemented by a reduction of the properties of reference and satisfaction to physicalistically acceptable relations. Field admitted that neither

his new account nor Tarski's original explains the normative element of truth, that is, the role that the attempt to believe and tell the truth plays in our cognitive and linguistic practices. The only possible explanation of this normative dimension of truth is one that incorporates the teleological character of the property of truth: truth is the intrinsic telos of thought.

There was some excuse for Field's overlooking the possibility of a teleological reduction of truth and reference in 1975, when it was conventional wisdom that physicalism excluded teleological explanation. However, Field continues to ignore this possibility throughout the book, despite the development of aetiological accounts of teleology developed by Wright, Millikan, Dretske, and others.

The problem of the meaning of the logical connectives is a recurring theme. In 'Tarski's Theory of Truth', Field thought that Tarski's recursive clauses for the connectives did provide an adequate reduction. Many commentators (including Stalnaker and Soames) complained about the unprincipled nature of this exception: why should a linking of names to referents be dismissed as a pseudo-reduction, while an exactly similar linking of logical words to truth functions goes unchallenged? In a postscript, Field accepts the justice of this objection. He first proposes the 'obvious strategy' of linking a logical constant to the simplest truth function that validates our deductive inferential practices. As he later recognizes, there is a host of difficulties with this suggestion. First, Field has the problem of distinguishing, without reference to the meanings of the constants, deductive from non-deductive inferences. Second, the strategy requires considerable idealization of our actual practices in order to exclude errors. Third, why should the meanings of the constants be assumed to be truth functions at all? Finally, what justifies the claim that the meaning of the constants is to be identified with the simplest candidate function? Simplicity may be relevant in making inferences to the best causal explanation, but Field explicitly denies that truth functions are part of a causal explanation of our inferential practices (p. 296).

In the postscript to chapter one, Field disavows his own demand for a physicalistic reduction of truth and reference. He argues that a physicalist should demand reductions only of properties that are supposed to pull some sort of causal/explanatory weight, and he now believes that truth and reference do no such work. Instead, Field argues, they should be seen as mechanisms of expressing certain kinds of generalizations vicariously, as has been argued by Dorothy Grover et al. in their prosentential theory of truth. In the 1975 paper, Field had argued that truth is needed as a causal/explanatory factor because of the role of truth in judgements of reliability, and reference is needed because of the importance of domain- or topic-specific forms of reliability. A person can be an expert about Bronze Age Greece or subatomic particles, without being at all reliable about other matters. In the postscript and subsequent chapters, Field never rebuts this argument for the explanatory status of reference, which is unfortunate, because the argument is compelling. I don't see how the pros-

entential theory of truth and reference can be pressed into filling this gap. Take, for instance, a person's reliability about the teacher of Plato. How could such a fact be expressed by means of the prosentential theory? The best I can do is something like the following:

For all  $p$ , if an expression/translation of  $p$  into English included the phrase 'teacher of Plato' and if  $X$  believes that  $p$ , then  $p$ .

However, this is obviously inadequate, since many, indeed, possibly all, of  $X$ 's beliefs about Socrates might involve no reference to Socrates as Plato's teacher.  $X$  might be very reliable about Socrates, but so focused on Socrates's early career that he has no beliefs about Plato, or Socrates's relation to Plato, at all. I do not see how topic-specific expertise can be expressed without an ineliminable reference to the relation of reference itself.

In chapters two, three and four, Field proposes that a non-intentional psychology of computational roles makes redundant any explanation of behaviour in terms of intentions. Consequently, semantic properties like truth and reference are otiose. Field recognizes that there is an element of idealization in the identification of an item's computational role, but he fails to see that this concession is fatal to his major thesis. The computational role of a representation is simply its intrinsic purpose. The very notion of computational role is a teleological one, and the function of such an item is inseparable from its connection to its referent. Cognitive scientists like David Marr have argued that there are three levels of explanation in cognitive science: physical realization, algorithm, and design specification. Field's psychology is limited to levels 1 and 2, and will consequently miss generalizations about cognitive functions that are realized by different algorithmic architectures in different subjects.

In chapter four, Field also discusses how a deflationist must cope with the semantic paradoxes. Unlike many other deflationists, Field recognizes that the strengthened Liar makes unavailable the claim that paradoxical sentences are simply contentless. In the end, Field concludes that the least unattractive alternative for the deflationist is Graham Priest's paraconsistent theory, in which the Liar is both true and not true. To my mind, this is an unacceptably high price to pay, placing deflationism beyond the pale. It is one thing to have a consistent theory about real inconsistencies, that is, to describe a paraconsistent language in a consistent metalanguage. It is quite another to admit inconsistencies within philosophy itself. Moreover, the paraconsistent theory doesn't even deliver a satisfying explanation of the phenomena, as Keith Simmons argued in 'The Diagonal Argument and the Liar' (*Journal of Philosophical Logic* 19, 1990, pp. 277–304).

Part two is devoted to the problem of vagueness and related forms of semantic indeterminacy. It begins with another classic paper of Field's, 'Theory Change and the Indeterminacy of Reference'. Field's paper provided scientific realists with a weapon to add to their arsenal: a defence of the claim that scientific knowledge is cumulative, against the Kuhnian claim that scientific

concepts before and after a revolution are incommensurable. Given Field's notion of 'partial reference', a realist needn't decide whether Newton's term 'mass' designated rest mass or relativistic mass. He can instead propose that it partly designates each, making some Newtonian claims about mass partly true, while others come out as wholly true (when the corresponding claims about rest mass and relativistic mass are both true). It now makes clear sense again to claim that the stock of scientific truths is growing: some false beliefs are replaced by partly true ones, and some partly true beliefs are replaced by wholly true ones, while all of the wholly true beliefs are preserved. This is a great paper, despite the fact that its author has now disowned it.

In chapters seven and eight, Field wrestles with certain *prima facie* difficulties for the deflationist posed by vagueness. Field's answer is to postulate a semantically primitive 'definitely' operator, governed by something like S4 modal logic, and to deny that either 'Jones is definitely bald' or 'Jones is definitely not bald' is true. Moreover, Field postulates that definiteness is a necessary condition for knowledge: only definite truths can be known.

*Prima facie*, this introduction of a primitive operator commits Field to a real distinction between facts and states that are definite and those that are indefinite. Moreover, Field is committed to the existence of a necessary connection between the mode of definiteness and the possibility of knowledge. These commitments cannot be squared with Field's physicalism. No such distinction between definite and indefinite states is sanctioned by our best scientific theory, and it is very implausible that the necessary connection between definiteness and knowability is reducible to purely physical necessities. Field was concerned only about the apparent tension between acknowledging vagueness and his deflationism and overlooked entirely the inconsistency between his views on vagueness and his physicalist commitments.

In part three, Field turns to the question of the objectivity of mathematics and epistemology. In 'Mathematical Objectivity and Mathematical Objects', Field argues that the questions of which mathematical sentences are objectively true and which mathematical objects really exist are independent. If logic is a matter of objective fact, then it will be objectively true which propositions follow from a set of axioms, and so mathematics, qua the investigation of the consequences of various theories, can be objective even if no mathematical objects exist. Conversely, Field relies on Putnam's arguments in 'Models and Reality' to show that the existence of a large number of real mathematical objects is not sufficient to guarantee mathematical objectivity, since we have to face the possibility of radical indeterminacy in the reference of our mathematical terms.

The question of the determinacy of number theory is critical to Field's project, since if number theory is indeterminate, so are the concepts of metalogic, such as well-formedness, provability or consistency. In order to define the sentences of a language or the theorems of a mathematical theory, we must be able to rely upon the determinate meaning of a 'finitely many' quantifier,

which cannot be defined in first-order logic alone. If metalogic is radically indeterminate, then the very intelligibility of Field's account comes into question. Can we meaningfully ask whether the truth-value of a mathematical sentence is determinate if we cannot take for granted that we know what we mean by one sentence's 'following logically' from another?

Field argues in chapter nine that Putnam's indeterminacy argument does not generalize to number theory. As Field recognizes, the crucial question is this: what is it that connects our numerical concepts with the peculiar structure of a standard omega-sequence? Field argues that impure mathematics, mathematics in application to physical science, offers hope, albeit a tentative one. If either space or time is constrained to be both infinite and Archimedean, and if our physical concepts, including our ideas of spatial contiguity and direction, immediate temporal succession, and the units of spatial and temporal measurement, are sufficiently determinate, we can use the actual constraints on the structure of spacetime to fix the mathematical reference of numerical concepts. For example, we could designate the present moment as time zero, and use our ideas of the duration of a second and of temporal succession to point to an infinite sequence of temporal intervals, beginning at the present moment, each precisely one second long and each immediately after its predecessor. The natural numbers can be identified with the members of any such infinite temporal sequence. If the long-range structure of physical time is cooperative enough, we will have succeeded in giving sufficiently determinate content to our concept of a standard omega-sequence, which is an adequate foundation for all of finite number theory.

This is an intriguing idea, but I think in the end it must be rejected. First, it is implausible that the determinacy of number theory could depend on the truth of speculative conjectures about the cosmos. Second, since Field admits that even our physical concepts, like second, metre, direction, contiguity, are to some extent indeterminate, any such indeterminacies could be infinitely magnified in application to the sort of infinite sequence Field has in mind. Suppose, for instance, that our concept of a second is somewhat indeterminate, and that, as seems reasonable, the indeterminacy increases somewhat the farther in time one goes from the neighbourhood of our linguistic practices. If each 'second' in Field's sequence were slightly shorter than its predecessor, the 'seconds' might become vanishingly small at the limit, and the sequence as a whole could become non-standard (with some intervals more than a finite number of intervals from the origin). Third, this last worry is further reinforced when we take into account the existence of higher-order vagueness, that is, vagueness in the notion of reference itself.

Even if Field is right in thinking that the determinacy of the sentences of number theory can be secured in this way, he has not yet proven his main thesis: that we can have determinacy of truth value in mathematics without the existence of real mathematical objects (in this case, the natural numbers). With Plato and Kant, I suppose that, in the absence of the existence of

numbers, space and time would be metrically amorphous. In attempting to ground the determinacy of arithmetical statements in the existence of metrical constraints on the structure of space and time, Field presupposes the existence of the the very natural numbers he was trying to eliminate.

As Field points out in the postscript to chapter nine, the problem of securing the determinacy of mathematical reference is a problem for everyone, not just for the deflationist. In fact, Field claims that it is an insuperable problem for the semantical realist. Here Field takes for granted, as do many working in this area, that there can be no causal connections between the realm of mathematical facts and the realm of physical and psychological facts. As I have argued elsewhere (Robert Koons, *Realism Regained: An Exact Theory of Causation, Teleology and the Mind*, New York: Oxford University Press, 2000), this intuition is illusory, based upon an unreflective Humean assumption that spatio-temporal contiguity is a necessary condition of causation. If I am right, there is no significant difference between our commitment to the existence of mathematical objects and our commitment to the existence of other theoretical entities, like electrons or black holes.

In chapter eleven, Field turns to the argument for mathematical realism that relies upon the indispensability of mathematics to physics. Field replies that all that is needed for a mathematical theory to be useful in physics is for that theory to be logically consistent (or, more precisely, to be a conservative extension of a non-mathematical base theory). However, Field offers no account of our knowledge of the logical consistency of mathematical theories. There are only three possible sources of such knowledge: testimony from a mathematical expert, a relative consistency proof (using some other mathematical theory we already know to be consistent), and knowledge of the actual truth of the theory under some specific mathematical interpretation. Only the third can be a non-derivative source of knowledge: experts must acquire their knowledge from some other source, and Gödel demonstrated that the consistency of one theory can be proved only in a more powerful theory. Field denies that we ever know that any mathematical theory is actually true: hence, he is left with no account whatsoever of our knowledge of the consistency of mathematical theories, a fatal lacuna for his project.

Field articulates his anti-realist, evaluativist account of epistemology in his thirteenth and final chapter. The specific case that Field discusses is that of a priori knowledge, but the claims he makes here generalize to the entire body of epistemology. In this chapter we see most clearly how Field's ontological minimalism and scientism have brought him to a dead end.

Epistemology is concerned with evaluations of beliefs and of methods of inference. Some of these beliefs and methods are reasonable, and under appropriate circumstances constitute knowledge, and some are not. Field argues that, as a naturalist, there are only two ways in which he can understand these evaluative judgements: (1) (non-teleological) reductionism, by translating them directly into the language of physical science, or (2) evaluativism, by

denying that they have any factual content whatsoever, and by understanding them instead as the expression of certain attitudes and commitments. Field overlooks two other options: (3) naturalized epistemology, by which reasonableness is identified with the 'proper functioning' of our cognitive faculties, and proper function is itself defined in terms of higher-order causation, and (4) meta-epistemological error theory, in which, paralleling J. L. Mackie's account of ethics, all epistemological judgements are evaluated as false, since they implicitly involve a commitment to the existence of supernatural, objective epistemic values.

Field offers seven compelling objections to reliabilism as a reduction of epistemology to the categories of a non-teleological natural science. These objections include the observation that rules need not be perfectly reliable to be reasonable, the new problem of induction (*grue/bleen*), the reference class problem (deciding which class of beliefs and inferences reliability should be evaluated with reference to), the fact that reliability is not the only epistemic desideratum, and the lack, on the part of purely natural properties, of normative force. None of these objections can be sustained against a reduction of epistemology to a *teleological* naturalism. As I argued in *Realism Regained*, the teleologist can explain the normative force of epistemological categories, since knowledge is the intrinsic telos of thought, and the additional resources available to the teleologist provide a principled solution to the reference class problem. However, this account of logical, mathematical and methodological a priori knowledge is unavailable to a naturalist who adopts, as Field does, an ontology that excludes the possibility of non-spatial and atemporal causes.

When Field, as a physicalist, derides the methods of non-physicalists as 'unreasonable', he cannot be taken to be stating a purported fact about the nature of knowledge or warrant, but simply to be expressing an attitude or stance that he has adopted. To which the non-physicalist may well reply, 'So what?' Since Field's evaluativism is itself grounded in his commitment to physicalism, friends of metaphysics as a science (rather than a venue for self-expression) might well reconsider this stance.

Field argues that he can avoid such rank relativism by pointing out that some methods are better than others, where 'better' means more likely to lead to truth and to avoid falsity.

However, this isn't enough to deflect the charge of relativism, given Field's deflationism and nominalism. If Field could be understood as making an objective and truth-evaluable claim in asserting that his methods are more likely to result in truth than their rivals, all would be well. However, interpreting Field in this way would be to attribute to him metaphysically serious belief in a form of modality (objective propensity or chance) other than logical possibility, a commitment Field has been careful to disavow. We have to take Field as saying that his subjective confidence in his methods is high, but this is quite compatible with a thoroughgoing relativism, since the partisans of competing methods might experience the very same intensity of self-confidence.

Much the same will be true of any deflationist. It would seem that the deflationist must take possibilities to be some kind of linguistic entity, like logically consistent sets of assertoric statements. An utterance  $u$  would be true with respect to  $w$  just in case  $u$  corresponded in meaning to some member of  $w$ , or was logically derivable from assertions contained in  $w$ . It seems quite implausible, on such a view, that there could be such a thing as objective chances or propensities, since these objective propensities would have to be taken to be primitive and mind-independent properties of these sets of assertions. In fact, I think that taking even logical possibility to be a real and primitive feature of these sets, as Field does, is problematic, and not just for the epistemological reasons I raised earlier. What, on the deflationist's view of the world, could make it true that one of these objective modalities belongs to one of these sets of linguistic entities?

Purely subjective probabilities, in contrast, might be amenable to the kind of nominalizing project that Field has partially carried out in the case of the use of mathematics in physics. Presumably one could use well-known representation theorems in decision theory to argue that the numerical weights assigned to degrees of belief are in principle dispensable. However, asserting a merely subjective confidence that one's own methods will lead to the truth does not provide any objective basis for their superiority. In the end, the claim that I prefer my methods because they are likely (in my judgement) to lead to the truth is a vacuous one. This is why Field's anti-realist account of epistemology must be classified as a form of epistemological minimalism. By comparison with Field's minimalism, outright scepticism is attractive, since the sceptic accepts the objectivity of epistemological standards.

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***Berkeley and the Principles of Human Knowledge***, by Robert J. Fogelin. London: Routledge, 2001. Pp. x + 166. P/b £8.99.

The *Routledge Philosophy Guidebooks* series is aimed squarely at the student market and this book is no exception. It is clearly written, clearly structured, makes the occasional concession to teenage humour (see, for example, p. 155) and steers well clear of any complex or conceptually challenging philosophical issues. Footnotes are kept to a minimum, as are discussions of scholarly disputes. Fortunately, all this simplification is not inconsistent with there being an interesting positive thesis to the book.

The first chapter is a general introduction. It gives a one-page summary of Berkeley's life and published writings, a brief but balanced account of the relation between Locke and Berkeley, and then a long (nineteen pages, more than