The Generality Problem is the lack of principled criteria by which to select the factors on which an evaluation should be based (pp. 29, 79). No such difficulties arises with regard to the criteria ((3) above) Roush proposes for deciding which conditional probabilities determine whether a belief tracks truth. Although this does not solve Roush's problems with non-true evidence, it makes Process Reliablity a less attractive alternative.

V.

Tracking is a model of good philosophy. It will fascinate and inform its readers no matter what they think of the rest of the 'S knows that p' literature.

Department of History and Philosophy of Science JIM BOGEN
University of Pittsburgh
1017 Cathedral of Learning
Pittsburgh, PA 15260
USA
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Ambiguity and Logic, by Frederic Schick. Cambridge: Cambridge University Press, 2003. Pp. ix + 154. H/b £40.00, P/b £14.90.

Standard decision theory sets up decision problems by providing a set of states for the world to be in, a set of actions, a mapping that assigns each pair of a state and an action to an outcome, and an assignment of real number values to outcomes. With an assignment of probabilities to states, this allows one to calculate the expected value of any action by multiplying the probabilities of each outcome by their respective values, and summing the results. Orthodox decision theory, supported by many arguments citing representation theorems and laws of large numbers, tells one to perform the action with greatest expected value. In particular, the assignment of probabilities to states is supposed to reflect one's full set of beliefs, and the assignments of values to outcomes is supposed to reflect one's full set of desires.

This orthodoxy has been challenged on many grounds. Causal decision theory points out that the subjective probabilities used to frame decision theory seem to treat our actions just as ordinary evidence, rather than the distinctive product of our deliberation. Other challenges (like the St Petersburg paradox, the Two-Envelope paradox, and others) point out problems for the expected value formalism that arise with potentially unbounded (or even infinite) values. And there are also concerns about agents with multiple incommensurable sets of desires.

In this book, Frederic Schick raises a whole new set of challenges, which are in some ways much deeper. He suggests that even given a fixed, well-defined set of available actions, states, probabilities, outcomes, and values, the rational

choices may not be uniquely specified. The issue is that one can see the same outcome *as* something different, or see the same action or state *as* something different. The value an agent has for an outcome depends on how she sees it. These different *seeings-as* allow an agent to value the same set of actions differently—not because she has changed her valuings of the outcomes, but because those outcomes were inherently ambiguous, and she valued them differently depending on how she saw them.

In particular, actions and outcomes do not enter as purely extensional parts of the world, but rather as propositions. In an example from George Orwell, cited by Schick in chapter one and mentioned throughout the book, the same action can be seen on the one hand as shooting a fascist, and on the other as shooting a fellow-creature emerging from the trenches with his trousers half off. Orwell wants to do the former but does not want to do the latter, so when he comes to see the situation in the latter way, the values he already has make him change his mind about what to do. This change is rational and does not involve any change in beliefs, just a change in seeing, according to Schick.

These ideas are extensively discussed in his previous books, *Understanding Action* and *Making Choices*. However, in those books he discusses many other issues as well. In this book, the focus is more complete, and he begins the development of a logic to relate seeings to more traditional propositional attitudes, like belief and desire. The book consists of seven essays tied together by this theme, several of which apply it to specific issues. Chapter one primarily introduces the theme, chapters two through four discuss connections to other theories of rational action, chapters five and six discuss connections to logic and epistemology, and chapter seven serves as a sort of coda, exploring the possibility of applications to questions of absurdity and nihilism.

Several essays discuss interesting implications of these 'seeings' for game theory and economics, but the central essay seems to be chapter six, where he discusses what he calls 'The Logic of Ambiguity'. This logic is necessary to fully spell out his theory, so it can be properly compared with traditional forms of decision theory. As Schick describes it, the logic of ambiguity is part of the logic of thought, and the logic of thought deals with 'what *propositional attitudes* [one] ought to hold or not to hold, or to hold or not hold in certain contexts of others' (p. 100), as opposed to the logic of truth, which says what follows from what. His claim is that beliefs and desires, though connected to the logic of truth, are governed by additional principles as well.

His first pass at these norms is as follows. One's beliefs should *be logically disciplined*, which seems to entail believing the deductive consequences of one's beliefs (thoroughness), and also entails not believing contradictions (consistency). Then he shows that certain propositions, if believed by a logically disciplined agent, must necessarily be false—these propositions he calls *incredible* for the agent. He defines a *reflective* agent as one who does not believe any propositions incredible for that agent.

At this point, before coming up with a logic for propositional attitudes other than just belief, Schick demonstrates an interesting connection to standard modal logics, though it is unclear exactly what the point of this connection is supposed to be. Using $\Box p$ for 'the agent believes that p' and $\Diamond p$ for 'the agent does not disbelieve p', he shows that no reflective agent can disbelieve $\Diamond p \rightarrow \Box\Diamond p$, $\Box p \rightarrow p$, $\Box(p \rightarrow q) \rightarrow (\Box p \rightarrow \Box q)$, or any tautology. He points out that these are the familiar axioms 5, T, K, and PL of S5 modal logic. However, it seems to me that this point cannot be as significant as Schick seems to suggest—after all, right before this, he also shows that no reflective agent can disbelieve $p \rightarrow \Box p$. This, together with T, gives the trivial modal logic Triv (see *A New Introduction to Modal Logic*, G. E. Hughes and M. J. Cresswell, 1996, Cambridge: Cambridge University Press, pp. 121–2) in which $\Box p$ is equivalent to p. Thus, either the requirement not to disbelieve a set of axioms does not give much of a connection to a modal logic (he points out that it is much weaker than the requirement to believe in them, since there is often no problem in suspending judgement on an incredible proposition), or the connection deprives the modality of any interest. It does not seem that this connection to S5 is supposed to be very central to the argument of the chapter, but if it helps play a role in achieving the reflective equilibrium Schick later says he seeks, then that argument may be undermined.

In exploring other propositional attitudes, Schick first suggests that analogues of discipline and reflection should hold for desires, but that it is less clear what the norms should be for other propositional attitudes, including his favourite one of 'making salient'. (He points out that 'seeing-as' is a ternary relation between a person, a situation, and a proposition—since his logic only deals with propositional attitudes, he suppresses the situation and considers the attitude of 'making salient' a proposition.) But once he starts considering more propositional attitudes, he can weaken his earlier principles to make them more realistic. Rather than believing *all* consequences of our beliefs, only the *entertained* consequences of our beliefs must be believed. Thus, these principles now involve two distinct propositional attitudes, to two distinct propositions—if you *believe* x and *entertain* y and y follows from x, then you should believe y.

In discussing other multi-attitude relations, he suggests a mixed principle called 'D, B, E-thoroughness'. According to the original version of this principle, if one believes x and wants y and entertains z, and z follows from x & y, then one must want z. In a footnote, Schick mentions that a reviewer of an earlier book showed this to be too strong, so he imposed an extra condition: z must follow from x & y and 'neither x nor any conjunctive component of x' may follow from z. However, this change seems to leave the principle too weak. x is logically equivalent to $(x \vee z)\&(x \vee \neg z)$, and one conjunctive component of this $(x \vee z)$ follows from z. Therefore, this newly modified thoroughness principle seems to never come into effect, unless the agent treats these two logically equivalent propositions differently. This rule is not itself endorsed—

instead, Schick suggests a modification he calls 'D, B, S-thoroughness', involving salience as well as desire, belief, and entertaining. This particular problem may not affect the new principle, but similar worries seem to apply. Most of his other rules seem not to be vulnerable to such a problem, though some seem excessively complex to be as basic as he suggests.

Because he thinks that many decision problems are best approached by considering the different propositions an agent may rationally take as salient in them, the particular multiple-attitude principles that he is most interested are those involving salience. In particular, if one desires *y* and believes that *y* reports the outcome of *x*, and holds *y* salient in doing *x*, then one should desire to do *x*. Although he suggests that the earlier principles were too strong for belief, it seems that he wants something like them for the logic of salience, so the modal logic involved may be relevant. However, there is an additional requirement that one not make distinct reportings of the same situation salient simultaneously, even though one may believe simultaneously that both correctly report the situation. By tying his decision principles to salience instead of belief, Schick aims to give a more faithful representation of ordinary action. His primary argument in favor of this position seems to be a challenge to the advocate of extensionality to show how ordinary praise and blame for actions and opinions can properly be accommodated without appeal to salience.

However, it seems to me that more effort could be put into an attempt to explain these things from within a more traditional framework. For instance, in the Orwell case mentioned earlier, one might be able to say that Orwell assigned some positive utility to shooting a fascist, but some greater negative utility to shooting a fellow creature. Orwell's original desire to shoot the man would thus be traditionally explained by the fact that he only saw the positive contribution to his overall utility, and not the negative contribution. Once he noticed the negative contribution, he (rationally) no longer wanted to shoot, and would not unless someone changed his values enough that the positive contribution would outweigh the negative. In chapter four, Schick shows that on his framework, such a change in values would not be needed—Orwell could (rationally) go back and forth in his decision as long as he kept changing between seeing the man as a fascist or as a fellow creature. The main virtue of this approach seems to be that Schick can give accounts of persuasion and weakness of will in ways that traditional decision theorists cannot. In addition, his account may be seen as more realistic in that it rarely requires ordinal comparisons between values, since only the values attached to salient beliefs matter, rather than the values attached to all beliefs.

However, it remains to be argued why it can be rational to ignore some of one's beliefs in making a decision like this, just because they are not salient. Perhaps this is just a matter of psychological limitations—it is easier for people to calculate using only a single value at a time, rather than combining separate ones, so they only use the salient one. But this is far from justifying the rationality of using only one belief, when two relatively simple ones are both

known. One may suggest, as Schick seems to on p. 72, that salience is necessary for relevance, but this is just to restate (without justification) the suggestion that only values attached to salient beliefs matter.

A full justification will most likely require detailed comparisons with more traditional theories, including a more formal spelling out of Schick's theory. The discussion in chapter six of his logic of propositional attitudes is an important start in this direction, but even here the principles are rarely given in full formality. Of course, traditional decision theorists rarely attempt anything at all in this direction, instead hoping that the logic of truth (or probability theory) will take care of most of these issues.

At any rate, whether or not the book gives a convincing argument for incorporating 'seeings' into decision theory, and whether or not he has given a complete enough account of the theory to compare the two, the individual chapters make many points that will be of interest to people working in this general field. In chapter two he examines the connections between decision theory and game theory, showing that depending on the way one relates decision-theoretic states and game-theoretic actions (of the other player), one can come to some usefully unorthodox conclusions about the Prisoner's Dilemma. Chapter three explains some phenomena observed by Kahneman and Tversky in terms of his seeings, which is a nice unification of seemingly disparate problems. His theory makes some more subtle distinctions than theirs and leads to some new conjectures, but at the price of being substantially more complicated than theirs. Chapter five shows how his logic of thought relates to the Surprise Examination Paradox, and draws connections between this paradox, Moore's Paradox, and some new puzzles for game theory. And throughout, he gives some very interesting accounts of situations in literature, from *Billy Budd* to *Anna Karenina* and *Ecclesiastes*. The primary claims of the book are not completely supported, but they provide an interesting viewpoint that seems to shed some light on many old problems.

KENNY EASWARAN
Group in Logic and the Methodology of Science
University of California at Berkeley
Berkeley, CA 94720
USA
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