**Pragmatic infallibilism**

(Pragmatic encroachment, infallibilism, and constructive accounts of rational choice)

**Abstract**

Infallibilism leads to skepticism and fallibilism is plagued by the threshold problem. Within this narrative, the pragmatic turn in epistemology has been marketed as a way for fallibilists to address the threshold problem. In contrast, pragmatic versions of infallibilism have been left unexplored. However, I propose that going pragmatic offers the infallibilist a way to address its main problem, the skeptical problem. Pragmatic infallibilism, however, is committed to a shifty view of epistemic certainty, where the strength of a subject’s epistemic state can vary depending upon the practical context. Pragmatic views of epistemic strength are quite radical so the argumentative goal of my discussion is argue for its plausibility, thereby arguing for the plausibility of pragmatic infallibilism. To do so, I discuss the role that the framing of decision problems and the construction of our deliberative attitudes have in our theories of rational choice. And I explore a way in which these necessary components of a normative theory of rationality can be used to motivate pragmatic views of evidential support. Finally, since the plausibility of our pragmatic account will depend upon the plausibility of a constructive account of rational choice, I conclude by comparing the adequacy of the constructive account with orthodox Bayesian and knowledge-based accounts.

The pragmatic turn in epistemology has been motivated, in part, by the challenges of developing a fallibilist epistemology.0F[[1]](#footnote-1) One of fallibilism’s central problems is to specify how strong one’s epistemic state must be for a true belief to count as knowledge. Labeled the threshold problem, the pragmatist proposes a threshold that suits knowledge’s role in deliberation.1F[[2]](#footnote-2) On this view, the threshold can shift depending on the subject’s practical situation. And pragmatists have argued that a shifty standard for knowledge is the best way for fallibilists to resolve the threshold problem.2F

While the benefits for fallibilism have been well-publicized, the benefits of going pragmatic for infallibilism have been left largely unexplored.3F[[3]](#footnote-3) In fact, Fantl and McGrath have gone so far as to characterize the theoretical landscape as a choice between the infallibilist’s skepticism and the fallibilist’s rejection of purism.[[4]](#footnote-4) However, this narrative fails to capture all the allures of the pragmatic turn. After all, pragmatic epistemologists develop theories of knowledge that capture knowledge’s practical role and value. And surely infallibilists can also be motivated by similar concerns.

The overarching aim of my discussion is to explore a pragmatic infallibilism. To this end, I will avoid detailed debates about how to characterize key concepts, such as infallibilism and evidence. Instead, I will sketch the outlines of just one version of the view. However, as I discuss below, the main obstacle for pragmatic infallibilism is its commitment to a radical view of evidence, which appears prima facie implausible. So within this exploration of pragmatic infallibilism, I will pursue the argumentative goal of motivating the view’s plausibility.

Section 1 sketches the outlines of a pragmatic infallibilism and shows how it deals with the skeptical problem. Section 2 discusses the account’s central difficulty, which is its commitment to a shifty view about measures of epistemic strength. While the view is radical, I argue for its plausibility in two stages. First, I appeal to the fact that any adequate theory of rational choice must provide an account of how we construct our deliberative judgments. And I show how this constructive account of rational choice can be used to make room for a shifty view of epistemic strength. Second, since the plausibility of our pragmatic view depends upon this constructive account, in section 3, I argue that this view of rational choice has advantages over competitors such as subjective expected utility theory and knowledge-based decision theory.

1. **Skepticism, pragmatic infallibilism, and a pragmatic view of epistemic chance**

The core tenant of infallibilism is that knowledge is incompatible with the possibility of error. Infallibilists claim that if one knows that p, then one’s belief that p could not be wrong. Of course, specifying the sense in which this belief could not be wrong leads to competing definitions of infallibilism.5F[[5]](#footnote-5) Given my exploratory aims, let us work with the infallibilist doctrine that if S knows that p, then there is zero epistemic chance for S that not-p. [[6]](#footnote-6) In other words, knowledge entails epistemic certainty.6F Further, let us assume that p is epistemically certain for S just in case S’s evidence is incompatible with not-p (i.e. rules out all not-p possibilities).7F[[7]](#footnote-7) So when all alternate possibilities can be ruled out, the subject is epistemically certain.8F

An anti-skeptical, pragmatic version of infallibilism is committed to two additional theses. First, one can be epistemically certain about many “ordinary” propositions (e.g. that I live in the US). Second, practical factors can affect whether p is epistemically certain for a subject. For example, in a low stakes, low risk situation where I am going across the street to return something to a neighbor, it may be epistemically certain for me that I turned off the oven. In this case, my evidence (e.g. that I turned the knob all the way clockwise) can rule out every relevant alternative. However, in a higher stakes and higher risk situation where I am leaving for a weekend trip, there may be a non-zero epistemic chance that I failed to turn off the stove. For example, the same evidence may fail to rule out some alternatives or doubts (e.g. that I turned the wrong knob, that I turn the knob the wrong way, or that the knob was loose and not working properly). To be certain, I should have tried the knob again and opened the oven to double-check.

This shifty view of epistemic certainty allows the pragmatic infallibilist to avoid skepticism by allowing one to be epistemically certain even though one’s evidence cannot rule out every conceivable or logically possible alternative. Of course, a fully developed view will have to specify which possibilities are relevant and do so in a way where epistemic certainty still entails truth. I sketch one approach in section 2.

These commitments outline one version of an anti-skeptical, pragmatic infallibilism. The result is a unique account of knowledge. Most pragmatic accounts embrace a view where the practical encroaches on the epistemic by determining what counts as knowledge-level justification. In contrast, pragmatic infallibilism proposes an invariant standard. Knowledge always requires epistemic certainty. Instead, what can vary from one practical context to the next is whether one’s epistemic state underwrites certainty.

This latter commitment to a pragmatic view of epistemic chance is quite radical and is, to my mind, the main reason why pragmatic infallibilism has been largely unexplored.9F[[8]](#footnote-8) The following consequence of the view illustrates some of its oddities. Epistemic certainty is an upper bound on measures of a subject’s strength of evidence. So, if practical factors encroach on epistemic certainty, then practical factors would thereby encroach on measures of evidential or epistemic strength. But if we allow for the latter, we are left in a puzzling situation where we may be unable to be differentiate the epistemic from the practical. Practical factors are often characterized in contrast to truth-relevant factors, which are those that affect the likelihood of a proposition.10F[[9]](#footnote-9) However, if measures of evidential strength depend upon practical factors, there is an open question of whether we can make sense of the “likelihood of a proposition” in a purely epistemic or truth-relevant way.

To further clarify what this commitment amounts to, it may be useful to contrast this pragmatic view of epistemic chance with two nearby pragmatic views. The first view, dubbed credal pragmatism by Jie Gao, is the view that rational degrees of belief are sensitive to practical factors.[[10]](#footnote-10) While this view is compatible with a pragmatism about epistemic chance, they explicate different epistemic concepts. Credal pragmatism is concerned with rational degrees of beliefs whereas the proposed view is about epistemic chance (e.g. evidential probability). Of course, credal pragmatism can entail pragmatism about epistemic chance if one embraces an additional thesis, such as the claim that degrees of belief ought to cohere with evidential probabilities. However, these two views are typically viewed as competitors. As Gao (forthcoming: 2) notes, credal pragmatism “implies the violation of widely accepted evidentialist norms.” One way to situate Gao’s view is by thinking about how much pragmatic encroachment one is willing to embrace. Many pragmatists try to limit the relevance of practical factors and do so by limiting the role of practical factors to determining thresholds for knowledge, rational belief, etc. Gao explicitly goes further than this by arguing that practical factors can determine which degree of belief is rational.

The second view is Andy Mueller’s pragmatic account of strength of reasons. Mueller’s view is the closest to my own and offers, to my knowledge, the most thorough discussion of the type of pragmatic account I have in mind. Mueller clearly goes one step further than Gao by proposing that the strength of reasons for one’s beliefs and degrees of belief is also sensitive to practical factors. While Mueller is somewhat agnostic about whether his view entails pragmatic encroachment on evidence, let us suppose, for the sake of discussion, that it does.[[11]](#footnote-11) I nevertheless think that there is one important difference between my discussion and his. Both Mueller and Gao situate their claims within the framework of bounded rationality. Mueller (2021:149-55) notes that belief is an attitude needed to simplify inquiry due to our cognitive limitations. Since the focus is on analyzing how we evaluate the strength of reasons for believing, and the whole point of believing is for practical simplification due to resource constraints, then this account of strength of reasons is firmly situated within a theory of bounded rationality. In contrast, my discussion of strength of evidence is not limited to bounded rationality, understood as rationality under constraints. When I talk about strength of evidence, I am not merely talking about the strength of evidence for practical simplifications. Rather, I am also interested in how measures of strength of evidence are relevant for the understanding of optimal choice.

The extremism of this position is evident in its conflict with some simple intuitions. When the information a subject possesses remains fixed, then the strength of the subject’s epistemic state should also remain fixed. For example, if two individuals, who are wholly ignorant of what is in an opaque box, are told that it contains either $1 or $10, then this presumably entails that the strength of their epistemic states with respect to the proposition that the box contains $1 (or that it contains $10) is equal. Pragmatic infallibilism with its commitment to a pragmatic view of epistemic chance claims that this is not necessarily the case. Varying the practical situation of the two subjects could make it that the epistemic chance that the box contains $1 could be different between the two subjects. For example, given the practical situation, one individual may no longer know that they have been told the truth. Thus, I believe that the first and most important step in the exploration of pragmatic infallibilism is to cast some doubts about the purist view of epistemic chance. By doing so, I hope to make room for the plausibility of these radical pragmatic views.

My ambitions are limited to and focused on arguing for the plausibility of this pragmatic view, And so to accomplish this, I would like to shift the focus to discuss normative theories of rational choice. In what follows, I will turn to summarize some problems, which I have discussed at length elsewhere, with the orthodox picture of rational choice presented by subjective expected utility theory (henceforth SEU).[[12]](#footnote-12) Addressing these problems will require that we adopt a constructive decision theory. And I explore how this alternative approach to normative theories of rational belief, desire, and preference might be used to raise doubts about the orthodox view of evidence and make room for a shifty, pragmatic view of epistemic chance. Within this constructive framework, I will also sketch the outlines of a pragmatic infallibilism.

1. **The constructive view of rational choice and the contextuality of evidence**

Pragmatic epistemologies are typically motivated by the desire to develop an account of knowledge that properly captures its role in deliberation and choice. Many have noted that knowledge appears to play a central role in justifying our actions and underwriting our deliberative activities. For example, when asked why you went to the mall instead of the beach, you might assert that you knew that the beach was incredibly busy. Here, you appeal to what you know and presume that while deliberating you are justified in relying on what you know. To adequately capture this practical role, pragmatic epistemologies are typically developed hand in hand with a normative account of practical reasoning or rational choice. The literature has largely appealed to either a reason-theoretic or decision-theoretic account of deliberation and choice.[[13]](#footnote-13) My exploration will follow the decision-theoretic approach.

I start with the normative interpretation of SEU, which states that the preferences of a rational agent ought to be coherent. Coherence here requires that one’s preferences adhere to a ranking by subjective expected utility. Though I will take the standard postulates of rational choice for granted, amendments to the orthodox view must be made due to its problematic empirical assumptions. As Glenn Shafer notes with respect to Savage’s version of SEU, “Savage’s argument for the normativeness of his postulates cannot be made without assumptions that have empirical content, and what we have learned in the past three decades refutes these assumptions.”[[14]](#footnote-14)

For my purposes, the most significant and relevant lesson from the empirical research on choice behavior is that the way one frames a decision problem can affect how one evaluates that decision problem.11F[[15]](#footnote-15) Most famously, the preference reversal phenomenon highlights the fact that different ways of eliciting preferences can prime different ways of framing the same choice. And so different elicitation procedures can result in conflicting preferences. For example, when considering the same pair of lotteries, A and B, if one elicitation method makes the probabilities salient while another makes the comparative payouts salient, then many express a preference for A over B relative to one method and a preference for B over A relative to the other method. 12F[[16]](#footnote-16) Shafer summarizes these findings as “the most fundamental result of three decades of empirical investigation. The preferences people express are unstable. They depend upon the questions asked.”[[17]](#footnote-17) Fischer et al. (1999: 13) write that from the point of view of traditional economic theory, decision analysis, and other management science disciplines, it is “[assumed] that people have rational preferences”; in contrast, “behavioral decision research suggests an alternative view, according to which people construct preferences as they are needed.” So we should not assume that people always possess the necessary beliefs, desires, and preferences. They are often constructed.

This empirical discovery poses a foundational challenge to the orthodox normative account of rational choice. [[18]](#footnote-18) SEU presupposes that we possess preferences and that the principles of rational choice are merely principles of coherence. However, if we often lack preferences and need to construct them on the fly, then the postulates of SEU and its accompanying expected utility ideal fail to provide a complete account of rationality.[[19]](#footnote-19) Thus, the upshot is that every adequate theory of rationality *must* include principles that govern how we ought to construct our preferences. Following Shafer, call such an account a *constructive decision theory*.[[20]](#footnote-20) This constructive account of rational deliberation acknowledges that the beliefs, desires, and preferences needed to deliberate are often constructed. So, even a normative account must articulate the principles that govern the construction of rational belief, desire, and preference. Of course, many have already recognized one constructive task of decision making: how to appropriately frame decision problems. And in section 3, I will return to this topic, arguing that our constructive approach is best suited to explain how this task can be accomplished.

As an aside, it is worth acknowledging the long and rich history of discussion in choice behavior research about the descriptive laws governing the construction of our preferences.[[21]](#footnote-21) And more philosophical discussions on context-sensitive and constructive accounts of belief and degrees of belief have joined that conversation.[[22]](#footnote-22) However, my claim here is not about descriptive theories of belief, desire, and preference. Rather, the focus is on normative theories.

The normative theorizing of the constructive approach is relevant for my discussion because, from this perspective, the framing of decision problems plays a central role in how we construct rational beliefs and desires. And since rational beliefs must be proportionate to evidence, this suggests that the framing of decision problems may play a central role in evaluating evidence. More specifically, I propose that once we consider deliberation from the constructive point of view, we will observe that the assumptions one must make in order to engage in inquiry can alter what *counts as favoring evidence*. As a result, the strength of one’s evidence for a proposition p and so the epistemic chance that p can vary depending on features of the deliberative context. To make a case for this, I want to use a case study to show that we can distinguish the information a subject possesses from the information that counts as favoring evidence. This will raise doubts about the intuitive fixed view of evidential strength. And if the framing of inquiry can alter what information counts as favoring evidence for a given proposition, then the pragmatic view of evidence will become much more plausible.[[23]](#footnote-23)

**2.1 Doubts about the fixed view of evidential strength.** For now, I will use the following example to motivate the intuition that the information one possesses can be evaluated differently depending upon features of the deliberative context. And to help focus the discussion, let us work with the probability raising notion of evidential support where some information Q will count as favoring evidence for P just in case p(P|Q)>p(P). My proposal will be that, by adopting a constructive approach, we can make room for the context-sensitive ways in which decision makers identify what is relevant for inquiry. And this type of shiftiness makes it plausible that practical factors can affect the evaluation of evidence.

Consider the simple decision of betting on a coin flip. You can bet on heads or tails with equal payouts. So, to determine which choice is best, you must evaluate the relevant likelihoods. For the moment, assume that you will be allowed to ask questions, knowing that you will be given true answers, but your questions must only concern the outcomes of the coin’s previous flips. You cannot, for example, ask questions about the physical make-up of the coin.

In this situation, how do you determine what information about the previous flips is relevant for evaluating the likelihood of heads or tails? In other words, how do you determine what counts as evidence for either outcome? Given our artificial set up, the information that counts as relevant corresponds with the questions that are deemed relevant. So, let us consider a few ways of approaching this issue.

**Fair coin assumption.** On the simplest approach, one assumes that the coin is fair. Given this assumption, no questions need to be asked and any information about the previous coin flips is irrelevant. There is an equal chance that the coin will lands heads or tails. Therefore, no information about the previous flips counts as evidence for either heads or tails.14F

**Independence assumption.** Knowing little about the coin, this assumption may appear unwarranted. If one leaves open the possibility that the coin is biased, it would be relevant to inquire about the ratio of heads to tails in the previous coin flips. If a large and statistically significant percentage of the previous flips came up heads instead of tails, this would provide evidence that the next flip will land heads instead of tails. After all, even in real life cases, how you flip a coin can alter the likelihood of heads and tails.[[24]](#footnote-24)

**Far-off possibilities.** By countenancing the possibility of a biased coin, information about the ratio of heads to tails becomes relevant and can count as evidence. But if this more open-minded approach seems natural and justified, then why stop there? In addition to information about the ratio of heads to tails, why not also ask about the order of outcomes? What if there was a long sequence in which heads was more likely followed by an equally long sequence in which tails was more likely? Or what if there were strange patterns in the order of outcomes? Would this additional information about the order of heads and tails be relevant? Normally, such information would not count as evidence for or against either outcome because even with the possibility of bias, we typically assume that coin flips are statistically independent. However, this possibility cannot be ruled out.

Even in real life cases, one presumably adopts this assumption as a mathematical simplification. After all, if you knew how to produce a biased coin “flip”, as would be the case if you spun an American penny on a table, then you could simply change the flipping method if the outcomes matched a certain pattern. And one could imagine that the flipper simply considers a certain number of the previous flips to determine the flipping method. In this case, one would want to know how many flips are being considered since that would determine how long of a sequence of flips should be considered. Perhaps the order in a sequence of ten flips is relevant or a sequence of a million flips.

The questions need not stop there. I artificially restricted the case by restricting the types of questions one could ask. But if those restrictions are eliminated, then more outlandish possibilities could be considered. Perhaps the color of the coin is relevant and could count as favoring evidence. Perhaps the outcome of a basketball game is relevant? So how does one determine which questions are relevant and what information counts as favoring evidence? Of course, I am not claiming that, given our current background information, learning about the color of the coin would alter our probabilities. Rather, the question is whether to even allow for the possibility that there is a correlation between the color of the coin and the outcome of the coin flip. By doing so, one leaves open the possibility that this is something one could learn about.

**2.2 Restricting relevance.** There are several reasons to think that any well-formed inquiry must proceed on the basis of assumptions that restrict what counts as evidence.[[25]](#footnote-25) First, skeptical possibilities, if countenanced, would undermine the evidential support given by most every answer to any question. No information would count as favoring evidence. Consider the possibility that an evil demon is going to intervene in the next coin flip. Assuming that the details are filled in appropriately, it would be practically impossible to possess any evidence for or against this possibility. And if this possibility is countenanced, then no information about the previous flips would count as evidence in favor of either outcome.

Second, it would be practically impossible, even with all the resources one could theoretically muster, to consider every possibility.[[26]](#footnote-26) Imagine training a neural net to predict the outcome of the coin flip. Which variables should be incorporated into the data set? Given the infinite number of variables one could consider, all the computing power in the universe would be insufficient. So even if it would make sense to talk about some measure of evidential strength over the whole space of logical or conceivable possibility, it would be impossible to know anything about it.15F More importantly, we would not be able to provide a reasonable approximation of a subject’s strength of evidence. As a result, it is doubtful that this ideal could be a normative ideal for human beings.[[27]](#footnote-27) After all, if the concept of evidential strength is meant to be action guiding, what purpose could this measure serve if we could not even approximate it?

Let me summarize the case thus far. The framing of decision problems is a necessary feature of human deliberation. Part of this task is to restrict what information is considered relevant, which thereby limits what counts as favoring evidence. Only by doing so does it becomes possible to talk meaningfully about epistemic chance. So, from this constructive point of view, our normative theories of rational choice must incorporate principles that govern how we limit what information counts as relevant. This leaves us with an important question: how can and should our inquiries be framed to limit what information is relevant?

One might appeal to what we know or rationally believe. The knowledge-based approach to decision theory will be further discussed in section 3. But, for the moment, let me raise some simple doubts about the two approaches. First, since what one knows and rational believes is a function of strength of evidence, this approach would be susceptible to circularity or bootstrapping concerns. For on this approach, what one knows or rationally believes would determine what counts as favoring evidence which then determines whether one is in a position to know or rationally believe. Second, neither knowledge nor rational belief appears to be sufficiently discriminating. For example, in the coin flip case, even if you consider your past experiences with ordinary coins, you neither know nor are rational in believing that the coin flips are independent. Given the state of ignorance, you would still be left with an overly rich set of possibilities to consider.

 Since neither knowledge nor rational belief can be appealed to, how can one frame an inquiry to determine what counts as favoring evidence? The lack of options presents an opportunity for the pragmatist to develop a new under-determination argument. Just as under-determination arguments are used to motivate pragmatic accounts of fallibilism and theory choice, there is space to develop an under-determination argument in favor of a pragmatic account of evidential support. Since the information one possesses under-determines what counts as favoring evidence, then practical factors could potentially play a role. While I have not argued for this claim, I hope to have shown that once one adopts a constructive approach to rational choice, the pragmatic view of evidential support becomes much more plausible.

**2.3 Plausibility Judgments.** I will return to discuss constructive decision theory in section 3 as I further argue for the plausibility of the pragmatic view. However, before we do so, it will be useful to see how one might develop a pragmatic account within this constructive framework. When engaging in inquiry, decision makers often make assumptions about what is and is not plausible. And importantly, plausibility does not directly correlate with probability.1 For example, winning a lottery is improbable but not implausible since everyone has an equally low chance. In addition, what counts as implausible does not coincide with what one’s knowledge can rule out. For example, I may think it implausible that an earthquake of magnitude 8 or greater will hit California this year, but I certainly do not know that this event will not occur. So, at first glance, plausibility judgments appear to have some degree of independence from probability judgments and knowledge.[[28]](#footnote-28)

To see how plausibility judgments might play a role in framing inquiries, consider the low stakes situation where you are betting $1 on our coin flip. You may find it implausible that the coin’s flips could be dependent. The nature of the practical situation lends itself to this simplification. After all, who would go through the trouble for such a low stakes bet? However, if the stakes were extremely high (e.g. someone’s life is at stake), then perhaps you ought to reconsider what is plausible. Here, the suggestive thought for the pragmatist is that epistemic certainty only requires that one be able to rule out all plausible alternatives. And the view is pragmatic because judgments of plausibility may be sensitive to practical factors.

To further develop this idea, observe that plausible alternatives naturally correspond to the doubts that are relevant to an inquiry. For example, if it is plausible that a broken sprinkler sprayed water all over the street, then I should eliminate the associated doubt before believing, on the basis of seeing water all over the street and sidewalk, that it rained last night. This connection between plausible alternatives and relevant doubts serves as a bridge to Cartesian infallibilism. Descartes suggested that epistemic certainty requires the removal of all doubts which are *properly raised*.[[29]](#footnote-29) And while the special inquiry of the Meditations required metaphysical certainty, our day-to-day deliberations only require moral certainty, which is “sufficient certainty for application to ordinary life.”19F[[30]](#footnote-30) Importantly, moral certainty is compatible with the fact that one cannot rule out conceivable alternatives. So taking inspiration from the Cartesian distinction between types of certainty, different sets of doubts (and so different assumptions of what is and is not plausible) can be deemed appropriate for different deliberative contexts. Alternatively, a different threshold of plausibility might be deemed relevant for different inquiries. Of course, to pursue this type of view, we would need an epistemology of plausibility.[[31]](#footnote-31)

While pursuing this line of exploration further would lead us too far astray, it must be noted that all actualized possibilities should deemed as plausible. This is necessary for a shifty account of epistemic certainty to entail the truth. For example, consider the situation above where I come to believe that it rained last night. However, suppose my neighbor woke up extra early and hosed down both the sidewalk and street. If this possibility is not countenanced as a plausible one, then it can be false but epistemically certain for me that it rained last night. Therefore, all actualized alternatives must be countenanced as plausible if epistemic certainty is to entail the truth.

**2.4 Constructing probabilities.** Plausibility judgments play a role in restricting which possibilities are deemed relevant. But how should one construct probabilities over this space? For my purposes, the discussion will not depend upon any detail account of the construction of probability. However, it might be worthwhile to summarize the constructive approach detailed in Tversky and Shafer (1985). They write,

The weighing of evidence may be viewed as a mental experiment in which the human mind is used to assess probability much as a pan balance is used to measure weight. As in the measurement of physical quantities, the design of the experiment affects the quality of the result.[[32]](#footnote-32)

Consider a simple example. As I am sitting at the park, I see John walking and wonder, what is the probability that he will step onto the road with his right foot rather than his left? To answer this, I ask myself what the plausible explanations could be. Suppose I ignore all external causes and focus on the reasons or desires that would motivate John to perform one or the other action. Considering the relevant evidence, I may then conclude that I know nothing about him that would suggest that he desires to use one foot or the other. Thus, using my evidence to develop a simple causal model that would predict his behavior, I judge that John’s use of his right or left foot is produced at random and assign both events an equal probability.

There are a variety of mental experiments that one could use and as Shafer and Tversky point out, the appropriateness of an experiment depends upon the case and evidence at hand. Above, judgments of plausibility helped us identify what information is considered as relevant evidence. But there are other important aspects of conducting these mental experiments. First, in conducting these experiments, one is constructing rather than eliciting the relevant probabilities. Second, one’s evidence should be used to fit the case at hand to a canonical example involving probabilities. When assigning quantitatively unique probabilities, the frequency, propensity, and betting interpretations of probability supply some canonical examples. The frequency interpretation proposes that we “compare our evidence to the scale of chances by asking how often, in situations like the one at hand, the truth would turn out in various ways.”[[33]](#footnote-33) The propensity interpretation proposes that we interpret “the evidence in terms of a causal model and then [ask] about the model’s propensity to produce various results.”[[34]](#footnote-34) The betting interpretation proposes that we “[assess] our willingness to bet in light of the evidence.”[[35]](#footnote-35) In our example above, we appealed to the propensity interpretation and used our evidence to develop a causal model to identify the relevant probabilities.

As Shafer and Tversky (1985) note, how the design our mental experiments will depend upon the language of probability one uses. This discussion focused on designs that fit a Bayesian language. But the case at hand may not always fit well with this approach. And Shafer and Tversky also explore how a different language (e.g. Dempster-Shafer belief functions) can lend themselves to different designs for mental experiments. While brief, this account helps to characterize the epistemic activity of constructing probabilities. And the resulting shifty view of evidence is one where what information functions as evidence depends upon one’s deliberative activities, part of which includes the construction of probability judgments (or whatever plays the role of assessing uncertainty).[[36]](#footnote-36)

1. **Constructive decision theory and theories of rational choice**

I have now sketched the outlines of a pragmatic infallibilism and identified the main obstacle for the view, a commitment to a radical pragmatic view of epistemic chance. To argue for the plausibility of this position, I discussed normative theories of rational choice and appealed to the claim that any adequate normative theory must articulate principles that govern the construction of rational belief, desire, and preference. I then proposed that once we adopt this constructive perspective, it becomes plausible that strength of evidence is sensitive to practical factors.[[37]](#footnote-37) Since the argumentative goal is to advocate for the plausibility of pragmatic infallibilism, and since the argument for its plausibility depends on the viability of the constructive account, I would like to conclude the discussion by contrasting this approach with a few prominent alternatives. The reason for doing so is that one might think that these alternatives can also provide an adequate normative account of constructing rational beliefs, desires, and preferences. But as I hope to show, these alternatives cannot even provide plausible principles governing the framing of decision problems.

Given my concerns, the scope of discussion will be quite limited. I will restrict my comparison to two challenges that are connected to the general challenges we face when constructing rational preferences. And to consider an alternative from the orthodox account, I will also discuss knowledge-based decision theory (henceforth KDBT).[[38]](#footnote-38) KBDT is also of particular interest here because it is typically associated with infallibilist epistemologies. Moreover, the knowledge-based approach can be seen as a type of constructive approach. However, I will argue that it imposes unsatisfactory constraints on the construction of preference.

**3.1 Subjective expected utility theory.** On the orthodox normative account presented by SEU, a choice is rational just in case it maximizes subjective expected utility. As a corollary, SEU requires that our beliefs, desires, and preferences be representable by a probability, utility, and probability-weighted utility function. And this ideal serve as a coherence constraint on the judgments that are used to deliberate.

SEU accurately identifies that rational choice is sensitive to the subject’s own epistemic state. If a fair coin has already landed heads but I know nothing of the outcome, then it still rational to bet on either heads or tails. The objective facts and probabilities do not determine what it is rational to believe and do. Of course, a common criticism of the view is that these coherence constraints on their own are much too weak. One’s beliefs can be representable by some probability function but still fail to have properly responded to one’s evidence. For example, in the coin flip, believing that heads is twice as likely as tails, I may choose heads. While my beliefs, preferences, and choices meet the coherence constraints, they appear to be irrational if I have evidence that the coin and flip are perfectly normal. These probabilities fail to be responsive to the available evidence.[[39]](#footnote-39)

Another problem – and this will be the main focus of our discussion – is that the theory offers no guidelines for the framing of our decision problems. The general problem is that some framings are inappropriate. For example, one may fail to identify everything of relevance. One may misrepresent the problem. Of course, decision theories make clear what criteria a decision table must meet to count as an appropriate framing. And different theories impose different constraints. On Savage’s (1954) original framework, the only objects that get assigned probabilities are states of the world. Beliefs are not defined over the acts and consequences. One consequence of this is that the probabilities of states must be independent of the acts. Suppose that you are deciding between going to the movies or the park with a friend. And you frame your decision problem as follows:

|  |  |  |
| --- | --- | --- |
|  | *Friend goes to movies* | *Friend goes to park* |
| Go to movies | Movies with friend | Movies alone |
| Go to park | Park along | Park with friend |

Table 1: Violation of act-state independence

If you are making this decision together, then this framing violates act-state independence since you and your friend are making the choice together so your choice will affect your friend’s actions. As a result, Savage’s theory cannot be used in conjunction with this representation of the choice problem.

While the theory imposes clear constraints, it offers no guidance for modeling your decision problems in a way that meets these constraints (e.g. act-state independence).[[40]](#footnote-40) And in some cases, it might be quite difficult to meet all the criteria. In response, less restrictive decision theories have been adopted that allow for act-state dependence. For example, Jeffrey’s evidential decision theory and Lewis’ causal decision theory both allow for act-state dependence though they differ on which probabilities are relevant.[[41]](#footnote-41)

One might think that the task is to simply develop a decision theory that only imposes criteria that can be easily satisfied. The hope is to find, what Richard Bradley (2017) calls, a “representation tolerant theory” that allows for a variety of different framings of decision problems. By doing so, then the remaining challenge would be to construct probabilities that are responsive to evidence. Unfortunately, these two challenges are not independent of each other. Loosening the framing criteria typically makes it harder to construct rational probabilities and utilities. And in some cases, this task can become practically impossible for human agents.

To see why, let us consider how to characterize the consequences of actions in a decision table. Given the separation between states and consequences on Savage’s theory, belief and value must be separable. In (Table 1), suppose that one only prefers going to the movies with a friend if the movie is an action movie. However, you would much rather watch a horror movie alone because you would be embarrassed by your reactions. Given these preferences, the table inappropriately identifies the consequences. Going to a movie with a friend is not really a consequence. Instead, it is an act with the consequences of having a pleasant movie watching experience if you watch an action movie and having an embarrassing movie watching experience if you watch a horror movie. Thus, the utility of a movie with a friend is really an expected utility.

Again, one can simply remove this restriction and acknowledge that belief and desire are not separable. For example, since probabilities and utilities are defined over a single set of objects in Jeffrey’s decision theory, one may use any proposition whatsoever as a consequence. Thus, it becomes easier to frame one’s decision problem in an appropriate way. Richard Bradley writes, “the fact that Jeffrey’s theory imposes much weaker requirements on the framing of decision problems is [his] primary reason for preferring [Jeffrey’s] framework to Savage’s for developing a theory of decision with a human face”[[42]](#footnote-42) Unfortunately, while removing these restrictions makes it easier to appropriately frame one’s decision problem, it also becomes difficult to ensure that one’s constructed utilities are truly rational. For Jeffrey, the utility of any proposition is, in fact, an expected utility given the truth of the proposition. This addresses the problem with using the consequence of going to watch a movie with a friend. The trouble is that if one is truly rational, then coherence demands that the utility assigned to this consequence cohere with the right expected utility, which accounts for the likelihood of watching different types of movies along with the utility of doing so. Of course, these latter utilities are also expected utilities and so forth and so on. So constructing a rational utility requires a large amount of coherence. At the very least, this is in tension with the constructive approach and at worst, it is practically impossible.[[43]](#footnote-43)

Thus, the orthodox decision-theoretic account faces two challenges accounting for the construction of rational preference. And these challenges cannot be addressed independently. The overall task is to develop a theory that can guide the construction of rational beliefs, desires, and preferences. And guiding the framing of decision problem (i.e. the construction of appropriate decision tables) is an integral component of an acceptable normative account of rational choice.

**3.2 Knowledge-based decision theory**. It has been suggested that knowledge plays a central role in a theory of rational choice and appealing to what we know can address the two challenges. Knowledge can be used to specify a standard for appropriately constructing decision tables. And if knowledge equals evidence, then the relevant probabilities (i.e. evidential probabilities) are those that are conditional on one’s total knowledge.[[44]](#footnote-44) Unfortunately, there are problems with these knowledge-based solutions.

First, the knowledge-based account does not always ensure that that rational belief is appropriately sensitive to evidence. And here, I will simply summarize a few critiques that have already been raised for KBDT. Fassio and Gao (2021) note that knowledge-based decision theories do not always do better than subjective decision theories in ensuring that deliberating subject are sensitive to evidence. They describe an example where Grace is searching frantically for her keys in the dining room. The keys are, in clear sight, on the dining table. And further suppose that Grace has ruled out many of the other possible locations. Yet because she fails to form any new beliefs, she fails to know that the keys are on the table. And so it is compatible with what she knows that the keys are anywhere in the room. Furthermore, Grace’s probability that the keys are on the table condition on her total knowledge remains low so she should continue searching. The lesson here is that what counts as evidence is typically more than what is known, and so KBDT presents too restrictive of a view of evidence.

Alternatively, Comesana (2020) has argued that knowledge-conditional probabilities are not always appropriate ways of measuring strength of evidence because there are instances where knowledge should not be counted as evidence. For example, he notes that ampliative inferences can produce knowledge (e.g. coming to believe that someone committed a crime). But, in many cases, it would be inappropriate to then treat the conclusion of this inference as evidence. And in the case of knowledge-based probabilities, one should be certain in this proposition. So KBDT also offers too loose of a view of evidence.

Even if one could address these worries, there is a more important problem. KBDT cannot articulate how knowledge provides an adequate standard in the construction of our decision tables. Once these standards are made explicit, it will become clear that they are either incomplete or they over-intellectualize the nature of rational choice. For example, consider Brian Weatherson’s (2012: 77) principle that “it is legitimate to write something on the decision table iff the decision maker knows it to be true.” How might one apply this principle? Suppose I am going on a picnic with friends. And I characterize my choice problem with the following decision table:

|  |  |
| --- | --- |
|  | *Actual world* |
| Buy a bathing suit | Own a bathing suit |
| Buy a tennis racket | Own a tennis racket |

Table 2: A simple framing under certainty

The principle clearly governs whether I can write each consequence down. And I can write down that I will own a bathing suit just in case I know that each consequence will be true if I perform the action of buying a bathing suit in the actual world.

But how can this principle govern the identification and description of the available actions? Obviously, I should not know that I purchased a bathing suit. Perhaps, I need to know that each act is, in fact, available; it is within my power to perform. That may address the question of whether one has characterized that act appropriately, but there are other criteria that must be met for the identification of the available acts. I have characterized our decision problem in an appropriate way only if I have identified all the available options. Suppose I described my problem in this way because I knew that I only had the money to buy one or the other. This explains why I did not consider the act of buying both a bathing suit and tennis racket. Applying Weatherson’s principle, would the agent have to know that the set of available acts was complete? What exactly must one know? Without restricting the scope of this principle, one would have to know that one’s decision table meets all the relevant criteria.

 If decision makers are required to know that their framings are appropriate, the resulting view is an overly demanding view of rational choice. For example, on Savage’s theory, value must be separable from belief. So my simple framing may not have been appropriate. Suppose the consequence of owning a bathing suit is really an “act” that has the consequence of a refreshing swim with friends if the weather is nice during the picnic and the consequence of sitting on the sidelines while one’s friends play tennis indoors if the weather is not nice. The original framing is inappropriate because the value of possessing a bathing suit is not independent of what I believe. Since the utility of possessing a bathing suit is really an expected utility, it will depend, in part, on the likelihood of good or bad weather. So, I should have framed my problem in the following way.

|  |  |  |
| --- | --- | --- |
|  | *Good weather* | *Not good weather* |
| Buy a bathing suit | Refreshing swim with friends | Sitting alone while friends play tennis |
| Buy a tennis racket | Sitting alone while friends take a swim | Enjoyable game of tennis with friends |

Table 3: A refined framing

What is it that I failed to know about the consequences in Table 2? And what should I know about the consequences in Table 3? It is not enough to know that each consequence is the outcome of performing some act given some state of the world. Must the decision maker also know that the utility of each consequence is state-independent?

Characterizing the exact problem with these knowledge norms will depend on the theory that one appeals to. But the general problem will remain. For one’s framing of a decision problem to be appropriate, it will have to meet certain criteria. The knowledge-based approach seems to require decision makers to know that their framing meets these criteria. But clearly, the resulting view of rationality is too demanding as most agents will fail to meet these requirements. In reply, one might propose that that these knowledge-based principles only govern knowing that certain propositions in the decision table (e.g. that an act & state entail a consequence) are true. The problem then is that KBDT is incomplete, and rational choice is not merely “knowledge-based”. It is worth noting that the same exact challenges apply to any belief-based approach. After all, this approach would require that decision maker possess an overly complex set of rational beliefs about their decision problems.

**3.3 Constructive decision theory.**

The challenge is to develop an account of rational choice that specifies appropriate norms for framing decision problems, which is integral in constructing rational beliefs, desires, and preferences. The subjective Bayesian account fails to ensure that rational beliefs are adequately sensitive to evidence but, even if one could address that worry, it then fails to provide any guidelines that would ensure decision problems and preferences are appropriately constructed. Knowledge-based decision theories offer a knowledge-based account of rational probabilities. And independently of the well-known problems with this approach, we more problematically found that such accounts run into insuperable difficulty when generalizing to all aspects of framing decision problems.

The general lesson from the failure of the knowledge-based approach is that one cannot require that the decision maker believes or knows that the criteria are satisfied. We need a more open and pluralistic view of the construction of rational preference. And decision makers should not be required to possesses any beliefs about the adequacy of a decision frame. Instead, as I will suggest, there are ways to ground the construction of rational preference that can serve double duty by helping to frame our decision problems and construct rational preferences. The second lesson, as our previous discussion has suggested, is that the construction of rational preference is sensitive to the deliberative context of the subject.

To offer an example of how this context-sensitive, constructive approach might address these challenges, I want to explore one approach to the identification of consequences and the construction of rational desires. One natural approach to decision making is to be driven by one’s goals.[[45]](#footnote-45) Consider the previous problem of deciding what to buy for a picnic with friends. I encountered the difficulty of characterizing the consequences appropriately. But suppose that I am pursuing the goal of spending as much time together with my friends and that is all that I care about. I can use this goal to not only identify appropriate consequences but also construct the relevant desires. First, the relevant consequences are simply those that describe the outcomes of the available actions in a way that is relevant to the goal at hand. So, for the purposes of my inquiry, I do not care about a refreshing swim or playing tennis. Rather, I simply care about spending time with friends. Thus, if I understand this goal in a fairly simple way, I might then describe our decision problem in the following way:

|  |  |  |
| --- | --- | --- |
|  | *Good weather* | *Not good weather* |
| Buy a bathing suit | 1 hour activity with friends | Sitting alone for 2 hours |
| Buy a tennis racket | Sitting alone for 1 hour | 2 hour activity with friends |

Table 4: Goal-based framing of consequences

Furthermore, these goals can help identify the desirability of the outcomes. For I can rank the outcomes in terms of how well they meet my goals. And in this simple case, I can easily rank the outcomes relative to the goal. It is important to note that goal-based consequences and desires are respectively comprehensive and state-independent. They are comprehensive because they characterize everything that matters to that decision problem and, as a result, they are state-independent.

This context-sensitive approach is more pluralistic and less demanding. The strategy is quite simple. There are certain judgments (e.g. goals) that ground the construction of rational beliefs and desires. These judgments restrict what counts as relevant so as to ensure that the decision maker has identified everything of relevance. They also help to construct rational beliefs and desires (e.g. probabilities and utilities). Of course, one feature of this approach is that what counts as rational becomes deeply context-sensitive. And the obvious objection is that the result is an overly permissive view of rationality. I respond to this worry in Kim (2014) but let me close with a brief observation.

By thinking of each assessment of rationality from the perspective a distinct “context”, a context-sensitive account of rationality will allow us to make more nuanced assessments of rationality. We will be able to differentiate a synchronically incoherent agent, who is simply irrational, from a myopically rational agent, who is synchronically coherent but violates diachronic or cross-context rationality. And each of these will be distinct from a diachronically rational agent. Intuitively, these three agents are rational or irrational in distinct ways. And I believe that the context-sensitive approach will be able to explain and account for these differences in our evaluations of rationality.

1. **Conclusion**

While pragmatic explorations have flourished in epistemology, the focus has been on fallibilist epistemologies. However, going infallibilist appears to be an attractive option for the pragmatist since it avoids the threshold problem. Alternatively, going pragmatic can be attractive for the infallibilist since it helps the infallibilist to avoid the skeptical problem. Of course, this attractiveness is severely hampered by the pragmatic infallibilist’s commitment to a pragmatic view of epistemic certainty. Thus, in hopes of motivating a further exploration of pragmatic infallibilism, I have argued that this view is not as implausible as it initially appears. Once one acknowledges and incorporates the constructive aspects of rational decision making, then this opens up the possibility that many of our evaluations, including the evaluation of evidential strength is deeply context-sensitive. And this context-sensitivity might lead us to a more thorough-going pragmatism about epistemic concepts like evidence and epistemic certainty. Since the plausibility of this radical pragmatic has been built upon the constructive account of rationality, I have therefore concluded my discussion by showing that this constructive account has important advantages over its competitors.

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1. Pragmatic accounts of knowledge have also been motivated by the ordinary use of ‘knows’ as well as the epistemic norms that connect knowledge and action. See Kim (2017) for an overview of the types of arguments given for pragmatic encroachment. [↑](#footnote-ref-1)
2. See Bonjour (2010) for a discussion of the threshold problem. For an example of a pragmatic solution, see Fantl and McGrath (2009:26). [↑](#footnote-ref-2)
3. Jessica Brown (2018:11) observes that “while in principle such a shifty infallibilist view could take the form of any of contextualism, relativism, or pragmatic encroachment, it’s been developed in most detail for contextualism.” [↑](#footnote-ref-3)
4. “Our advice to fallibilists is this: if you don’t want to budge on skepticism, at least think about budging on purism.” Fantl and McGrath (2009: 29) [↑](#footnote-ref-4)
5. Dutant (2007) offers a detailed discussion of the competing accounts. [↑](#footnote-ref-5)
6. This is derived from the definition of fallibilism found in Fantl and McGrath (2009). Epistemic chance is a measure of the likelihood of a proposition p given the strength of a subject’s epistemic state with respect to p. I will largely use epistemic probability to talk about epistemic chance. However, this assumption is simply for ease of discussion and plays no important justificatory role. [↑](#footnote-ref-6)
7. While this view of epistemic certainty is inspired by Lewis (1996), I will appeal to a different view of evidence and relevant possibilities. [↑](#footnote-ref-7)
8. The two notable exceptions are Weatherson (2018) and Mueller (2021) along with a critical discussion in Comesana (2013). I also discussed this view in Kim (2019). I contrast my approach with Mueller’s below. [↑](#footnote-ref-8)
9. This proposal comes from DeRose (2009: fn. 25). [↑](#footnote-ref-9)
10. Gao (2019) [↑](#footnote-ref-10)
11. P. 142, Mueller (2021). Thanks to Andy Mueller for discussion on these points. [↑](#footnote-ref-11)
12. Kim (2014) [↑](#footnote-ref-12)
13. Schroeder, M. (2021) offers the most fully worked out reason-theoretic approach to these issues. In contrast, early work by Fantl and McGrath (2002) as well as the work of Brian Weatherson (2012) have been situated within a decision-theoretic framework. [↑](#footnote-ref-13)
14. Shafer (1986a:464) [↑](#footnote-ref-14)
15. The discussion in Tversky and Kahneman (1981) of framing effects as well as the literature following the discovery of preference reversals, documented in Lichtenstein and Slovic (2006), have both pointed to the importance of framing in understanding choice behavior. [↑](#footnote-ref-15)
16. These two elicitation methods are respectively labeled the P-bet and $-bet in Lichtenstein & Slovic (1971). [↑](#footnote-ref-16)
17. Shafer (1986a: 464-465) [↑](#footnote-ref-17)
18. In Kim (2014), I offer a detailed discussion of the normative significance of preference reversals and offer an alternative normative interpretation of subjective expected utility theory. I will simply summarize some of those claims here. [↑](#footnote-ref-18)
19. Many are dissatisfied with the minimal coherence constraints imposed by SEU. For example, objective Bayesians have proposed additional principles of rational belief (e.g. Jaynes’ entropy maximization). John Broome (1991) has argued for rational requirements of indifference. While many of these approaches are compatible with the constructive point of view, they do not appear amendable to the pragmatic approach we are developing. [↑](#footnote-ref-19)
20. Shafer proposes that we interpret SEU in a constructive way by viewing the theory as one that help us to construct rational preferences. While I agree with this interpretation, the theory is incomplete and inadequate as I discuss in section 3. [↑](#footnote-ref-20)
21. See the essays in section 3 and 5 of Lichtenstein and Slovic (2006) [↑](#footnote-ref-21)
22. Thomason (1986) and Norby (2015) provide some examples. In Kim and Vasudevan (2017), we also explore a context-sensitive account of belief and acceptance. [↑](#footnote-ref-22)
23. Shifty views of evidence have been discussed in somewhat disparate ways without too much interaction. Neta (2003) and Beddor (2020) propose contextualist views of “evidence” that may seem similar. But contextualist accounts are best viewed as competitors to the pragmatic account. In the parallel debate about “knows” and knowledge, contextualist and pragmatic accounts are typically viewed as offering competing accounts of the same phenomena. In theory, contextualism is silent about the metaphysical pragmatic encroachment thesis about knowledge-relations. However, in practice, contextualists are at odds with pragmatists over how to explain the relevant data. The same applies to the debate about the context-sensitivity of evidence and evidential probability. [↑](#footnote-ref-23)
24. Diaconis, Holmes, and Montgomery (2007) [↑](#footnote-ref-24)
25. For additional arguments that we should not consider every possibility whose probability is greater than zero, see chapter 4 of Comesana (2020) [↑](#footnote-ref-25)
26. Thus, this is practical impossibility for any rational agent and not just a limit for human beings at a given time. [↑](#footnote-ref-26)
27. In Kim (2014), I argue that while this type of all-things-considered rationality can govern some type of activity, it is not an activity that is within the realm of human possibility. And if that is the case, then these principles do not apply to us. To be clear, I am not trying to distinguish bounded rationality from ideal rationality. Rather, I am claiming that this unfettered all-things-considered rationality has no normative import whatsoever. [↑](#footnote-ref-27)
28. Friedman and Halpern (2013) have proposed that plausibility measures are the most general measures of uncertainty and thus can be seen as a generalization of probability measures. [↑](#footnote-ref-28)
29. Descartes (1984:14-15) [↑](#footnote-ref-29)
30. “It would be disingenuous, however, not to point out that some things are considered as morally certain, that is, as having sufficient certainty for application to ordinary life, even though they may be uncertain in relation to the absolute power of God.” Descartes (1984:289-290) [↑](#footnote-ref-30)
31. The epistemology of plausibility should articulate the factors that determine how plausible an alternative is. So one would need more than just an account of the formal structure of plausibility measures. For an example of a parallel investigation, Gardiner (2020) uses a relevant alternatives framework to explore the epistemology of risk, identifying some factors that contribute to the remoteness or relevance of an alternative. However, Gardiner’s analysis of relevant alternatives cannot simply be substituted for our analysis of plausible alternatives. Gardiner notes that the epistemology of risk should allow for the risks of relying on false beliefs and should not commit to the factivity of eliminating all relevant alternatives. So a theory of epistemic certainty, which I assume is factive, will look quite different than the theory of epistemic risk even if both appeal to the same framework. [↑](#footnote-ref-31)
32. Shafer and Tversky (1985:300) [↑](#footnote-ref-32)
33. Shafer and Tversky (1985:316) [↑](#footnote-ref-33)
34. Shafer and Tversky (1985:316) [↑](#footnote-ref-34)
35. Shafer and Tversky (1985:316) [↑](#footnote-ref-35)
36. This approach is inspired by the account proposed in Chang and Fisher (2011). They argue that “evidence” is a “intrinsically contextual concept.” (*Ibid* 2011: 346) And they offer an action-based view where “a piece of information…can function as evidence only in the context of an evidential epistemic activity.” (*Ibid* 2011:361) They discuss their approach in the context of the raven paradox so their focus on the epistemic activity of theory testing. [↑](#footnote-ref-36)
37. This, of course, means that epistemic chance and epistemic certainty is sensitive to practical factors. [↑](#footnote-ref-37)
38. Comesana (2020) credits Julien Dutant with coining the phrase knowledge-based decision theory. [↑](#footnote-ref-38)
39. See Lin (2022) for a summary of the many ways a subjectivist can respond. [↑](#footnote-ref-39)
40. Some think that this is not within the purview of decision theory. Savage writes, “I believe, and examples have confirmed, that decision situations can be usefully structured in terms of consequences, states, and acts in such a way that the postulates of [Foundations of Statistics] are satisfied. Just how to do that seems to be an art for which I can give no prescription and for which it is perhaps unreasonable to expect one." (79, Dreze 1990) Unfortunately, Savage did not appear to recognize how difficult this task actually is. [↑](#footnote-ref-40)
41. Jeffrey (1965); Lewis (1981) [↑](#footnote-ref-41)
42. Bradley (2017:20) [↑](#footnote-ref-42)
43. As Shafer (2016:50) notes, “Jeffrey’s theory is more obviously non-constructive than Savage’s.” [↑](#footnote-ref-43)
44. Timothy Williamson (2000) is the most prominent proponent of this view of evidential probabilities. However, he rejects the role of evidential probabilities in rational choice. See Levi (1980) for a proponent of the view that the relevant probabilities are conditional on total knowledge. [↑](#footnote-ref-44)
45. This is the type of approach detailed in Keeney (1996) [↑](#footnote-ref-45)