Chapter 3: Synchronic Choice and Rationality

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June 9, 2025

Abstract. Having argued in the first two chapters that unsharpness is vagueness, I defend a decision rule for unsharp agents: how ought you act when you have vague preferences and credences? I argue that my preferred rule Hierarchical Liberal copes well with plausible cases, and that apparent counterexamples are overcomplicated to the point of being unrealistic. I also turn to two puzzles about reasons: the vindication of Joseph Raz's 'basic belief' and of means-end instrumental rationality.

As a reminder, a *sharp* agent who complies with the axioms discussed in Chapter 1 can be represented by a pair of functions—a utility function and a credence function—and according to standard decision theory, her actions are permissible *iff* they are admissible according to ('sanctioned by') those functions. That is, *iff* they maximise her subjective expected utility.

By constrast, an unsharp agent has not a single utility and credence function, but a set of them, called her 'representor' or (more specifically) her 'preferential set' and 'credal set'. As things stand, this is just a mathematical formalism, but in the last chapter I argued that it can be indeterminate what you prefer, and that this is what unsharpness (incomplete preferences and imprecise credences) amounts to. So the sets are to be interpreted as ways her preferences and credences could be made wholly complete and precise—their *sharpenings*. Supersharp adds tolerance-denial, so for an agent to be unsharp is for her preferences and credences to be vague, but for it to be supertrue that she has point-valued preferences and credences.

How should such an agent act? In this chapter and the next, I defend a decision theory for her. In this chapter I'll consider single, isolated actions; in the next, *sequences* of action. In the presence of unsharpness these are two distinct projects, because as we've seen the main problem for unsharpness is that sequences of apparently-permissible choices can amount to impermissible value-pumping sequences of action.

Other authors—for example, Quinn (1990), Tenenbaum and Raffman (2012), Tenenbaum (2020), and Andreou (2023)—have argued that we need to revise or even abandon standard decision theory to avoid such value-pumps, but I will try to forbid value-pumping in a broadly standard framework.

1 Moderate

As I explained in Chapter 1, we call an action 'E-admissible' if and only if it maximises utility according to (is sanctioned by or admissible according to) at least *one* sharpening in the agent's representor. Like much of the other terminology that'll crop up, E-admissibility is not tied to the vagueness view.

But I'd like to introduce a further distinction, between actions that maximise utility on every sharpening and those which merely do so on at least one. *Merely E-admissible* actions are sanctioned by some but not all sharpenings in the representor, whereas *T-admissible* ('totally admissible') actions are sanctioned by every sharpening therein.

Given a supervaluationist account of the sharpenings, a very natural theory for action under unsharpness is due to Susanna Rinard:

Moderate. If ϕ is T-admissible, then it is permissible; if ϕ merely E-admissible, then it is indeterminate whether it is permissible; if ϕ is not E-admissible, then it is impermissible.[1]

Its core idea is that we simply apply standard decision theory, which says that ϕ is permissible *iff* ϕ is sanctioned. Indeterminacy in, indeterminacy out. If some ϕ is merely E-admissible then it's indeterminate whether ϕ maximises expected utility (that's the vagueness interpretation) and so it's indeterminate whether ϕ is permissible (that's the decision rule). No additional content or rule is added to cope with the indeterminacy.

On the other hand, any action that's not E-admissible isn't sanctioned by any member of the representor. It's determinately not sanctioned and determinately impermissible. Moderate thus respects

Liberal Necessity. Any permissible action is E-admissible.

In fact under Moderate all permissible options will be T-admissible, not *merely* E-admissible. Merely E-admissible actions will be indeterminately-permissible, and for that reason the view denies

Liberal Sufficiency. Any E-admissible action is permissible.

There are two ways to argue for Moderate or any other decision rule. From first principles, so to speak, and by appealing to the intuitive plausibility of its verdicts.

(Rinard 2015, 3) offers a first-principles argument for Moderate: with indeterminate credences we should expect indeterminate permissibility, because 'it would be very odd if there were indeterminacy in your beliefs but perfect determinacy about the rationality of all possible actions'. One may grant that this is odd, but not extremely so, as a parallel with ordinary uncertainty shows. There is often uncertainty—lack of knowledge—but nevertheless the possibility of knowably permissible action. In lotteries you may be uncertain which ticket will win, but

[1] Rinard (2015), p. 3. A very similar rule is considered by Mahtani (2019), p. 24, and mentioned by Aldred (2007), p. 393.

as we saw in an example in Chapter 1 standard decision theory can tell you whether buying a ticket is rational or not.

Moderate goes to the other extreme: because E-admissibility always engenders indeterminate permissibility, Moderate offers something more like *perfect indeterminacy*. This is implausible in two main kinds of case.

First, if there are only merely E-admissible options to choose from, Moderate makes all of those options indeterminately-permissible. I call this a 'dilemma of indeterminate permissibility': there are no determinately-permissible options, so there is no way to act determinately permissibly, though it is supertrue that there is a permissible action.[2] Ironically, therefore, Moderate in a sense agrees with Elga's argument (which we'll see in the next chapter) that unsharpness is not compatible with perfect rationality, because an agent caught in such a dilemma cannot act determinately permissibly.

(Rinard 2015, 13) is of course aware that Moderate has this dilemmatic implication, and she frames her defence in terms of ought-implies-can principles. She argues that such principles show only that 'at least one of your options must fail to be determinately impermissible'. Moderate respects that constraint, because there will always be at least one E-admissible action and thus at least one action that's either permissible or indeterminately-permissible. This is because it respects a weaker version of Liberal Sufficiency, according to which any E-admissible action is *not determinately impermissible*.

I don't find this response compelling, partly because it's not obvious how we should understand ought-implies-can principles under indeterminacy. The problem isn't really one of principle. Instead, dilemmas of indeterminate permissibility are simply implausible in particular cases. In the classic examples of incompleteness, the intuition that *you may choose either* is very strong. Consider, for example, Chapter 1's choice of whether to buy House or Flat. If you have narrowed the options down to these final two and are incomplete between them, then what is there to do but pick?

Perhaps ironically, I don't feel this intuition quite so strongly about tasks based in ordinary predicate vagueness. If I present to you a series of men each 1mm taller than the next, ranging from the very short to the very tall, and ask you to specify the first tall man, then this is a task with vague correctness-conditions. Whatever the theory of vagueness, there will be a penumbra of men who are borderline-tall, and hence borderline-*shortest* tall man. The best you can do is to pick one of these borderline men. I think that if you do this then you complete the task *correctly*—not merely borderline-correctly—even though it's indeterminate whether you have chosen the shortest tall man. What else could you have done? But I must concede that I don't hold this judgement very strongly. Perhaps the defender of Moderate can say that I've treated you badly by giving you a task that can't be completed determinately correctly.

A related argument involves the appropriateness of blame and criticism. In general, assuming no excuses and so on, you are criticisable *iff* you've acted impermissibly. But when all options are merely E-admissible, Moderate makes

[2] Mahtani (2019), pp. 24–25, also notes this problem.

it indeterminate whether you have acted so. Thus you will be borderline-criticisable. (Rinard 2015, 4) takes this indeterminate-blameworthiness route, but I find this somewhat implausible once we consider the potential infectiousness of the borderline-blameworthiness: if you are borderline-blameworthy, then am I borderline-criticisable whether I blame you or not? And so on. This picture isn't incoherent, but it is implausible. I think criticism is clearly not warranted in such cases.

If I ask you to *tell* me which is the shortest tall man (no hedging, no meta-linguistic claims about definiteness!), then if you say it is one of the borderline-tall men, you say something indeterminately-true, but you are not criticisable because you have completed your task as best you could.

Of course Moderate could be modified to cope with such cases, for example by adding that indeterminacy is an excuse or that indeterminately-permissible actions are not criticisable when there was no determinately-permissible alternative. But such modifications are uncomfortable for Moderate, because they take us away from its simple motivation: to simply keep standard decision theory with no modification. Once we start tinkering with claims such as "you are criticisable *iff* you've acted impermissibly", we might as well tinker a stage earlier by altering our decision rule to cope with the indeterminacy.

Criticism isn't warranted in these dilemmas because there is nothing rationally better you could have done—no T-admissible option. Decision theories tell us how to best cope with our situations, and here indeterminacy is part of your situation. Insofar as some action in a situation isn't criticisable (and not merely because it is excused), there's strong pressure to say that the action is permissible.

So how might we tinker?

2 Liberal

I'll now turn to 'two-level' rules, which distinguish between admissibility and permissibility, much as standard decision theory distinguishes between (objective) utility-maximisation and (subjective, *expected* utility-based) permissibility under uncertainty.

One way is to require determinacy. Jonathan Aldred argues that under supervaluationism at least, escaping indifference requires *determinate* truth. Suppose that all else is equal, and an agent cares only for not spoiling the commons. He prefers state A to state B of a piece of common land *iff* in state A it is unspoilt and in state B it is spoilt. Let's suppose A is determinately unspoilt, for simplicity. But B—the next stage in a sorites of building more houses—is borderline-spoilt. Then the claim that A is unspoilt and B is spoilt is borderline and, (Aldred 2007, 392) claims that 'the agent should be indifferent between adjacent states'. A strict preference for A requires it be *false* that A is spoilt and *true* that B is spoilt.

This rule has intransitive implications, as neatly explored by Aldred. Given the appropriate background assumptions, it requires strict indifference about every

particular house, even if the commons is definitely spoilt after a hundred have been built. If we add a competing preference (for example, suppose we get a small payment for every house sold on formerly common land), then we can easily be in a preference cycle. But I think Aldred's rule conflates two claims:

- a preference for unspoilt commons, and its being indeterminate whether that preference is satisfied;
- a preference for determinately unspoilt commons.

Now we certainly *can* have preferences of the second type but they wouldn't require total indifference at all points. Such a preference requires us to dispref-fer building the house that takes the commons from determinately unspoilt to borderline-spoilt. And insofar as there is second-order vagueness there, the situation is of the first type but at a higher level of vagueness.

Much more commonly we have preferences of the first type, such as simply an unadorned preference for an unspoilt commons. In the presence of indeterminacy, we cannot infer from its being untrue that this house will spoil the commons to its being determinately false that it will: we need a rule to cope with its being (to speak loosely) neither true nor false.

The most obvious such rule is

Liberal. ϕ is permissible *iff* ϕ is E-admissible.

Liberal says that if any sharpening in your representor sanctions an action, then that action is permissible. It endorses both Liberal Sufficiency and Liberal Necessity (hence the names, of course). All and only E-admissible actions are permissible, including both T-admissible actions and the merely E-admissible. In the commons case, Liberal gives the agent considerable freedom where to draw the line: he must be not-indifferent except at one point, but he complies with Liberal if that point is anywhere between the first house that takes the commons from determinately unspoilt to borderline spoilt, all the way to the house that takes it from borderline spoilt to determinately spoilt.

An intuition behind Liberal is this. If there *were* a precise threshold, then the place to stop building houses would be at that point. Suppose that I (somewhat oddly) care about no more than half of the commons being concreted over, but other than that I am indifferent. I don't care whether 1% or 49% is concrete, for example. Then if each house is 1% of the commons and it started pristine, then I should oppose the fifty-first house and no others. Before then opposing building is pointlessly refusing money, because this house won't take me over the threshold. After then it's pointlessly refusing money, because the only threshold I care about is already crossed. When I care about the application of a vague predicate such as 'spoilt', that threshold is 'smeared' across many E-admissible percentages. The best I can do is to stop at one of them.

Liberal is discussed, though not always endorsed, by authors including I.J. Good ('it would be reasonable to use the Bayes solution corresponding to a value of p selected arbitrarily within its allowable range'), Roger White ('take any set of bets that maximises expected utility according to *some* credence function in your representor') and Sarah Moss ('according to a permissive rule, you may

perform an action without thereby having done anything irrational just in case that action is permissible according to some member of your representor'). Brian Weatherson's *Caprice* probably has the best name.[3]

Liberal can also be modified in many ways, typically caveating Liberal Sufficiency (as I will do). For example, JRG Williams adds a decision procedure: according to his Randomize, if 'one must choose whether to ϕ or ψ, if k sharpenings recommend ϕing, and $1-k$ ψing, then one should choose at random — ϕing with chance k and ψing with chance $1-k$'. Rohan Sud's forward-looking rule discussed in the next chapter is a restriction of Liberal, and clearly in its spirit.[4]

Liberal Sufficiency avoids dilemmas of indeterminate rationality, because if you take one of the merely E-admissible options then (subject to any constraints such as Williams's randomisation) you act permissibly.

2.1 T-admissibility

But can one be too liberal? Consider a case due to John Broome:

> **Canberra Suburbs.** You are required to dedicate a suburb to the greatest Australian who doesn't yet have a suburb. It's indeterminate whether Exe is the uniquely greatest remaining Australian, or tied for greatest with Wye. There are no other possibilities. (Broome 1997, 74)

Here we have *asymmetric indeterminacy*: Exe is T-admissible but Wye is merely E-admissible. Liberal says it's permissible to choose Wye, because the sharpening where Exe and Wye are equally great sanctions choosing Wye.

Broome thinks choosing Wye would be 'quite wrong'. My intuition is not quite that strong. Were I a member of Canberra council I'd be puzzled and discomfited by such a choice, but I wouldn't have the same grounds for outraged oration as I would if you dedicated the suburb to someone who is *definitely* not the greatest Australian. (Such puzzlement could plausibly be called a win for Moderate, which says that choosing Wye was indeterminately-permissible when there was a permissible option available. Puzzlement and hesitancy is perhaps what we'd expect in that case.)

Even if we disagree with Broome about the strength of the verdict, it's clear that choosing Wye is at least decision-theoretically questionable. The problem is Liberal's *narrowness of vision*: Liberal cares only that Wye is E-admissible, so if Wye is admissible on one sharpening, then all other sharpenings are irrelevant to its verdict. It ignores the structural fact that Exe is T-admissible and Wye is not—every sharpening that sanctions Wye also sanctions Exe, but not vice versa. For this reason, Liberal violates what Johan Gustafsson calls 'Avoid Indeterminate Worseness': if possible, you should choose so it's determinate that no option is better than what you chose.[5]

[3] Good (1952), p. 114; White (2009), p. 178; Moss (2015), p. 667; Weatherson (Manuscript).
[4] J. R. G. Williams (2014), p. 11; Sud (2014), p. 127.
[5] Gustafsson (2013), p. 32.

Liberal can easily be modified to cope with asymmetric indeterminacy:

Hierarchical Liberal. Choose T-admissible options over merely E-admissible options over inadmissible options.

Hierarchical Liberal is not pretty, but it captures many of our intuitive judgements about the cases. Do something determinately sanctioned if you can, but if you can't then do something indeterminately-sanctioned. Hierarchical Liberal heavily qualifies Liberal Sufficiency, because a merely E-admissible action won't be permissible if there's a T-admissible alternative. And I think this is hard to deny: once we adopt a two-level rule and fold meta-level facts about indeterminacy into our decision rule, how could choosing an indeterminately-admissible option be permissible when there's a determinately-admissible alternative available at no extra cost?

As well as being independently plausible, this restriction helps us to resolve a longstanding puzzle involving John Broome's *Collapsing Principle*:

Collapsing Principle (special verson). For any x and y, if it is false that y is Fer than x and not false that x is Fer than y, then it is true that x is Fer than y.[6]

The Collapsing Principle rules out asymmetric indeterminacy where it's indeterminate whether x is Fer than y or merely equally as F as y.[7] The principle is a central premise in Broome's famous argument that evaluative incommensurability is vagueness.

There has been a longstanding debate about the Collapsing Principle, and I have argued that it is false.[8] The debate has centered around putative counterexamples, but Broome's argument for the principle is independently interesting. The argument is decision-theoretic, and involves the Canberra Suburbs. Recall that you are to choose the greatest Australian, and it's indeterminate whether Exe is greater than Wye or merely as great as Wye. Besides the setup of the case, Broome's argument has two premises:

(1) It would be 'quite wrong' to choose Wye in the Canberra Suburbs.

(2) It could only be wrong to choose Wye if Exe were greater than Wye.

(3) Therefore, Exe is greater than Wye.

Since the details of the particular case are irrelevant, the conclusion (3) then generalises to all asymmetric indeterminacy, and the Collapsing Principle follows.

Dialectically, this argument is a little delicate. The case stipulates asymmetric indeterminacy, then (1) draws a decision-theoretic conclusion from that asymmetry, and then (2) reasons backwards from that permissibility verdict that such asymmetric indeterminacy is impossible. The argument risks eating its own tail: if the Collapsing Principle is true then such indeterminacy is impossible or incoherent. So how can we be confident enough in (1), which is a claim about how to act in that situation?

[6] Broome (1997), p. 74.

[7] In the terminology of Bales (2018), y is 'indeterminacy-dominated'.

[8] See, for example, Carlson (2004), Elson (2014), Broome (2021) pp. 33–36, and the references in the latter.

Hierarchical Liberal allows for a more direct response to Broome's argument: (2) is false. Our decision rule forbids choosing the merely E-admissible Wye over the T-admissible Exe, *without* the problematic consequence that Exe must be determinately greater than Wye.

Now Broome could respond that Hierarchical Liberal is incorrect, and perhaps even question-begging in its own way—after all, I introduced the rule to cope with the kind of asymmetric indeterminacy the Collapsing Principle forbids—but (2) is also false on some other decision rules we'll see, such as Maximin and Superexpectation, and so as an argument for the Collapsing Principle (2) looks rather unmotivated.

Since the criticisms of the Collapsing Principle have taken the form of counterexamples but haven't touched Broome's argument for it, it's an advantage for Hierarchical Liberal that it can explain give an error theory for that argument.

Hierarchical Liberal is Liberal with a relatively small modification, and still broadly in the spirit of Moderate.

2.2 Liberal Necessity and Mixing and Matching

But here's a problem. Liberal Necessity (the claim that any permissible action is E-admissible) can sometimes seem too restrictive. Liberal has no problem with the following case:

> **One Workshop Soda.** I'm at a one-day workshop, and I'm offered one free drink. My preferences are incomplete between the blackberry and the orange soda (which I strictly prefer to all the other options).

Hierarchical Liberal says that either B (ordering blackberry) or O (ordering orange) would be permissible—since they are E-admissible and there are no T-admissible options—and this seems clearly correct. But consider a slightly longer workshop:

> **Two Workshop Sodas (one order).** I'm at a two-day workshop, and I'm entitled to one free drink *per day*. As before, my preferences are incomplete between the blackberry and the orange soda (which I strictly prefer to all the other options). I must place my order for both sodas on the first day.

Here is the problem: what if I want to mix and match? Intuitively, BO (blackberry on day one and orange on day two) seems entirely permissible, as does OB. But when I place my order on day one, BO and OB aren't E-admissible. *No* sharpening sanctions BO or OB, as we can see from the sharpenings of my preference order, as can be seen from the following table.

Sharpening	One drink	Two drinks
s_1: prefer orange	$\mathrm{B} \prec \mathrm{O}$	$\mathrm{BB} \prec \mathrm{BO} \sim \mathrm{OB} \prec \mathrm{BB}$
s_2: prefer blackberry	$\mathrm{O} \prec \mathrm{B}$	$\mathrm{OO} \prec \mathrm{BO} \sim \mathrm{OB} \prec \mathrm{BO}$

This is a problem for Liberal Necessity. If anything, the example's low stakes give it bite, because Liberal Necessity looks much too demanding. The problem is especially worrying if we pursue my suggestion from Chapter 2 that strict indifference is also indeterminacy; mixing and matching seems clearly permissible if you are strictly indifferent between the sodas. This type of case might push us to reject Liberal Necessity.

But we shouldn't be too hasty. The phenomenon also arises under an epistemic interpretation of unsharpness: suppose that one of the sodas is strictly preferred, with likelihood 0.5 each. Then BB and OO each give you that 0.5 likelihood of satisfying your preferences, whereas BO and OB have no likelihood of doing so. Mixing and matching seems forbidden under an epistemic view too.

And in some similar cases mixing and matching does *not* seem permissible. Consider a variant of Broome's Canberra suburbs case:

> **Brasilia Suburbs.** A statue of the greatest Brazilian will be erected in every suburb of Brasilia. You must determine who is to be so honoured, but it's indeterminate which of Aye and Bea is the greatest Brazilian. You can choose to have a statue of Aye in every suburb, Bea in every suburb, or to mix-and-match in any combination.

It seems clear that you ought to honour the same person in every suburb: mixing and matching would make it determinately true that the greatest Brazilian is not honoured with a statue in *every* suburb of Brasilia. But the case is structurally similar to Two Workshop Sodas (one order).

So what explains the different verdict? Here is my suggestion: if you have preferences for novelty and variation—for example, to try everything—in the soda case they are sufficient to make mixing and matching permissible. But when you are working for the Brazilian government the *only* relevant criterion is honouring the greatest citizen, and so your second-order preferences to try different options are irrelevant (or at least defeated).

A preference for variation can even rationalise choosing a strictly dispreferred option: even if you strictly prefer blackberry, if you care enough about not having the same drink on different days, it can be permissible to order orange for one of the days.

Granted, this response is a little unsatisfying. It implies that if I didn't have any preference concerning novelty and variation and *only* cared about having my preferred sodas, then it would be impermissible for me to mix and match. This restriction still seems a little arbitrary to me. But I don't find it horribly uninituitive, and I don't consider these cases a serious threat to Liberal Necessity.

3 Maximin

Now I'll turn to some more complex cases. Hierarchical Liberal says that in the absence of T-admissible actions, all merely E-admissible actions are permissible, which can cause trouble in cases of *near-asymmetry*.

For the next few pages, I must ask your indulgence in allowing me to stipulate payoff tables; I will come back to whether these stipulations are really plausible. Sharpening k is denoted by 's_k' (or 'c_k' for credences). First, please suppose that your representor has two sharpenings:

Table 2: Near-Asymmetry

	s_1	s_2
ϕ	£1	Pleasure
ψ	£2	Agony

Intuitively only ϕ is permissible, and this judgement seems as clear as any other in the area. We are concerned with preferences, but using evaluative language to keep things readable, ϕ is either slightly worse than ψ (£1 instead of £2) or vastly better (pleasure instead of agony). The structural issue is that though ψ is E-admissible, it's only slightly better on its best sharpening and much worse on the other.

Both ϕ and ψ are merely E-admissible, so neither Moderate nor Liberal can forbid ψ. They don't distinguish between merely E-admissible actions.

Here's another kind of case in a similar vein. There are four rooms. Anna has utilities linear in dollars, and her credal set is $\{c_1, ..., c_4\}$. On each c_k, Anna has very high credence that she is in room k, and very low credence that she is in any of the other three rooms. There are four numbered buttons (1-4) in front of her, and so Anna has five options: if she presses button n, then a million dollars will be deposited in room n, and nothing in the other rooms; if she doesn't press a button, then $900,000 will be deposited in every room.

Here is the payoff table, showing expected values.

Table 3: Buttons

	c_1	c_2	c_3	c_4
Push 1	$1m	0	0	0
Push 2	0	$1m	0	0
Push 3	0	0	$1m	0
Push 4	0	0	0	$1m
Nothing	$900k	$900k	$900k	$900k

Doing nothing is not E-admissible: on each sharpening c_k one of the buttons (k) is sanctioned, doing nothing is slightly behind, and the other three buttons are a distant joint third. But intuitively, Anna ought to do nothing and pocket the $900,000. This is doubly so if the payoff for doing nothing is raised to $999,999. (If we made it $1m, then we'd have an asymmetry case where we'd have to agree with Broome that pushing any of the buttons would be quite wrong.)

Buttons uses imprecise credences. We could instead use indeterminate personal identity, following an example due to J. R. G. Williams (2014). After Anna goes

through a person-splitting machine, it's indeterminate which room she'll be in. Button n fills room n with $1m and the other three rooms with poison gas; doing nothing fills every room with $900k. If E-admissibility is necessary for permissibility, then a purely self-interested Anna—who doesn't care about killing anyone other than herself—should push one of the buttons.

The problem in such cases is that the worst-case scenario for each action doesn't affect whether the action is E-admissible. But it *does* make a big difference to our permissibility judgements: the fact that an action has awful consequences on the *other* sharpenings intuitively detracts from the significance of its excellent consequences on one sharpening. Instead an action that is neither excellent nor awful on any sharpening looks much more tempting.

To accommodate this verdict, we could be guided by the worst-case scenario:

Maximin. ϕ is permissible *if and only* if for any act ψ, the lowest expected utility of ϕ is at least as great as the lowest expected utility of ψ.

Maximin says the permissible acts are those with the highest 'most pessimistic' expected utility, instead of the highest most optimistic one. In Buttons, Maximin forbids pressing any of the four buttons, because each has a lowest pessimistic expected utility of 0, whereas doing nothing's is 900,000. Maximin also vindicates Broome's verdict in asymmetric cases—in Canberra, for example, the most pessimistic sharpening for Wye is worse than that for Exe.

However, Maximin is as narrow as E-admissibility, albeit looking only at the worst rather than the best sharpening for each action. This leads to other problems:

Table 4: Beneficial Choice of Room

	s_1	s_2
ϕ	£1m	One finger prick
ψ	£2m	Two finger pricks

Assuming that two finger pricks are worse than one, Maximin tells us to ϕ. But ψing is clearly the thing to do. The problem is that we considered Maximin to avoid near-asymmetry on the upside, but it is vulnerable to near-asymmetry on the downside.

4 Compromise?

So far, I've been assuming that being permissible is a matter of having *one* sharpening that supports an action, whether through being E-admissible or its Maximin equivalent. This assumption looks undeniable, especially given an indeterminacy interpretation of unsharpness—how could a determinately inadmissible option be permissible?—though we saw some trouble with the workshop sodas.

But we could *compromise* or aggregate between the sharpenings. It may be that some option which is not E-admissible (and doesn't satisfy Maximin or some

other narrow rule) is nevertheless permissible. In Buttons, doing nothing may be permissible, as someone who comes second every race may win the season.

The most natural compromise rule goes all-in on the parallel between indeterminacy and uncertainty. If $eu_r(\phi)$ is the expected utility of ϕing according to some member r in an agent's joint representor R, then the superexpected utility $su(\phi)$ of ϕing is

$$su(\phi) = \sum_{r \in R} eu_r(\phi)$$

and with this notion in hand:

Superexpectation. ϕ is permissible if and only if ϕing maximises superexpected utility.

This rule renders the intuitive verdict in every case we've seen so far, and in particular Avoid Indeterminate Worseness follows quickly from it.

Sometimes, Superexpectation tells you to pay to avoid indeterminacy. Suppose that your only desires are for a red ball (15 utiles) and for money (utilities linear in pounds). Box A contains a determinately red ball and £5; Box B contains a borderline-red ball and £10. Assume completely unjustifiably that there are just two sharpenings s_R (both balls are red) and $s_{\neg R}$ (only the ball in box A is red) with equal weight. The utility of taking box A is determinately 20, but the utility of taking Box B is 25 on s_R and 10 on $s_{\neg R}$:

Table 5: Boxes

	s_R	$s_{\neg R}$	Superexpectation
Box A	£5+red: 20	£5+red: 20	20
Box B	£10+red: 25	£10+nonred: 10	17.5

The rule tells you to take Box A, sacrificing £5 to get a determinately red ball rather than a merely borderline red ball. This is plausible: you want a red ball, so you should pay something to determinately get what you want rather than borderline get what you want.

Again, compromise is commonplace in action under uncertainty: the action with the most expected utility might be one which knowably doesn't have the most utility. For example, standard decision theory might well tell you to pay £5 more for red ball instead of a raffle ticket with 50% chance of winning a red ball and 50% chance of nothing.

There's actually a stronger first-principles argument for compromise under indeterminacy than under uncertainty. Under uncertainty we will normally find out how things turn out, which state was the actual one. This means that sometimes, failing to compromise has the best long-run outcome, even if compromise would have maximised expected utility. We can sometimes think that though we took an irrational risk, it paid off and we're glad we did it—things turned out for the best. We might even say that choices can be retrospectively vindicated by how

things turn out, along the lines of Bernard Williams's attribution of moral luck to his fictionalised Gauguin: whether Gauguin's decision to leave his family is justified depends at least in part on how his art turns out.[9] Whether we go that far or not, non-maximising (and non-maximin) actions under uncertainty can work out in a way that makes criticism churlish. Buying a lottery ticket may not have maximised expectations, but I won £50m so I won't worry too much about it.

But under preferential indeterminacy there is no 'turning out'. We never find out which sharpening was the actual state of the world or of our representor; things remain undecided, unsettled. There will be no retrospective justification and we won't be able to look back as Gauguin does, knowing how things turned out. We will have to live with our decisions under every sharpening, since no resolution is forthcoming. The irresolubility of indeterminacy speaks in favour of compromise, which lets all sharpenings to 'have their say'.

Nevertheless, there is a decisive argument against compromise under unsharpness as indeterminacy, at least assuming revealed preferences. If you are unsharp between ϕ and ψ, it's vague—indeterminate or unknown—whether you attach greater expected utility to ϕ or to ψ. It's indeterminate or unknown whether you *would* ϕ or ψ if you are rational and nothing else is at stake. At least in the simple cases considered in Chapter 2, it is determinate that you wouldn't do anything *else*. If a compromise rule tells you to do some other action χ, then it tells you to do something *that you determinately will not do*. The rule is too detached from your actual preferences, and violates an 'ought implies can' principle.

If we reject compromise, what about the apparently pro-compromise cases considered above? Now we come to the end of the indulgence I asked for, and acknowledge that the cases are too artificial. It's easy and fun to get lost in the maze of cases when trying out decision rules. But for Superexpectation to render its verdicts in those cases, we needed an enormous amount of detail and structure packed into them: that you attach 15 utiles to a red ball, that there are only two sharpenings, they have equal weight, and so on. The cases must be highly idealised for Superexpextation to render a verdict, and minor tweaks can change that verdict.

Idealisation is often no problem in decision theory, but here it is unmotivated. We introduced unsharpness to cope with situations that are incomplete and imprecise, such as Kirk and Spock on an unknown planet under hostile occupation. So it is perverse if to cope with the imprecision of the situation our decision theory demands a complete account of every sharpening, how they are to be weighed against each other, and so on—of exactly *how* it is imprecise. If we are idealising that much, to echo my response to interpretivism in the last chapter, why not idealise further by assuming complete preferences and precise credences?

(Bradley 2018, 268) makes a related point about decision-making under imprecise credences, that 'it is hard to see how agents who lack the information nec-

[9] B. Williams (1981).

essary to form first-order probability judgements would nonetheless be able to form second-order ones', and notes the extra cognitive load this would involve. Calculating superexpectations would indeed involve cognitive load, and it's simply not clear where the weights would come from.

Common examples of unsharpness typically involve symmetric indeterminacy (such as House versus Flat) and perhaps a smattering of asymmetry (such as the Canberra Suburbs). I'm not aware of any 'realistic' cases that have the pro-compromise structure of Buttons, for example. If there is such a case, then perhaps Superexpectation or something similar is the underlying decision rule and there are problems for Supersharp.

In the absence of a clear such example, in practice our intuitive judgements always seem to track something like Hierarchical Liberal, so that is my decision rule of choice. I should note that my argument against compromise has been in indeterminist terms: given epistemicism, compromise might be more plausible insofar as it is an instance of expectation-maximising. But I think the point about requiring an implausible amount of structure would remain, so *in practice* Hierarchical Liberal is plausible in realistic cases: we know little about our preferences, so we might as well pick arbitrarily between those options that are candidates for satisfying them. I thus reject Aldred's claim that vague preferences together with epistemicism lead to 'paralysis' of a kind that 'saves transitivity but renders normative decision theory silent'.[10]

5 Reasons

I'll now discuss the upshot of Hierarchical Liberal for some questions about normative reasons. If there are any such reasons—if global normative nihilism is false—then they are what *justify* your actions or attitudes, making them what they ought to be (or not). So, for example, the fact that it's raining today is a reason for you to take an umbrella. Normative reasons should be distinguished from motivating and explanatory reasons, which answer different questions about your actions and attitudes.

As I said, one can be justified/vindicated by one's reasons or not. We say that an agent's actions and intentions are *substantively rational* if and only if they are supported by the balance of her reasons—if they are what she *ought* to do, all things considered—and substantively irrational otherwise.

5.1 The Basic Belief

Consider what Joseph Raz calls the 'basic belief':

> Most of the time people have a variety of options such that it would accord with reason for them to choose any one of them and it would not be against reason to avoid any of them. (Raz 2002, 100)

[10] Aldred (2007), p. 390.

The basic belief says that most of the time, we have multiple permissible options. This claim is enormously compelling. I could have worn different clothes today, drunk a cup of tea instead of coffee, and so on. I could have had a different kind of cheese in my sandwich, or written these words at a different desk. And in doing these things I would not have been acting impermissibly. These intuitive judgements extend to more significant choices such as whether to have a child and whether to have another.

As Joshua Gert notes, if normative reasons are provided by desires rather than objective values (or, presumably, any other kind of objective 'external' facts), then the basic belief is puzzling because 'it is more plausible that one's desires are characterizable in terms of a single, commensurable sort of strength than it is that objective values are'.[11] Of two options ϕ and ψ, one will likely satisfy my desires more, so if desires are the only things that provide reasons then I'll have stronger reason to ϕ or stronger reason to ψ.

But I've argued that the strength of our preferences is shot through with indeterminacy. So Gert is right that the question of whether I prefer ϕ to ψ involves a single *sort* of strength, but it doesn't follow that this strength is 'commensurable' if we take that to mean that there is a determinate winner in a test of strength. Thus even if reasons are based in desires, a rule such as Hierarchical Liberal explains the basic belief. Desires may characterisable by a single sort of strength—motivational strength—but indeterminacy lurks in particular in *how much strength* a desire has relative to its competitors.

This account of the basic belief explains both its instances and its limits. Very many instances involve the interaction of conflicting preferences: for comfort and for style in my outfit, for example. These preferences must be weighed against one another, and it is in such weighing that we've seen incompleteness arise in many cases, in the 'exchange rate' between different desires. If this indeterminacy engenders multiple merely E-admissible options in our desires—and no T-admissible option—then Hierarchical Liberal says that there are many permissible options.

Indeterminacy also explains the limits of the basic belief. Were I going to a traditional job interview today, the only permissible option would be to dress smartly, at least if my desire to get the job determinately outweighs all the others, such as for comfort. If dressing too casually will put the conservative potential employer off, then the basic belief is much more limited in its import here: consistent with my reasons, I may choose between my conservative outfits only. I might merely have latitude in a choice of jacket, for example. In a more extreme version, if I'll be fired for not wearing a uniform to work and my desire not to get fired determinately outweighs any conflicting desires, then I'm limited by reason to only my uniforms.

This has been a brief argument, of course, but I contend that desires *can* explain both the truth in the basic belief and its limits.

[11] Gert (2018), p. 460.

5.2 Means-End Coherence

Your dog is yelping and obviously stuggling to walk. Absent extremely potent counterveiling reasons, taking him to the vet is the *only* substantively-rational option open to you—it's what you ought to do—and if you don't do so then you are substantively irrational.

Now you're not a monster, so you do intend to take him to the vet. Moreover, you know and thus believe that to get him to the vet you need to put him in the car. But here's where things go wrong. You *don't* intend to put your dog in the car. You haven't done anything yet (haven't even left the house, perhaps) but you have a very odd pattern of intentions and beliefs:

1. You intend to take the dog to the vet;
2. You believe that to take him to the vet you must put him in the car;
3. You don't intend to put him in the car.

This pattern of intentions and beliefs violates the following principle of 'coherence' or 'structural' rationality:

Wide Means-End Coherence. You are rationally required to (intend to ψ if you (intend to ϕ and believe that in order to ϕ you must intend to ψ)).[12]

Your *pattern* of intentions and beliefs violates Wide Means-End Coherence. The principle has wide scope so you could comply with it in several ways, by changing any of 1, 2, or 3. Obviously if you dropped the intention to take your dog to the vet or dropped the belief that to take him to the vet you must put him in the car then you would be criticisable on other grounds (moral and epistemic, respectively) but at least you wouldn't be 'locally' structurally incoherent between in 1–3 or their revised versions.

But as things stand you are incoherent. You intend an end but but fail to intend the necessary means despite knowing that those means are necessary. This is what Wide Means-End Coherence forbids.

Even if your means-end beliefs are false, violating Wide Means-End Coherence looks criticisable: suppose you wrongly believe that to take your dog to the vet you must put him in your catapult, but you don't form an intention to do that. We might be grateful that you don't launch your sick dog in the air, but there's still something fishy about your inaction: you intended to take him to the vet, believed that the catapult was the only way to do this, but didn't intend to use the catapult. So for simplicity in what follows, I'll bracket the means-end beliefs by assuming you know all the relevant means-end relationships.

Other coherence rationality principles include Belief Consistency—don't believe both a proposition and its negation—and the Enkratic Principle: intend all and only those things you believe you ought to intend. But the means-end principle is the most troublesome one. This is because the other principles of structural rationality look reducible to substantive rationality, via the following claim:

The Core Claim. If we are substantively rational, then we are coherent.

[12] Compare Lord (2018) p. 21 and Kiesewetter (2017) p. 263.

For example, if there is only ever sufficient reason to believe a proposition or its negation, but not both, then an agent who violates Belief Consistency (who thus believes both p and not-p) must be believing at least one of the two without sufficient reason, which is substantively irrational.

That was a quick-and-dirty argument that rested on several assumptions, but I hope the structure is clear. The Core Claim—especially in its contrapositive form, which says that incoherence guarantees substantive irrationality—allows us to reduce coherence to substantive rationality, either by saying that coherence is a mere 'by-product' of substantive rationality or that *in*coherence is a useful red flag for substantive irrationality.[13]

The Core Claim spares us from having to give the coherence principes some kind of independent status and force. This is appealing both for general reasons of philosophical parsimony and because in nearly every case of incoherence we can indeed find substantive irrationality. If the Core Claim is false, this looks like a big coincidence.

But only *nearly* every case. The Core Claim has a hard time with Wide Means-End Coherence. Granting some some (fairly!) uncontroversial assumptions, we can avoid this problem when there's only one substantively-permissible end, as with your dog. The assumptions are:

Act-Intention Link. You have sufficient reason to ϕ if and only if you have sufficient reason to intend to ϕ.

Reasons Transmission. If you have sufficient reason to ϕ, and ψ is a necessary means to ϕ, then you have sufficient reason to ψ.

These are both substantive claims about what reasons we have, and could be denied, or at least qualified. See (Lord 2018, 37) for a qualified version of Reasons Transmission, for example. 'Toxin Puzzle' cases raise potential trouble for Act-Intention Link, in particular. But that's a separate issue and I'll set it aside, and these principles are broadly plausible.

I'll illustrate how the reduction works in the vet case. Wide Means-End Coherence is a material implication, so if you violate it then—remember we are bracketing your beliefs—you intend to take your dog to the vet and *do not* intend to put him in the car. So let's assume you have that pattern of intentions.

If you are substantively required to take your dog to the vet, then by Act-Intention Link you are substantively required to intend to take him. By Reasons Transmission you are substantively required to put him in the car, and again by Act-Intention Link you are required to intend to put him in the car. Since you lack that last intention, you're substantively irrational.

The other possibility is that you are substantively required to do something other than take him to the vet. Perhaps, for example, you have stronger reason to take a child to a hospital in the other direction. Then you don't have sufficient substantive reason to take the dog to the vet and by Act-Intention Link, you don't

[13] See Kolodny (2008) for the former 'myth view' and Kiesewetter (2017) and Lord (2018) for the latter view.

have sufficient reason to intend to take the dog to the vet. Since you do have that intention, you're substantively irrational.

Those were the only two options for your reasons (ought to take him to the vet; ought to do something else instead) so we've proven by cases that if you violate Wide Means-End Coherence here then you are substantively irrational. Incoherence guarantees substantive irrationality no matter what your reasons. The converse guarantee doesn't hold: if you have the bizzarre belief that the catapult is the best way to get your dog to the vet and form a coherent set of intentions around that, then you comply with the structural rule but nevertheless don't comply with your reasons.

If there's only one substantively permissible end then a coherent agent *might* be complying with her reasons, but an incoherent agent definitely isn't. Wide Means-End Coherence looks like the shadow of Reasons Transmission, a claim about the structure our intentions and beliefs must have if they are to possibly mirror the structure of our reasons. Even if we don't know what those reasons are, we know that if we are incoherent then we violate at least one of them.

This very satisfying reasoning has parallels for other coherence principles: if we have contradictory beliefs then we have at least one false belief, even if we don't know which are false. The absence of true contradictions here plays a role akin to Reasons Transmission.

So what's the problem? The basic belief. At least intuitively, there can be more than one substantively rational end, and such 'permissive' cases throw up problems.

Suppose it's substantively permissible for Bebe to go to either Berlin or Paris for the weekend, but she doesn't have time to go to both. The only way to get to Paris is to buy an SNCF ticket and the only way to get to Berlin is to buy a DB ticket. Assuming once more Act-Intention Link and Reasons Transmission:

(A) It's permissible to intend to go to Paris, and permissible to intend to buy an SNCF ticket;

(B) It's permissible to intend to go to Berlin, and permissible to intend to buy a DB ticket.

Suppose that these are the only permissible ends. Let's make Bebe violate Wide Means-End Coherence in a specific way similar to that above: she intends to go to Berlin, but she intends to buy an SNCF ticket instead of a DB ticket, despite knowing that this will take her nowhere near Berlin.

The above proof by cases seems to fail here because she appears to have sufficient substantive reasons for each of her intentions. (B) gives her reasons to intend to go to Berlin, and (A) gives her reasons to intend to buy an SNCF ticket. Bebe is a (putative) permission counterexample to the Core Claim. The case is simple but infuriating.

No convincing defence has been given of the Core Claim against such cases. There have been several clever attempts, but they are clearly the weak spots in their respective theories of coherence. (Lord 2018, 39ff) argues that by intending

one of the ends (to go to Paris), Bebe weakens the relative weight of her reason to buy a train ticket to Berlin. But giving her such normative powers looks *ad hoc* and takes us beyond relatively uncontroversial claims such as Act-Intention Link and Reasons Transmission.

Benjamin Kiesewetter calls explaining means-end coherence 'the most difficult task' for his account and concedes that his 'economic' account implies that the Core Claim may be false in some cases, but (I claim) understates the damage this does to his account of coherence.[14] Even one exception is a major cost, not least because this kind of case doesn't seem like a marginal exception we could grudgingly tolerate.

The example hangs on it being permissible to visit either city—an instance of the basic belief. There are two ways this could be so: the trips could be incommensurate, or she could have equally-strong reasons to visit either.

Let's take incommensurability first. On my view it's indeterminate which trip she has stronger reason to take, because incommensurability is vagueness. (Vague how? My more specific view is that reasons are provided by her beliefs and desires and she is unsharp, as in my account of the basic belief, but I'm not relying on that more speculative picture now.) It's indeterminate whether she has stronger reason to visit Paris or Berlin, and visiting either is E-admissible.

There are two classes of sharpenings. On the Paris sharpenings she has decisive reason to go to Paris only and (thanks to Reasons Transmission) decisive reason to buy an SNCF ticket only; on the Berlin sharpenings she has decisive reason to go to Berlin only and (thanks to Reasons Transmission) decisive reason to buy a DB ticket only.

The situation may be easier to see in a table:

Table 6: Sharpenings of Bebe's reasons.

	Paris sharpenings	Berlin sharpenings
Substantively required	Go to Paris Buy SNCF ticket	Go to Berlin Buy DB ticket
Substantively forbidden	Go to Berlin Buy DB ticket	Go to Paris Buy SNCF ticket

We can now vindicate the Core Claim. Suppose Bebe complies with her substantive reasons and Wide Means-End Coherence. Then she forms what I'll call a 'vertical intention', by staying in one column in the table. Either she intends to go to Paris and to buy an SNCF ticket (both E-admissible intentions and E-admissible in combination), or she intends to go to Berlin and to buy a DB ticket (both E-admissible intentions and E-admissible in combination).

Those are the only two ways for Bebe to comply with the coherence principle, so if she complies with it then she has an E-admissible combination of intentions.

[14] Kiesewetter (2017), especially p. 263 and pp. 280ff.

She is indeterminately substantively rational, and acts permissibly according to Hierarchical Liberal.

In the infuriating case, Bebe violates Wide Means-End Coherence by forming a *cross-intention*, with one of the required intentions from the Paris sharpenings column (for example, to go to Paris), and one from the Berlin sharpenings column (for example, to buy a DB ticket). Each of these intentions is E-admissible. But their combination is not, and so it's determinate that she is substantively irrational. No sharpening permits this combination of intentions. It's determinate that either her choice of city or her train booking is substantively irrational, but indeterminate which. If she is incoherent, then she's determinately substantively irrational. Taking the contrapositive and generalising, anyone who is *not* determinately substantively irrational is coherent.

So vagueness seems to handle the incommensurability case nicely. But what if she has *equally-strong* reasons to visit Paris and Berlin?[15] Doesn't she have sufficient reason to go to either city, and thus sufficient reason to buy either kind of ticket, undermining the 'cross-intention' move?

No, because of our rejection of strict indifference in Chapter 2. She can't have determinately equally-strong reasons to visit either city. If she is strictly indifferent between visiting the two cities, then that is also vagueness (albeit vagueness broken by sweetening and souring). So it's indeterminate what she has strongest reason to do, and the above reasoning can be carried through once more. It may be that the two cities are precisely equally good, but she cannot have determinately equally-strong reasons, because there will always be some tie-breaking desire. (Here I am assuming that desires provide reasons, but not that *all* reasons are provided by desires.)

That answer required you to accept my thesis about strict indifference as well as that desires sometimes provide reasons. But I'm not hostage to that. We can also accept the possibility of reasons of (determinately) equal strength but bring to bear a version of Kiesewetter's economic account. There will indeed be some tiny cost to forming a cross-intention (for example, if Bebe intends to visit Paris but buys only a DB ticket, she must cope with questions about how she will get to Paris). And the economic account is more promising in equal-strength cases than under incommensurability, because under equal strength the tie *is* broken by sweetening and souring. It takes only the very tiniest inconvienience to break the symmetry.

Whether you go for the stronger or weaker answer under equal-strength, the Core Claim is rescued. Violations of Wide Means-End Coherence are only possible under *determinate* substantive irrationality. The general picture is that Reasons Transmission is a determinate truth about the structure of our reasons, and Wide Means-End Coherence is a shadow of that truth. When it's indeterminate what reasons we have, the transmission principle nevertheless holds of them. The Basic Belief and the coherence principles are shadows of our indeterminate reasons: despite indeterminacy in their content, various structural supertruths remain.

[15] I'm grateful to an anonymous reviewer for pushing me to say more about this case.

I've assumed a lot to get to this point, and make no pretense to giving an ecumenical response to the problem of instrumental rationality. I offer this vindication of the Core Claim as a bonus for those who accept the package of views in play, including a belief/desire account of normative reasons and Supersharp (or some other way incommensurability can be vagueness), strict indifference as indeterminacy, Act-Intention Link, and Reasons-Transmission. Nevertheless, the availability of such a bonus does speak in favour of the package.

6 Is it Irrational to Care about the Vague?

I've been considering how agents should act under vagueness. Many of the above examples involve agents caring about the vague: even if it's vague who is the greatest Australian, we care about awarding the suburb to the greatest Australian, for example. But perhaps no agent with such cares can be wholly rational?

Andrew Bacon has argued that it's irrational to care intrinsically about the vague. (Bacon 2018, 197) claims that 'for every vague thing a rational person might find themselves caring about (such as being happy), there are some underlying precise matters which they care intrinsically about from which their vague cares arise'.

Here's an example. Could rationally you care *intrinsically* about whether you are rich, once all the precise facts are in? Bacon thinks not:

> you should be indifferent between states that agree on how much money you have. If you furthermore know how much money you have, you should be indifferent between all the different maximally specific ways things might, for all you know, be, even if they disagree about whether you're rich or not (Bacon 2018, 195–96)

I think the underlying thought is that once the number of pounds you have is fixed, and so are the other (stipulatively) precise matters such as whether you can afford the things you want, how others view you, and so on, there is nothing *extra* to care about whether you are rich or not. If this argument succeeds, then all of the vague projects (such as writing a short book) that we'll see in Chapter 5 are not things we can rationally, intrinsically care about.

Bacon's examples—such as Bacon's richness, greenness, and happiness about cake—are generally unidimensional (amount of money, grams of cake), whereas many of those I find most convincing are multidimensional, involving the extra question of how the different dimensions trade off against each other. I often assume for the sake of argument that the underlying dimensions are precise, and in fact many of the examples I pursue in detail—such as that of the cairn—are unidimensional or otherwise simplified, largely for ease of graphing. This difference may not be decisive, but Jack Spencer presents some compelling counterexamples to Bacon's claims, especially that of caring about the *truth*, when truth may be vague.[16]

[16]Spencer (2022), especially pp. 183ff.

Why should multidimensionality make a difference? I think because Bacons' theory of vagueness assumes that our cares about precise matters are determinate. For example, he assumes that unsharp credences have 'nothing specifically to do with vagueness', that our credences and preferences are complete and precise: they may be 'often slightly vague [but] the vagueness isn't usually enough to make a difference to the ordering of propositions' and 'any two propositions are either as preferable as one another, or one is more preferable than the other'.[17]

These assumptions are not obviously false—Bacon's theory is sophisticated and should be taken seriously—but I do not share them, and have argued against them. In particular, in multidimensional cases unsharpness in the weighing of dimensions against each other can make a very large difference in the ordering as propositions. Many of the examples I've given have been to illustrate that our patterns of concern can be vague, *especially* in weighing different concerns against each other. Consider again the carrots and onions. Even if we do have precise intrinsic cares about the number of carrots and onions we'd like in isolation, full precision also requires a precise trade-off between the two.

More concessively, perhaps it would be irrational to care intrinsically about the vague if we had complete, determinate preferences about all precise matters. But as I've mentioned above about Normative Preference Completeness and the like, that doesn't mean a decision theory for such cares is otiose. Sometimes we are irrational, and we would like a decision theory to prevent us from falling *further* into the irrationality value pump. How should we cope with our patterns of concern, even if what we are doing is making the best of a bad job?

7 Conclusion

In this chapter, I've defended an account of synchronic action under indeterminacy. I've also argued that the view I've defended here can offer a convincing error theory for Broome's defence of the Collapsing Principle, as well as vindicating the basic belief and a means-end coherence principle.

In standard decision theory diachronic sequences of action are merely sequences of synchronic actions, but as we'll now see there's a good case under unsharpness that this is not so. So the diachronic case is a separate—and in many ways more challenging—topic, to which I'll now turn.

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[17] Bacon (2018), p. 146, p. 180, and p. 187 respectively.

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