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Unifying the requirements of rationality

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This paper looks at the question of what form the requirements of practical rationality take. One common view is that the requirements of rationality are wide-scope, and another is that they are narrow-scope. I argue that the resolution to the question of wide-scope versus narrow-scope depends to a significant degree on what one expects a theory of rationality to do. In examining these expectations, I consider whether there might be a way to unify requirements of both forms into a single theory of rationality, and what the difficulties involved in doing so can teach us about the foundations of practical rationality.

Keywords: rationality; practical reason; Broome; Kolodny; detaching; intention

Introduction

It has become commonplace among philosophers who work on reasons to distinguish between normativity and rationality.1 On this view, normativity concerns what one might think of as genuine reasons and oughts, although different theories of normativity will give different accounts of what reasons there genuinely are and what one ought to do or believe. Rationality, on the other hand, concerns our mental states, or relations among them. While there are reasons for having certain mental states – intentions, beliefs, fears that, and so on – those reasons may or may not coincide with what rationality requires or permits. In this paper, I shall take up the assumption that rationality and normativity are distinct in order to explore some difficult questions concerning the nature of rational requirements.2

Two influential theories of rationality both see rationality as being comprised of rational requirements. These theories disagree, however, about how these rational requirements should be formulated. One view is that rational requirements are synchronic and have a wide-scope logical form. The other is that rational requirements are narrow-scope and are diachronic (Broome 1999, 2001, 2005; Kolodny 2005, 2007).

It is not my aim in this paper to resolve the question of whether rational requirements are exclusively wide-scope or narrow-scope, nor whether we should adopt some sort of mixed view. Instead, I am interested in what we can learn from examining the relation between certain foundational assumptions about what a theory of rationality should deliver and the form of the rational requirements that best satisfy those assumptions. By identifying what we should expect a theory of rationality to do, and what broad logical capacities a

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theory of rationality must have in order to do it, we can shed light on some basic features of rationality. As a starting point, I shall argue that we should have two expectations for a theory of rationality: that it allows us to make judgements about an agent’s rationality at a given time; and that the requirements of rationality are sufficient in most cases to guide an agent’s thoughts, if those requirements are followed.3

Of course, these are highly idealised expectations for a theory of rationality. There may be shades of grey concerning whether an agent is rational or irrational at a given time, but I shall be treating as at least locally irrational agents who violate a requirement of rationality. Perhaps rationality is not fully guiding in particular circumstances, but I shall be assuming that it is for ease of discussion. The arguments made here do not hinge on the idealisations, and problems of the kind that I discuss arise mutatis mutandis for non-idealised theories in much the same way. It is not the stringency of the conditions imposed but, rather, the shape that they force onto rational requirements that is revealing. In order to meet both foundational assumptions, a theory of rationality must have both wide-scope and narrow-scope requirements.

Producing a plausible theory of rationality that contains both wide-scope and narrow-scope requirements is challenging, I shall argue, because the type of explanation for why any particular wide-scope requirement is a requirement of rationality looks quite different to that needed for any particular narrow-scope requirement. To put it another way, wide-scope and narrow-scope requirements, respectively, have quite different justificatory grounds. The important consequence of this disparity in justificatory grounds for the two forms of requirements is that there are significant difficulties in unifying wide-scope and narrow-scope rational requirements into a single theory, and thus there are significant challenges in producing a plausible theory of rationality that both allows us to make judgements about an agent’s rationality at a given time and that is fully guiding.

The question, then, of whether it is possible to unify the requirements of rationality (and thus whether it is possible to produce a fully satisfactory theory of rationality) depends on whether there are successful approaches to addressing the difficulties raised by the disparity in justificatory grounds. I shall explore approaches to unifying the requirements of rationality, and I shall also explore the possibility that there are really two different theories of rationality working in parallel. One theory addresses the first desideratum for a theory of rationality: that it allow us to make judgements about an agent’s rational state at a given time. The other addresses the second desideratum: that the theory’s rational requirements, if followed by an agent, be capable of guiding her thought. No conclusion is reached in this paper concerning the correct way, or even the correctness, of unifying the requirements of rationality. The aim is to set out the challenges that must be met in order to do so.

1. Two plausible expectations for a theory of rationality

Here are two idealised, but nonetheless plausible, conditions that we may expect a theory of rationality to meet:

C1. A theory of rationality must have the resources to evaluate whether or not an agent’s mental states, or some relevant proper subset(s) of them,4 are rational or irrational.5

This constraint is not meant to be specifically synchronic, although it may have that sound. It is open in principle that collections of an agent’s mental states across time can be evaluated as rational or irrational. A less idealised version of C1 might allow for graded
judgements about an agent’s rationality, but as the same problems arise in either case, we
shall work with the simpler idealised version. The second constraint is explicitly diachronic:

C2. A theory of rationality must have the resources to be guiding over time.6

Rationality must have the resources to guide the agent to some particular correct mental
state(s), when an agent is in a position such that rationality requires a change in mental
states. A less idealised version of C2 might be more plausible, but again little of substance
would change in the argument. A non-idealised version of C2 will generate the same diffi-
culties as the idealised version, and many others as well.7

It will be helpful to look first at C1 and C2 individually to see why each is a plausible
expectation for a theory of rationality. Afterwards, it will be easier to see what relations they
bear to each other. Let us consider C2 first. C2 requires that a theory of rationality be struc-
tured such that an agent who conforms to all and only the requirements of rationality will
change her mental states in a rationally correct way. This tells us that rationality has to
require agents to end up in specific mental states at some time or in some sequence,8
based on the mental states she is presently in. Or, it has to provide a procedure for
mental state change that will put the agent in determinate mental states.

There are two motivations for accepting C2 as an expectation for, or constraint on, a
theory of rationality. The first is that a theory of rationality is considerably less useful if
it does not conform to C2. And, indeed, rationality itself turns out to tell us much less
than we might have thought if a theory of rationality need not satisfy C2. Consider the
extreme case of a theory of rationality that never had anything specific to say about how
to change one’s mental states. Sally, a perfectly and only rational person, is desperately
thirsty during a heat wave, and she intends to drink some cold water. She believes that
there is cold water in the glass, and that the cold water in the glass is the only cold water
available. Sally, if the correct theory of rationality were not to conform to C2, would be
delayed in her quest for refreshment because she would not, except by chance, form an
intention to drink the glass of cold water. This is because, ex hypothesi, the theory has
nothing to say about, for example, what particular mental state (in this case, the intention
to drink the cold water in the glass) correctly follows from intending to do something
and believing that there is a necessary and sufficient way to do it. As the example suggests,
a theory of rationality that does not tell an agent how to change her mental states will be of
limited use. Requirements in addition to those of rationality would be required for Sally to
make mental progress.

The second motivation for accepting C2 is that it is a part of our ordinary judgements
about an agent’s rationality to consider how an agent updates his mental states. Suppose that
Jacques has the false belief that the light inside of his refrigerator is burnt out. When Jacques
opens the door to the refrigerator and sees the light go on, it prompts him to think, ‘Hmm,
that’s odd, the light’s burnt out, but it’s on, and if it’s on, it’s not burn out. Well, I guess the
light is burnt out and it’s not burnt out.’9 In such a case, we worry about the conclusion that
Jacques draws from seeing that the light is on, and we worry about it for two reasons. One
reason why we worry is that he believes a contradiction, but the second reason, and the one
that relates to C2, is that he fails to reason his way out of believing a contradiction. The
rational failure for Jacques is not just his having an irrational, and in this case contradictory,
belief; it is also a failure to make the right changes in his belief. The same holds, mutatis
mutandis for sequences of reasoning involving intentions to perform contrary actions.

The example of Jacques and the refrigerator light also provides a good starting point for
seeing why C1 is a plausible minimal requirement on a theory of rationality. It is quite
natural to say that Jacques’s belief that the refrigerator light is both burnt out and not burnt out is itself irrational. That is to say, the irrationality of Jacques’s belief is not (merely) a function of its pedigree in the reasoning process, but of its content. It is an ordinary judgement that there is something irrational about believing a contradiction. In order to provide the grounds for making a judgement about the rationality of a mental state (or on a collection of mental states), a theory of rationality must provide requirements to which mental states or collections of mental states can conform or fail to conform.

In fact, what is worrying about Jacques’s failure to do any further reasoning after he has concluded that the light in the refrigerator is burnt out and not burnt out is that he fails to reason his way out of having an irrational collection of beliefs. Part of what it is for at least some pieces of reasoning to be intuitively correct is that they move an agent from a mental state or a collection of mental states that is irrational to a mental state or collection of mental states that is not irrational. This point is especially vivid in practical rationality. Suppose, for various reasons, Sandra forms an intention to leave work early. And suppose, for different reasons, she also forms an intention not to leave work early. When she attends to this state of affairs, she notices that she intends to $x$ and she also intends not to $x$. Having directly contrary intentions leads in a straightforward way to paralysis for an agent. This paralysis arises directly from the logical connection between the contents of her respective intentions: that she $x$, and that she not $x$. The contents of contrary intentions imply a contradiction, and so she will not be able to carry out both intentions.

As noted above, having contrary intentions or contradictory beliefs is worrying not only because an agent fails to reason her way out of that condition, but also because the agent is in that condition itself. C1 not only helps explain why some pieces of reasoning are correct for an agent when she is starting from an irrational position (Broome 2007), but they also help explain why some pieces of reasoning are correct when an agent starts from a position that may not be irrational but that is in some respects incomplete.

Consider the agent who is considering what conclusions to draw from her having two intentions: one to $a$ and the other to $b$. A piece of reasoning that led to the intention to $a$ and to $b$ would be rationally permissible. One that led to the intention to $a$ and both to $b$ and not to $b$ would be impermissible. This is because it is not irrational to intend to $a$ and to $b$ (unless some further intentions or beliefs are introduced with which either $a$-ing or $b$-ing are inconsistent), but it is irrational to intend to $a$ and both to $b$ and not to $b$. The requirements that allow a theory of rationality to satisfy C1 can tell us something about whether or not putative diachronic rational requirements like those arising from C2 are genuine rational requirements. It is important to note, however, that requirements that satisfy C1 will not suffice to give us the requirements we need to satisfy C2. A theory of rationality that failed to meet the expectations of C1 would lack the resources to allow one to know when agents’ mental states were rational and irrational. Without the requirements needed to satisfy C2, agents who were entirely and only rational would be unable to make mental progress.

2. Requirements that meet C1

In this section, we shall look at the form of rational requirements that would allow a theory of rationality to conform to C1. It will be easiest to begin with synchronic rational requirements, and then to show how the form of synchronic requirements can be adapted for use with diachronic requirements in a manner that satisfies C1. An influential account of synchronic rationality, the rationality of a collection of mental states at a time, has it that many of the requirements of theoretical rationality can be expressed by using a wide-scope
operator (Broome 2007 and 2007a), call it the *rational requirement* \( (R) \) operator.\(^{13}\) This operator governs complex propositions, whose constituent simple propositions are propositions about an agent’s mental states.

Before spelling out the requirements in detail, a point about notation is in order. Because fundamental issues about scope and detachment are at stake in debates about normativity, it is difficult to avoid using some notation. I have used one of the standard notations for the logical connectives in propositional logic. ‘\( R \)’ denotes the rational requirement operator, and it behaves like an ordinary modal operator in regard to scope and grouping symbols. ‘\( I \)’ denotes an intention and is followed by lower case letters in italics, which indicate the content of the intention. Finally, ‘\( B \)’ denotes a belief, and otherwise works in the same way as ‘\( I \)’. It is common when discussing rational requirements and normative requirements to include quantifiers. It is unnecessary to do so for purposes here, so I have not used them. Likewise, rational requirements are sometimes thought of as being necessary. I have left alethic modal operators out, as they are not relevant to the arguments here and only serve to further encumber already inelegant strings of symbols.

We may now consider two examples of rational requirements:

- **E1.** You are rationally required not to intend both \( a \) and not \( a \)
  
  \[
  F_1. \quad R \sim I(a \& \sim a)
  \]

  and

- **E2.** You are rationally required to intend what you believe to be the necessary means to ends that you intend
  
  \[
  F_2. \quad R [I(p \& B(p \rightarrow q)) \rightarrow Iq]^{14}
  \]

E1 tells us that we are rationally required not to intend contrary actions, and E2 tells us that we are rationally required that we intend what we believe to be the necessary means to the end that we intend.\(^{15}\)

I shall say more about the logic of these rational requirements later in the paper, but for now I wish to point out one important feature. It is that for rational requirements that govern *conditionals*, as in F2, one is generally not entitled to detach the consequent of the conditional governed by \( R \), when the antecedent obtains. So, in the case of F2, when both \( I(p) \) and \( B(p \rightarrow q) \) are true, \( R Iq \) is not a valid inference. Thus, we may say of this requirement that it is *non-detaching*.

There is a way of expressing *detaching* rational requirements. For rational requirements that do detach, the rational requirement operator will govern only the consequent of the conditional:

- **F3.** \([I(p) \& B(p \rightarrow q)] \rightarrow R Iq\).

In a detaching rational requirement like F3, one may infer \( R Iq \) from \( I(p) \) and \( B(p \rightarrow q) \).

Many requirements of rationality at least seem, and probably are, best captured using the wide-scope formulation. For example, suppose that I intend to drop an anvil on my toe, and that I believe I can only do so if I procure an anvil. On the narrow-scope formulation in F3, I would be required to intend to purchase an anvil. While doing so may be rationally permitted, one might also think that it is equally rationally permissible for me to cease to intend to drop an anvil on my toe. Both procuring and anvil and ceasing to intend to drop an anvil on my toe would satisfy F2. There is a strong case to be made that both are rationally permissible (although, no doubt, rescinding the intention to drop...
an anvil on my toe is much wiser). According to F3, however, the only rationally required (and indeed permissible) option is to intend to procure the anvil.\textsuperscript{16}

This is a point that bears repeating: to be in compliance with a rational requirement like F3, there is no \textit{logical bias} or \textit{rational bias} towards satisfying it any particular way, so long as the conditional governed by the R operator is made true. To put the point more plainly, when there is a non-detaching requirement, there are many ways of satisfying it. The detaching version of the same requirement limits the ways in which the requirement may be satisfied.\textsuperscript{17}

The reason why C1 requirements must be non-detaching is that detaching rational requirements may lead to bootstrapping.\textsuperscript{18} Suppose that I intend to commit a vile crime. And, suppose I believe that I will only commit the vile crime if I associate with dangerous criminals. There may be a variety of salient considerations that suggest that it would be wiser for me to cease to intend to commit a vile crime, rather than to take what I believe to be the necessary means to doing so. It is not clear why it is rationally required of me to intend the means to an end I take myself to have little good reason to intend, nor why I am not meeting the requirements of rationality by rescinding my initial intention.

Let us now turn to diachronic rationality. Diachronic rationality concerns rationality over time, whether the period is very short or very long. In either case, we may want to be able to say something about whether or not an inter-temporal collection of an agent’s mental states is rational. The simplest form of a requirement that does this is an enriched version of E2. In order to spell out this first attempt, I shall have to introduce time into the notation.

\begin{quote}
\begin{enumerate}
\item E4. You are diachronically rationally required that (intend $q$ at time $t_1$, if you intend $p$ at time $t$ and also believe if $p$ then $q$ at time $t$, but you do not intend $q$ at time $t$).
\item F4. R \{[I_t \; p \& B_t (p \rightarrow q) \& \sim I_t \; q] \rightarrow I_{t_1} \; q\}.
\end{enumerate}
\end{quote}

This version of a diachronic rational requirement is non-detaching. An agent could conform to this requirement (ignoring for the moment the impossibility of travelling backwards in time), either by ceasing to have the conjunction of belief and intention in the antecedent (contained within the square brackets), or by coming to believe $q$ at the requisite time.

Nonetheless, the rational requirement given in F4 is not quite right, and the problem results from the inclusion of timed notation. F4’s synchronic cousin, F2, can be satisfied by falsifying the antecedent or by satisfying both the antecedent and the consequent. There is a sense in which this is true of F4, but at least from the perspective of an agent of whom the antecedent is true at time $t$, at time $t_1$ the antecedent cannot be falsified, as she cannot go backwards in time. As a consequence, an agent at $t_1$ must intend $q$ to satisfy the requirement. In effect, and in fact, an agent is rationally required to intend $q$ at $t_1$. In other words, when one adds time in this way to a wide-scope synchronic requirement, one in effect (and, as I shall explain, in fact) ends up with a detaching requirement.

While F4 does not formally conflict with F2, there is some tension. Suppose that an agent intends $p$ and believes ($p \rightarrow q$) at $t$. She is violating a rational requirement (F2), if she does not intend $q$ at $t$. But, even if she does not intend $q$ at $t$, she could at least satisfy F4 by intending $q$ at $t_1$. Now suppose that by time $t_1$, the agent has stopped intending $p$ or has stopped believing ($p \rightarrow q$). Because the antecedent of F2 is no longer true of her at $t_1$, the agent has already satisfied the requirement in F2, regardless of whether or not the consequent is true of her. F4 now requires something more specific of the agent than F2. Note that this may be an advantage. Because F4 requires something more specific than F2, it is therefore more guiding than F2.
It is not entirely clear whether the fact that F4 requires more of an agent than F2 should be a source of worry. One possible concern is that the agent acquires new mental states that are mutually incompatible with both intending \( q \) and satisfying a requirement with the same form as F2. Suppose now that the agent intends \( x \) and believes \( (x \rightarrow \neg q) \). An F2-like requirement on that collection of mental states, along with the requirement not to intend something and also its negation, would make it rationally impermissible to intend \( q \).

If this is a worry, then a new requirement may be adopted:

\[
\text{E5. You are diachronically rationally required that } \left\{ \begin{array}{l}
(you \text{ intend } q \text{ at time } t_1 \text{ or do not at } t_1 \text{ both intend } p \text{ and believe if } p \text{ then } q) \text{ if you intend } p \text{ at time } t \text{ and also believe if } p \text{ then } q \text{ at time } t, \text{ but you do not intend } q \text{ at time } t.
\end{array} \right.
\]

\[
\text{F5. R} \left\{ [I_t p \& B_t (p \rightarrow q) \& \neg-I_t q] \rightarrow [I_{t1} q \vee (I_{t1} p \& B_{t1} (p \rightarrow q))] \right\}
\]

F5 requires an agent to comply with F2 (here given as a logical transform of F2) at \( t_1 \), if she has failed to do so at \( t \). Because F2 is timeless, it is not clear whether F5 adds anything to F2, but for someone worried about F4, it may be the most satisfactory alternative among diachronic C1-satisfying requirements that are of this general form. With fewer formalisms, F5 tells us that we are required to satisfy F2 now, and we are also required to satisfy F2 later. It does not tell us specifically (as F4 does) how to do so. F5, in effect, gives us F2 in a much more complicated form.

So, while we can express diachronic requirements that conform to C1, it is not clear that they differ in any meaningful way from synchronic requirements that meet C1.

3. Requirements that meet C2

We should, I have suggested, expect a complete theory of rationality to be guiding. This guiding constraint could come in stronger and weaker versions. The very strongest would say that for any collection of an agent’s mental states, a theory of rationality ought to require an agent to make determinate and complete changes. By ‘determinate’, I mean that the changes required are not disjunctive options amongst multiple mental states (i.e. not of the form: rationally required to intend \( a \) or to believe \( c \)), and by ‘complete’, that there are requirements to keep, modify, or cease to possess each individual state. Weaker versions of the idealised guiding constraint would be less complete, although they would not be less determinate, as rational requirements must be fully determinate to be guiding at all in the sense that C2 demands.19 I shall not discuss completeness any further here, and the discussion about determinacy should be taken to apply to whichever partitions of an agent’s set of mental states are governed by a theory of rationality on the correct view about completeness.

Before continuing, it is important to note that one consequence of C2’s requiring determinacy is that it also rules out the possibility of there being conflicting requirements of rationality. If there is one requirement to intend \( a \), and a separate requirement to intend not to \( a \) (or not to intend to \( a \)), then I cannot satisfy both requirements, and I am left wanting for instruction on which to satisfy.

Although there is a diverse range of plausible types of guiding rational requirements, any guiding rational requirement must be detaching in order to be determinate. An example of a detaching rational requirement was given in section 2:

\[
\text{F3. } [I p \& B(p \rightarrow q)] \rightarrow \text{RL} q
\]

\( \text{RL} q \) is materially implied by \( I p \) and \( B(p \rightarrow q) \), and so we may say that \( \text{RL} q \) can be detached from its antecedent, when the antecedent is true.
Detaching rational requirements are not appropriate forms for rational requirements that play the evaluative role set out in C1, because of the worries about bootstrapping, as discussed in section 2. However, without detaching requirements, specifically those the consequents of which are not disjunctions, rationality cannot be guiding. So, we must set aside any worries about detachment for requirements that allow a theory of rationality to satisfy C2. This is easy to see with some examples. Let us first look again at a wide-scope diachronic rational requirement:

\[ F_4: R\{[I, p & B, (p \rightarrow q) & \neg I, q ] \rightarrow I, q} \]

This requirement is met every time an agent does not satisfy the conditions in the antecedent of the rightmost arrow. When the agent does satisfy the antecedent of the rightmost arrow, she can only meet the rational requirement by intending \( q \) at \( t_1 \). This is because we may treat the past as necessary (or immutable, at least). In so doing, we are also able to apply necessary detachment to \( F_4 \). Necessary detachment says that for \( R(p \rightarrow q) \), if \( p \) is necessary, we can detach \( Rq \). The motivation behind necessary detachment is intuitively clear; the only way to satisfy a conditional governed by \( R \), for which the antecedent is true, is for the consequent to be true, too. Because the antecedent is necessarily true, we may point to the satisfaction of the consequent as the only way to meet the requirement, allowing us to say that there is a requirement to satisfy the consequent.

Once necessary detachment is applied to \( F_4 \), we can derive \( F_6 \):

\[ F_6: [I, p & B, (p \rightarrow q) & \neg I, q ] \rightarrow RI, q \]

In \( F_6 \), a particular intention is required, and so an agent has guidance. It is difficult to imagine inter-temporal requirements that are non-detaching (due to necessary detachment) that do not imply detaching requirements, because the nature of time is such that we cannot return to the past to change it. Thus, even a requirement like \( F_4 \), which is wide-scope, implies a detaching narrow-scope requirement, \( F_6 \). Detachment, because of time, comes on the cheap.

What does not come so cheaply is determinacy. Determinacy requires that the detached requirement govern a particular mental state or a non-disjunctive collection of mental states. Consider a detaching version of \( F_5 \):

\[ F_7: [I, p & B, (p \rightarrow q) & \neg I, q ] \rightarrow R[I, q \lor \neg(I, p & B, (p \rightarrow q))] \]

The rational requirement in the consequent of \( F_7 \) is a logical transform of the synchronic requirement \( F_2 \) (with times included, although their presence is unimportant, because they all denote the same time). \( F_7 \) tells us that if an agent fails to meet the requirement \( F_2 \) at \( t \), then she is required meet the requirement of \( F_2 \) at \( t_1 \). As \( F_2 \) is timeless, \( F_7 \) is effectively trivial (assuming we accept the correctness of \( F_2 \)). And \( F_2 \), as we have seen, is not guiding. \( F_2 \) is satisfied either when the antecedent is false or the consequent is true. An agent who is otherwise entirely, and only, rational, but who fails to satisfy \( F_2 \), will not be rationally guided to change her mental states; as we know from Buridan’s donkey cases, there must be some choice rule to make the choice of one disjunct more rationally correct than the other. In \( F_2 \) (and so trivially for the consequent of \( F_7 \)), there is none. Rational requirements that will allow a theory of rationality to satisfy C2, i.e. those that are guiding, will be detaching and will not detach a disjunction.
4. A puzzle for reconciling C1-satisfying and C2-satisfying rational requirements

The analysis in section 2 and section 3 reveals a tension between the two minimal constraints set out for a theory of rationality. The sample rational requirements that were suitable for determining if agents were rational in C1 were non-detaching, and those in C2 were detaching. This mismatch in detachment poses some philosophically informative challenges for setting up a theory of rationality meeting the constraints set out by C1 and C2.

The problems do not occur at a formal level; the mismatching does not lead to any special difficulty with the mutual unsatisfiability of different rational requirements. The problem arises in attempting to give a common grounding or justification for rational requirements. Consider C1-satisfying requirements. F2 is a standard example:

F2. \( R\{[I_{p} \& B(p \rightarrow q)] \rightarrow Iq} \)

F2 is a consistency requirement. Failing to believe \( q \) when you also believe \( p \) and if \( p \) then \( q \) renders the contents of that collection of beliefs inconsistent with *modus ponens*, which does not allow for agnosticism about the truth-value of \( q \) when \( p \) and if \( p \) then \( q \) are both true. Just being a consistency requirement, it expresses no preference, so to speak, about how it is met, whether through the falsification of the antecedent or the veracity of the antecedent and the veracity of the consequent.

If we take as a sample principle that if you now do not intend to take what you believe to be the necessary means to the end you intend, then you are next required to intend the means:

F6. \([I_{p} \& B_{t} (p \rightarrow q) \& \sim I_{t} q] \rightarrow RI_{t} q\)

We have a specific instruction as to how to satisfy F2, when it has not initially been met. Why should we adopt F6, when we could adopt F6a?

F6a. \([I_{p} \& B_{t} (p \rightarrow q) \& \sim I_{t} q] \rightarrow R[I_{t} q \lor (I_{t} p \& B_{t} (p \rightarrow q))]\)

F6a does just as well as F6, insofar as satisfying it brings an agent into compliance with F2, and there is no reason, that can be drawn from considerations of consistency without more information about an agent’s doxastic states or the available evidence, to prefer F6 to F6a, as far as I can see. There may be a less straightforward reason, not directly related to consistency. I shall return to this matter in section 5.

It is not surprising that consistency requirements of the kind that might be employed to meet C1 do not provide the guiding requirements that are needed to satisfy C2. But, there is clearly a relationship between at least some C1-satisfying and some C2-satisfying requirements. Namely, when an agent’s mental states are inconsistent with a requirement like F2. It is the flaw identified by F2, a requirement proposed to do the work that C1 requires, that triggers the need for a C2-satisfying requirement. Of course, C2-satisfying requirements could be triggered other ways, but at least sometimes they result from an agent’s failure to comply with a C1 requirement.

We can see, at least roughly, what kinds of justifications might be available for C1 requirements. For F2, it is a question of logical consistency, but other kinds of consistency or consistency-like requirements would also be plausible candidates (that your beliefs had to be consistent with your beliefs about the evidence for them, for example). The interesting questions are on what grounds could C2 requirements be justified, and how do these justifications square with those used to justify C1 requirements?
To answer these questions, it will be helpful to look at some ways we might select C2-satisfying requirements and to consider their limitations.

5. Some strategies for producing guiding rational requirements

I want to consider two ways of generating the kind of detaching rational requirements that are guiding in the way required by C2. This short list is, of course, not intended to be a comprehensive survey of possible approaches to revision of beliefs or other mental states. The two approaches discussed, heuristics and coherence, raise a group of problems that prompt fundamental structural questions that will apply to a broader range of approaches and theories.24

Heuristics are shortcuts in reasoning, and they can take several forms. One heuristic would be: when presented with equally satisfactory alternatives to satisfying a requirement of diachronic rationality, number them and roll a die with that many sides, choosing the alternative that corresponds to the number on the die. Another heuristic might be: choose the first satisfactory alternative that pops into your head. And a final example is: whenever F2 is applicable and you believe the antecedent but not the consequent, believe the consequent rather than ceasing to believe the antecedent.25

Heuristics pose two interesting challenges. The first is that heuristics are quite different in nature to consistency requirements. Heuristics help us to cut down on inefficiency in our mental processes, to put our attention where it is most needed, and to sort out sensible ways to use our limited cognitive resources without wasting those very resources on the problem of how to use them. Most importantly for our purposes, heuristics can give us guiding requirements.

The sample heuristics given (and indeed many more plausible ones) could serve as guiding requirements, because they are requirements that detach to particular mental states. Suppose I intend $p$ and I also intend $\neg p$. A heuristic that told me to intend $p$ if the calendar date is odd and to intend not $p$ if it is even would today give me a detaching rational requirement to intend $p$. Heuristics must say something more than ‘be consistent’ if they are to be rationally guiding, and so it looks as though grounds for inclusion of a heuristic would instead be something to the effect that its inclusion would make our rational processes work better for us in a practical way.26

That the inclusion of a heuristic needs to be justified on, loosely put, pragmatic grounds poses a new concern. Heuristics may very well require us to engage in processes that are not consistent with C1-satisfying requirements that are derived from consistency considerations. Here is an example with beliefs. Suppose you believe $p$ and you also believe if $p$ then $q$ and not $q$, but you do not believe $q$ and not $q$: $B_p \& B[\neg (q \& \neg q)] \& \neg B(q \& \neg q)$. This set of beliefs does not satisfy F2, because you do not believe $q \& \neg q$. One heuristic that would move you into compliance with F2 would be one that told you to believe the consequent of the conditional in these cases rather than ceasing to believe the whole conditional or the antecedent.

If a heuristic told you just that, then the heuristic would disagree with the C1-satisfying consistency derived rational requirement that required you not to believe a contradiction: $R(\neg p \& \neg \neg p)$. You would be in the unfortunate position of being logically unable to satisfy both of two rational requirements, the heuristic and the consistency requirement.

This problem is hardly insuperable, but it points to a difficulty, cousins of which arise with the other approaches to generating guiding principles. To resolve possible inconsistencies between heuristics and consistency requirements, one would need to provide an ordering, or rules that will generate an ordering, among the various heuristics and
consistency requirements. Without an ordering, the conflicting requirements will in effect render the theory non-compliant with the determinacy criterion under C2. Orderings create their own complications, and I shall return to the matter of ordering requirements in section 6.

It should be stressed that I am not arguing that we know a priori that any system of heuristics will conflict with consistency requirements, or that one heuristic will necessarily conflict with another. The point is only that in the event of conflicts, we will require an ordering of the heuristics and/or requirements, and that even if heuristic approaches are successful and conflict free (or have resolved conflicts), the justificatory grounds for including the heuristics will be quite distinct to those used for consistency requirements.

A second way of producing guiding rational requirements is to appeal to a holistic picture of rationality. This approach shows up most plainly in coherence views of belief revision. There is a vast body of literature on belief revision, far too vast to discuss meaningfully here. Instead of trying to address the literature as a whole, I want to discuss two general approaches one could take towards making coherence work. The first I shall call ‘score-keeping’. The second I shall call ‘weighting’. In fact, score-keeping makes an implicit appeal to weighting, but it will be more convenient to treat them separately in the exposition.

The score-keeping approach to coherence requires a measuring procedure for determining to what degree a particular belief or intention coheres with the complete set (or complete relevant subset) of an agent’s rational requirements. An agent would be rationally required to adopt the belief that coheres best.

Score-keeping by itself will not be sufficiently guiding for much the same reason that simple diachronic consistency requirements are insufficiently guiding. Consider an agent who has two rational requirements acting on her:

F8. \([I, p \& B_t (p \rightarrow q) \& \sim I, q] \rightarrow R[I_{t1} q v \sim (I_{t1} p \& B_{t1} (p \rightarrow q))]\]

and

F9. \([I, x \& B_t (x \rightarrow q) \& \sim I, q] \rightarrow R[I_{t1} q v \sim (I_{t1} x \& B_{t1} (x \rightarrow q))]\]

Suppose our agent presently has the mental states:

B1. \(I, p \& B_t (p \rightarrow q) \& \sim I, q\)

and

B2. \(I, x \& B_t (x \rightarrow q)\)

There are a variety of ways that an agent could get into complete compliance with both F8 and F9. The agent could intend q. Or the agent could intend q and cease to intend p, and so on.

To make score-keeping work, one needs to introduce the second type of coherence requirement: weighting. Weighting is a system that gives preferences to certain mental state changes over others. One might adopt, for example, the principle of conservatism (Harman 1999, 1986). Conservatism tells us that we must give special weight to mental states that we already have. So, for an agent who holds B1 and B2, the favoured revision would be to acquire the intention to q, rather than to give up any of his current mental states. This is because it takes some kind of additional consideration to overturn beliefs or intentions that we already hold.
Unfortunately, conservatism on its own will underdetermine what to do in a wide variety of cases. Consider an agent who is in the following groups of belief states:

B3. \( B, p \& B, (p \rightarrow q) \& \sim B, q \)
B4. \( B, \sim q \& B, (\sim q \rightarrow x) \& \sim B, x \)
B5. \( B, p \& B, [p \rightarrow (p \rightarrow q)] \& B, (p \rightarrow q) \)

There is no coherence-optimising solution on conservatism for this collection of beliefs. Conservatism is not the only possible weighting principle, but it should be possible to construct mental state groupings that are not given a determinate revision solution for a very wide variety of plausible weighting principles. Simple score-keeping and weighting are not sufficiently powerful for guiding fully, and only, rational agents, which is no great surprise. What are needed are sophisticated rules for belief revision. The simple, and simplistic, example here illustrates the need for more complex rules to gain determinacy. As with heuristics, the point is to emphasise that the principles or rules that would deliver determinacy for coherence approaches are likely to be justified in quite distinct ways to the way in which consistency requirements are. Finding a non-arbitrary basis for such rules may prove challenging and may raise similar issues to those raised by the need for an ordering to make heuristics work.

6. Justifications for orderings and coherence rules

We have seen two (but not the only two) ways of generating detaching rational requirements. The first way is to employ a heuristic that guarantees detachment. The second is to use criteria that rely on a global view of an agent’s mental states, in particular to apply coherence rules. These two approaches do not begin to exhaust the ways in which one might try to generate detaching principles, but they are adequate case studies for raising the interesting general structural challenges present in constructing a theory of rationality that satisfies C1 and C2.

With heuristics, we face two challenges for incorporating them into a theory of rationality that has C1-satisfying requirements. The first problem is the selection of the correct heuristics. The second problem arises in deciding on what basis to create the dominance ordering amongst the heuristics themselves and with consistency constraints: finding a non-arbitrary basis on which an ordering would rest.

We can raise a similar question in the case of providing detailed weighting rules for a coherence approach to satisfying C2. Because simple coherence criteria are bound to underdetermine many possible cases, we may need quite a sophisticated theory of weighting, one the sophistication of which outstrips the resources of the simplistic weighting and score-keeping approach. The question is not whether one can generate such rules; no doubt this is possible. The question is on what sort of basis might the correct set of rules be justified.

For our purposes, what is important is that such rules cannot be justified by simple appeals to consistency. And it seems to me unlikely that we will find anything like a broader logical basis that is capable of justifying the kind of sophisticated rules or principles needed to satisfy the determinacy requirement of C2.

Because of this concern, one might expect to find pragmatic justifications for these rules. I think this is right, but we must attend carefully to what we mean by ‘pragmatic’ here. The sense of ‘pragmatic’ that I have in mind is that of being relative to some particular aims. One possible aim could be to maximise goodness. Although he is not specifically
concerned with solving scope problems, Stephen Stich offers a pragmatic account of rationality that aims at producing (egoistically) good results, rather than tracking truth (Stich 1993).

A value-oriented justification may sit rather uneasily with our common sense views about rationality. This is not to dismiss the possibility of a value-oriented pragmatic justification but to suggest that other, less jarring approaches may be possible; in particular, other kinds of pragmatic justifications may be available. Determining the correct ordering among conflicting C1 and C2 rational requirements, or giving detailed resolution rules for coherence approaches to generating C2 rational requirements, may well be a matter of specifying independent aims for agents that are rich enough to exert an ordering on conflicting principles of rationality. We may have the independent aims of being agents who can engage in social co-operation, who can engage in individual co-ordination over time, and who can make reasonable trade-offs in the use of our cognitive resources (Bratman 1999). Particular orderings of rational requirements or bolstered coherence principles might be justified by an appeal to a set of independent aims that might reasonably be considered to have some relevance to the rationality of agents.

Of course, having specified independent aims will not algorithmically generate all that is needed, and so the suggestion is limited to being a basis for justifying, rather than a decision procedure for creating, such requirements. But thinking of independent aims as being a fundamental basis of justification for rational requirements within a theory of rationality might at least expand the conceptual resources for making the theory C2-compliant. Indeed, while a sketchy view like this may sound appealing in the abstract, all the hard work comes in explaining how to translate some broad set of aims into specific principles of rationality. The extraordinary range of literature on belief revision alone suggests that there is little agreement on how to translate even broadly agreed-upon general cognitive aims into specific belief revision principles. There is no reason for optimism that the task will prove any easier in the case of practical rationality.

7. Some strategies for resolving conflicts between C1-satisfying and C2-satisfying requirements

The proposal, or sketch of a proposal, of the previous section for ensuring the determinacy of C2-satisfying requirements was to provide a justificatory basis for those requirements that had sufficient resources for alleviating both underdeterminacy and conflicts. The type of basis gestured at was a theory of independent aims, and I offered as an example Bratman’s theory of the aims given to us by our needs as planning agents. This proposal is wholly schematic. Its development lies outwith the scope of this paper.

Nonetheless, it should be apparent that even this schematic proposal leaves one important matter unresolved in principle, much less in substance: how to cope with conflicts between C1-satisfying requirements and C2-satisfying requirements. C1-satisfying requirements of the kind outlined in this paper are derived from considerations of the formal consistency (or closure) of the contents of an agent’s mental states. These requirements do not derive directly from considerations about independent cognitive aims. Because the justificatory basis of C1-satisfying requirements is apparently (and perhaps actually) quite different to that of C2-satisfying requirements, there is no obvious basis on which to resolve conflicts between the two types of requirements.

We could, quite simply, give up one set of requirements or the other. That is in effect Kolodny’s strategy. He does not think that C1-satisfying requirements belong in a theory of rationality (Kolodny 2005, 2007). This is Broome’s strategy, too (Broome 2005,
2007). He, however, gave up C2-satisfying requirements. Whether one favours Kolodny’s or Broome’s strategy, abandoning one of the two expectations for a theory of rationality, and the requirements that satisfy them, eliminates the possible conflicts.

Of course, the strategy of abandonment comes at a considerable cost. Either one loses the ability to make evaluations of agents’ rationality at a time, or rationality ceases to give determinate direction to agents about what to intend or believe. I shall not weigh those costs here, and I shall offer only a brief sketch of an alternative to dividing up rationality into two discreet theories. The proposal is again only schematic, with the same caveats about the difficulties of working it out in detail. The schematic nature of the proposal should further emphasise an essentially negative point in this paper: that developing an account of the bases on which rational requirements are justified will be no straightforward task.

The alternative I shall sketch out here is to develop a mixed theory with rules for resolving conflicts between different kinds of requirements. Theories that contain pluralistic grounds for their contents are not uncommon in philosophy, and rules for mediating between conflicts in content arising from different grounds have been developed for a variety of cases. The particular challenge for a theory of rationality is that it is difficult to see what resources, other than one’s own intuitions about such matters, one could use to decide whether some requirement deriving from considerations of consistency dominates, or is instead dominated by, some requirement deriving from one’s theory of independent aims. Perhaps one should be content with an intuitively framed conflict-resolution structure for a mixed theory of rationality, but it is, perhaps, not wholly satisfactory.

A more promising version of this alternative is to argue that some set of independent aims is the only correct basis of justification. Consistency requirements, insofar as we have them, derive from the importance of being the kind of agents that are evaluable as rational or irrational at a given time by others. On this view, the plausibility of C1 derives not from our basic judgements about the concept of rationality, but rather from some important contingent facts about our independent aims and what they require. If this is the case, then there is a more plausible basis for resolving conflicts between different kinds of requirements, as we can appeal to what, overall, does the best job of realising our independent aims.

One challenge for a view like this one is that it requires some criteria for measuring the degree to which our independent aims have been satisfied. A fuller account would need both to specify the independent aims in a suitably clear way and to offer a method of measurement for compliance with those aims. I have conjectured that a similar task is required for working out a viable theory of rationality that complies with the determinacy condition alone. Perhaps explaining how we are to justify C2-satisfying rational requirements will also help point the way towards a unified theory.

Conclusion

This paper has shown that there are considerable challenges to formulating a single theory of rationality that unifies the requirements needed to meet two very plausible expectations for a theory of rationality: that a theory of rationality provide the resources for making judgements about the rationality of individual agents at a time, and that a theory of rationality provide determinate guidance to an agent on how to update her mental states. This difficulty arises from the possibility of conflict between requirements of the first kind and requirements of the second kind, as the second expectation rules out unresolved conflicts on grounds of indeterminacy.
In the final section of the paper, various options were given for addressing the difficulty of reconciling the two types of rational requirements. One possibility is to abandon one or other of the two plausible expectations for a theory of rationality. If this comes at too high a cost, then one must propose resolution mechanisms for conflicts. I argued that at least a first blush, there appear to be more promising resources for conflict resolution if we divide a theory of rationality into two distinct theories, rather than developing a mixed theory of rationality with internal conflict-resolving mechanisms. As these resolution structures have only been treated schematically here, it remains yet to be determined as to the right way to treat conflicting requirements of rationality. If the arguments in this paper are correct, we know what needs to be done to unify, or disunify, a theory of rationality. As yet, it is not clear how to do it.

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Notes
1. Important accounts of this distinction began to appear at the beginning of this decade, most notably Parfit (2001) and Wedgwood (2003). More recently, Kolodny (2005) provides an argument for the distinction between normativity and rationality in response to Broome (1999) and Broome (2001). Broome himself adopted the view that there is distinction between normativity and rationality (and that the latter is not reducible to the former) in Broome (2005) for somewhat different reasons to Kolodny’s.
2. It is possible to accept that there is a conceptual distinction between normativity and rationality while also believing that they are closely connected to each other. See Kolodny (2005) and Reisner (forthcoming) for discussions on the relationship (or lack thereof) between normativity and rationality.
3. Although the matter will not be discussed here, a theory of rationality might also be expected to provide guidance for an agent’s actions. I shall address this question here.
4. I have made the object of rational evaluation here the set of an agent’s mental states, or some proper subset thereof, but there are alternatives: a vexing question is whether the proper objects of rational evaluation are collections of mental states or of the agents who hold them. Kolodny (2005) argues for the latter. Broome (2007) suggests the former.
5. It is my view that rational requirements should express necessary, rather than sufficient, conditions for rationality. In effect, this means that the judgements they allow are about irrationality, rather than rationality. I have left open the possibility that a theory of rationality should also give sufficient conditions for being rational, as nothing important hinges on the question of sufficiency in this paper.
6. I came to understand the importance of C2 from Shackel (Ms) and Shackel (Msa).
7. Perhaps the most difficult challenge would be to give a principled account of under what circumstances rationality had to be guiding, if it is not guiding in all circumstances.
8. Diachronic requirements, which are the sort that can satisfy C2, may be either explicitly temporal or just sequential, depending on the precise nature of what is being required.
9. Perhaps one may be sceptical that it is possible to believe a direct contradiction of this sort. If the use of this example seems objectionable, substitute a case in which Jacques errs in his reasoning...
by failing to complete a piece of *modus tollens* reasoning. This may be more psychologically plausible and raises the same synchronic troubles with holding inconsistent beliefs.

10. I am assuming that one can intend not to do things.

11. See section 4 for a full explanation of this point.

12. As Kolodny (2005) observes, rational requirements are local in nature. The broader question of whether an individual agent is rational *tout court* is a separate matter, and one not considered here.


14. F2 requires closure on the contents of one’s mental states, which may be too demanding. A weaker version of each requires consistency instead: \( R\{[p & B(p \rightarrow q)] \rightarrow \neg\neg q} \). It is less cumbersome to make the relevant arguments using closure requirements, but they can be made with consistency requirements, too.

15. I use this grammatical barbarism, as English infinitives cannot be formulated with conditionals. One could also use the *STIT* operator (‘see to it that’) to smooth out the grammar, but the *STIT* operator gives everything the feel of an action, often inappropriately.

16. For a complete discussion of the differences between detaching and non-detaching rational requirements, see Broom (2007) and Kolodny (2005, 2007).

17. As Kolodny (2007) notes, synchronic detaching and non-detaching requirements are violated under the same conditions, even though they possess different satisfaction conditions.

18. See Broome (2001) and Bratman (1999) for more on bootstrapping problems.

19. A less idealised principle might have a weakened determinacy constraint.

20. Necessary detachment for rational requirements is discussed in further detail in Broome (2007a).

21. Formally speaking, this is a completeness requirement. Here I mean something less precise by ‘consistency’, that there is a valid conclusion not drawn from the premises, or that an invalid conclusion is drawn from the premises. Consistency formally only includes the latter. See footnote 12 for a formal consistency requirement.

22. Although I have used a simple true/false belief scheme here, these arguments apply to more complicated theories of belief, such as Bayesian belief theories. On a Bayesian approach, the equivalent of ceasing to believe the antecedent in order to satisfy the conditional is the reconditioning of prior probabilities. The problems I shall raise in this section with determining how to change problematic collections of belief have close parallels in the literature about reconditioning priors. See Rabinowicz (2006).

23. Gilbert Harman thinks otherwise, see Harman (1986). In section 5, I discuss possible reasons why it might be correct to opt for F6 over F6a.

24. Notably, AGM belief revision theory has been left off this list. This is in part for reasons of simplicity, and in part because AGM faces similar issues to those raised for coherence. AGM theorists propose various solutions, but they, too, will face the same basic justificatory challenges raised in section 6. For a discussion of AGM in a philosophical context, see Segerberg (2001)

25. Not all heuristics are equally plausible; indeed, I suspect none of the ones listed are very attractive. They have been chosen for their diversity and simplicity, and they are meant only as toy examples.

26. For a more detailed account of the possible roles of heuristics, see: Gigerenzer (2008) and Roberts (2004).

27. There are a number of classic statements of holistic approaches to rationality and mental state revision. For just a small sampling, see: Quine and Ullian (1978), Thargard (2000), and van Fraassen (1990).

28. Much of the following discussion of coherence, weighting, score-keeping, and of course of conservatism, is adapted from Harman (1986). In addition, see Christensen (2000).

29. Note that conservatism would provide grounds for favoring F6 over F6a

30. The literature on ways to make a coherence theory work is extensive. For just two examples amongst many, see Bonjour (1985) and Shogenji (2005). A sophisticated analysis of problems for coherence theories is given in Olsson (2005).

31. It may seem a glaring omission that Bayesian approaches to belief revision are not discussed in this section. The reason for this is that Bayesian theories just provide a different context for essentially the same kinds of problems. If we take conformity to the axioms of Bayesian probability theory as a C1 requirement, then we can think of Bayesian belief theory as having a wide
scope: we can conform to the probability requirements either by reconditioning our prior probabilities or by adjusting the probabilities assigned belief for which we have evidence. If we want to ban or limit reconditioning, then we need a justification for doing so that will likely run into similar concerns as those raised in section 5 of this paper. For an interesting related discussion, see Levi (2002) and Rabinowicz (2006).

32. This approach has been developed in depth by David Gauthier (1984, 1994).
33. I have in mind a view like Bratman’s theory of planning agency and its aims of inter-temporal and interpersonal coordination (Bratman 1999).
34. David Chalmers has impressed on me both the prevalence and appeal of pluralistic theories in philosophy. Some attempts have been made on developing theories of weighing for pluralistic accounts of reasons. See Reisner (2007).

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