Fiction, Imagination, and Normative Rationality

Malvina Ongaro

University of Piemonte Orientale

Abstract

Rationality is a cornerstone of economics. The properties defining rationality are embodied by the Rational Agent, whose actions are prescriptive for economic agents. However, the Rational Agent is a fictional character: so why should real agents act like it? The Rational Agent takes its normative force from the arguments in support of the properties it embodies. In this paper, I explore the grounds for the normative force of the Rational Agent by looking at one of them. I explain the compelling pull of the famous Dutch Book argument using tools from narratology. I contend that the argument presents a branching narrative structure that allows the comparison of outcomes. Thus, the agent can see that one option serves her economic desires better than the other, and this is the specific way in which it provides normative support to the rational agent. Since the comparison of outcomes requires the use of imagination, I conclude the paper drawing some implications of my analysis for a connection between imagination and action.

Keywords: Rationality, Normativity, Narratives, Imagination, Dutch Book.

1. Introduction

There is a fictional character haunting economics: the Rational Agent.[1]Microeconomic models base their conclusions on assumptions about what constitutes rational economic agency. These assumptions are embodied by the Rational Agent but, as features of real, human agents, they would be highly unrealistic. However, it is often contended that, since they are taken as features of *rationality*, their goal is not to provide an accurate description of actual economic agency, but rather to prescribe a blueprint for rational behaviour. In short, the fictional character behaves how we *should* behave, i.e. how we would behave if we were

---

[1] The subject of models of economic agency goes often under the name *homo economicus*. Here, I refer to it as *rational agent* mainly for historical reasons. Genealogically, the two notions are distinct, and talks about normative rationality are more tightly connected with the latter (Morgan 2006).

rational. It only exists in microeconomic models, where it makes choices that are supposed to be prescriptive for real agents: since the model shows that the Rational Agent would do *a*, then real agents have a reason to do *a*.

But how can the actions of a fictional character be normative for real people? What reasons do we have to act like someone who does not even exist? The apparent contrast between fictional world and normative arguments motivates this paper. Consequently, the *broad* research question from which we move is the following: how can fictional constructs act normatively?

I plan to address this question in the following way. I will start introducing the Rational Agent as the personification of a bundle of normative requirements on rational agency. I will then present the well-known 'Dutch Book', a normative argument in support of one such requirement. With this background in place, I will formulate my *narrow* research question: what is it that makes arguments like the Dutch Book normative? I will construct the answer to this question in three steps. First, I will clarify the sense in which I take such arguments to be normative. Second, I will propose that the argument displays a structure similar to the branching structure theorised by Beatty (2017) for explanatory narratives. Third, I will claim that this structure allows real agents to compare different outcomes and see that the one delivered by complying with the assumptions of rationality is the one that better serves their economic motivations. Thus, fictional constructs can provide normative grounds for human agency. Finally, I will expand on my argument and propose that the mechanism of outcome comparison is based on the cognitive capacity of imagination. If this is so, then my account of normative arguments illuminates some interesting connections between imagination and action.

2. The Rational Agent

The rationality of agents is one of the central assumptions in neoclassical microeconomic models. This puts the Rational Agent at the foundations of microeconomics, since it embodies the properties that economists have taken to constitute economic rationality. Traditionally, the central properties defining economic rationality, and hence the Rational Agent, are the following:

(1) *Logic*: The Rational Agent reasons according to classical logic.
(2) *Probabilism*: The Rational Agent has credences that respect the probability calculus.[2]
(3) *Rational Preferences*: The Rational Agent has preferences that are complete, transitive, and independent.[3]
(4) *Maximisation*: The Rational Agent chooses what is ranked highest in its order of preferences.

---

[2] Of course, *Probabilism* is not necessary in all those contexts where there is no uncertainty.
[3] While the name and specification of the requirement of Independence vary across different formal systems (e.g. von Neumann and Morgenstern 1944; Savage 1954; Jeffrey 1990), the core idea is that the preference between any two alternatives should be independent of both the state of the world in which they obtain and all irrelevant alternatives. Typically, full theories will include other (technical) requirements, which however are not strictly requirements of rationality.

Even under such a rough presentation, these properties strike as remarkably inaccurate descriptions of actual human agents. Our reasoning often violates classical logic, and nobody has truly probabilistic credences. Indeed, the Rational Agent is a very unrealistic character. Clearly we are not talking of someone *real*—there is no risk of meeting it in line at the post office, for instance. The Rational Agent is nowhere to be found: it is as fictional as Sherlock Holmes. In a truly Meinongian spirit, as a fictional character all we know about it are the properties ascribed to it by economists, and nothing else. It is, so to say, a *thin* character, since we do not assume anything about it beyond what we are explicitly told.

As properties of rationality, (1)-(4) are commonly taken to have a normative character: however unrealistic, they are not meant to constitute a descriptively accurate representation of human agency. They describe not how an economic agent is, but how an economic agent *should* be, or has reasons to be. The Rational Agent acts in microeconomic models and makes choices that are supposed to be prescriptive for real agents, because they are the choices real agents would make if they were rational.

It is worth noting that—although common—this normative interpretation is by no means uncontroversial. Since it is still supposed to apply to human agent, claims about rationality are still open to empirical enquiry. Indeed, the normative interpretation has sometimes been taken as a response to defuse potential empirical counterexamples (Hands 2015).

However, in this paper I will stick to the normative interpretation of properties of rationality for several reasons. First, however contested, the normative interpretation of (1)-(4) is still the standard view n economic methodology. Second, these properties are generally justified with normative arguments showing that it is rational to follow them, rather than with empirical observations. And finally, as long as there is a normative interpretation and there are normative arguments, then it is sensible to investigate the source of this normativity, independently of its adequacy.

So we have a fictional character that makes choices within models, and human agents that are expected to comply with such choices. But what reasons do we have to act like somebody who does not even exist, and that is entirely defined by a bunch of unrealistic properties? How can an unrealistic fictional character have any normative power towards the behaviour of a real person?

To be clear, the Rational Agent is not normative in itself. As we have seen, its role is to flesh out a bundle of properties that are normative. The actions of the Rational Agent have normative power only as representations of the normative implications of (1)-(4).

Of course, each of the properties listed above is supported by arguments justifying it as a property of rationality, and therefore justifying the legitimacy of its inclusion in the set. For instance, the requirement of transitivity in *Rational Preferences* is grounded on arguments that show how intransitive preferences would expose the agent to the possibility of exploitation.

However, the existence of such arguments does not answer our question. Just as there are arguments supporting this view of rationality, there are others opposing it. The debate on what is rightfully rational and on the notion of rationality that economists should care about, if they should care about one at all, is open and heated. But this debate should not concern us. I am not trying to argue for this specific list of properties, or for any such list for that matters: I am

interested in the sources of normativity, not in its objects. Any other property would be interesting, as long as it had a normative status supported by arguments claiming to justify it. It is sufficient for our purposes that there is some property, the legitimacy of which as a feature of rationality is justified by some typical arguments. Even though the validity of these arguments is debated, they have a compelling pull explaining their normative role.

Then, it seems that one could answer the question of what makes the Rational Agent normative by listing the arguments in favour of each property. But this move simply shifts the question. What is it that makes the arguments compelling? Through which mechanisms do they provide normative force to some property? This is the *narrow* question that I will try to address. In order to answer this question, I will focus on one such argument, and try to enlighten the normativity generating mechanisms behind it. We will later see that this mechanism is not specific to the argument I discuss.

One of the most influential arguments in favour of *Probabilism* is the so-called 'Dutch Book' argument. The argument is often presented in a very narrative fashion, constructed as a story in which some character displays non-probabilistic credences in some gambling scenario, and ends up losing money in consequence of her credences. This is an example of a standard presentation of the argument in an introductory text to Decision Theory:

> Suppose, for instance, that you believe to degree 0.55 that at least one person from India will win a gold medal in the next Olympic Games [and to degree] 0.52 that no Indian will win a gold medal in the next Olympic Games […]. Also suppose that a cunning bookie offers you to bet on both these events. […] However, by now you have paid $1.07 for taking on two bets that are certain to give you a payoff of $1 *no matter what happens*. […] Certainly, this must be irrational. (Peterson 2017: 154; emphasis in original).

The normative force of the argument cannot come from some feature of the storytelling. It is not relevant to the final judgement of irrationality that you are betting on the Olympic Games, or that the bookie you meet is cunning. The storytelling may have rhetoric force that is useful to get the message through and make the reader understand the gist of the argument. But it cannot suffice to establish something as a legitimate property of rationality, or it could be sufficient to present the argument under a different storytelling to dispel its legitimising power. Instead, the normative force must reside in the core of the argument, i.e. in that part that remains constant under different clothings. Let us then have a look at the argument in its minimal form, devoid of narrative constructions:

Dutch Book: If an agent has non-probabilistic credences, then there is a theorem that proves that there is a combination of betting contracts[4] (called a Dutch Book) such that the agent faces sure losses.

With this argument in place, the question that remains to be addressed for the rest of the paper is the following: What is the mechanism that makes *Dutch Book* compelling as an argument for the normative validity of *Probabilism*? In order to

---

[4] A *betting contract* is "a contract to settle a bet or a group of bets at certain agreed betting rates" (Hacking 2001: 164). It is neutral with respect to the role played by the agent, i.e. whether she is the bettor or the bookie in the contract.

attempt an answer to this question, we need first to clarify the notion of normativity at stake. Thus, I will now move to an analysis of the sort of normativity that I take the Dutch Book to confer to *Probabilism*.

3. Normativity

A complete account of what normativity is would be vastly outside of the scope of the present paper. What is interesting for our purposes is not normativity *per se*, but rather the identification of the way in which the Dutch Book argument can be normative. Whether there are other ways for something to be normative, or how powerful or frequent this specific way is, are interesting questions that do not concern us. Instead, I will limit the discussion to two claims that I will try to make as little controversial as possible. Let us start with the first one:

> (1) An argument provides normative support for a certain (option)[5]*o* IF it provides a reason for *o*.

Some clarifications on (1). First, we are talking about normative, not motivating reasons (Dancy 2000, Scanlon 1998). We are not looking for the motivation behind some actions, but for a consideration in favour of a certain option. Second, (1) is not meant to be a definition of a normative argument. It is not a biconditional, as it merely provides a sufficient condition for an argument to be normative. This means that there may be many other ways to attain normativity. But as long as (1) is at least one of the possible ways in which an argument can be normative, then there is no obstacle to our discussion. Third, being normative does not imply that the argument is conclusive. Each normative reason provides *pro tanto* justification for a certain option; there may be different normative reasons pulling in the opposite direction, so that the evaluation of an option would require an all-things-considered assessment. Thus, it is not the case that once someone has an argument that provides a reason for option *o*, then *o* is justified once and for all.

With these due clarifications of (1) in place, we need to take a further step, and understand what it means for an argument to provide a (normative) reason for something. Of course, an evaluation of the debate on normative reasons would, again, be far out of the scope of our present inquiry. As before, I will content myself with the following claim, broadly Humean in spirit:

> (2) The agent has a reason for a certain option *o* IF she has a desire *d* and *o* serves *d* better than the alternative options.

Again, a few qualifications are necessary. First, (2) is not a definition either. Contrary to other authors supporting a desire-based view of reasons (e.g. Williams 1979, Schroeder 2008, Goldman 2009), I do not claim that this is a requirement of reasons. (2) does not provide necessary and sufficient conditions for the agent to have a reason for something: it merely states two jointly suffi-

---

[5] The claim is expressed in terms of options. Since it is assumed to be possible to have either probabilistic or non-probabilistic credences, or else there would be no need for an argument, then I take the Dutch Book argument to support an option. Others may prefer to look at *o* as a choice or an action. But nothing in our discussion hinges on the ontological category to which we ascribe the target of the argument. This does not imply that (1) applies equally to all sorts of categories: as long as it applies to your favourite ontological account of the target of the Dutch Book, we are good to continue.

cient conditions, without making any claim about other potential ways in which an agent could have a reason for something. As long as one concedes that these conditions do indeed provide one with a reason, then the discussion can proceed. Second, once again having a reason does not imply that the agent should act according to that reason. She may have other reasons supporting different courses of action, and any justification of her behaviour should come after an all-things-considered assessment of the different reasons she has.

Since both our claims provide sufficient conditions, we have identified a plausible route to attain normativity, one that does not pretend to exhaust the discourse on what constitutes normativity. Putting (1) and (2) together, we obtain (3):

(3) An argument provides normative support to option o IF it shows to the agent that o serves her desire d better than the alternative options.

If my reasoning is correct, this is one way in which an argument gets normative force. In what follows, I will try to show that it is the way in which the Ducth Book argument gets its normative force in support of *Probabilism*, and that it does so in virtue of the specific structure it displays. To introduce this structure, our next step requires a little detour into narratives.

4. Branching Structures

Narratives are often taken to be appropriate tools to describe what happened, but not to explain *why* it happened. Beatty (2017) argues against this position, claiming that certain narratives manage to explain some present outcome by putting it against the background of what could have happened instead. To illustrate his idea, Beatty introduces the example of Mlle Amélie, the protagonist of Kate Chopin's story "Regret". At the age of fifty, Mlle Amélie comes to regret declining an old marriage proposal, as she realises that it meant missing the possibility of having children of her own. According to Beatty, this story has a structure that can be represented as in Fig. 1:
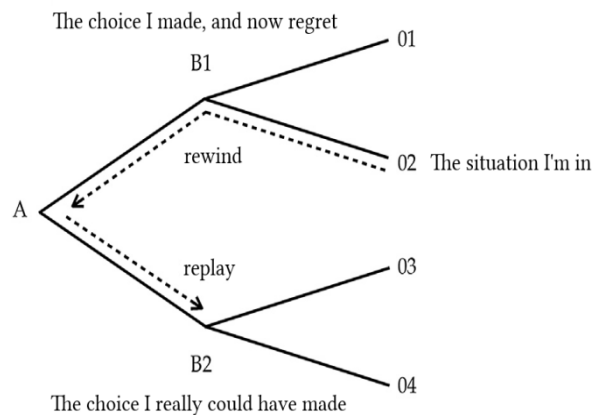

Fig. 1 – From Beatty (2017: 32).

In order to properly explain the situation 02 at which Mlle Amélie ended up being, 02 has to be put against the background of its alternative possibilities. To understand why Mlle Amélie feels regret at 02, we need to entertain the

thought that things really could have gone differently, and she really could have ended up at 03 or 04. The feeling of regret comes from a comparison between the present situation, which is the result of the choices made at some crucial node in the past at which other possibilities were really open, and the alternative outcome that could have resulted from following one of these other possibilities, and that is imagined to be better. In this way, narratives can create a branching structure that develops around the crucial nodes in the past that correspond to some difference-making events. Thus, they allow the reader to consider the ramifying possibilities in the past, and to explain the present as the path identified by what happened at the crucial branching nodes.

And here we arrive at the central point of my proposal. My suggestion is that the Dutch Book argument presents a structure very similar to Mlle Amélie's story, and that it is precisely this structure that provides the mechanism by which the argument gets normative force in the sense identified by (3).

Since this claim brings together two fields as foreign as narratology and decision theory, I will try to make it more plausible by proposing to look at the Dutch Book argument itself as a narrative, even in its barest version. After all, there is no need to be a fictional story to be a narrative. Many current accounts see narrativity as a spectrum, a property that different things can have more or less of (e.g. Ryan 2007, Currie 2010). Rather than by a specific definition, narratives are characterised by a set of typical features, none of which is neither necessary nor sufficient to identify a narrative. And the Dutch Book argument displays a remarkable set of such characteristic features: it presents an ordered series of events, some of which are purposeful actions carried out by intelligent agents, forming a chain and leading to a closure. Hence, even though it may not strike as stereotypically narrative, the Dutch Book still seems to present an interesting degree of narrativity. If this is so, then narratology may provide fruitful tools to investigate the mechanisms behind the Dutch Book.

In the Dutch Book, the agent is at an initial node, at which two different possibilities open: she can comply with *Probabilism* and have probabilistic credences, or she can violate it and have non-probabilistic credences. What the argument does is to show the outcomes of these possibilities, just as narratives do when employing Beatty's branching structure. Therefore, similarly to Beatty's reconstruction of Chopin's "Regret", the structure behind the Dutch Book argument can be schematised as in Fig. 2:
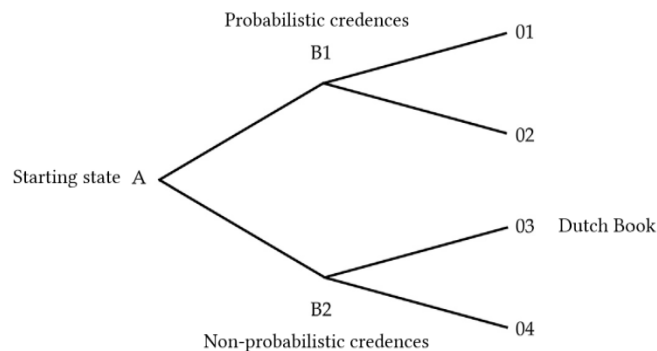

Fig. 2

There are, however, some important differences between the narrative structure theorised by Beatty and the one I propose to see behind the Dutch Book. First, in Mlle Amélie's story the crucial node at which the possibilities branch is situated in the past, while in the Dutch Book it is the starting point of the narrative. Consequently, Mlle Amélie compares the result of the actual course of events with a counterfactual outcome, the possibility of which is ruled out by the choice she made. On the other hand, the Dutch Book compares two equally open possibilities, neither of which has become the actual one yet. And finally, while the first narrative identifies the crucial nodes in the past to explain and understand Mlle Amélie current situation in light of what could have happened instead, the second one employs the branching structure to fulfil a normative function. It is now time to tackle more directly the question of how it manages to do so.

5. Comparing Outcomes

In Mlle Amélie's story, the explanation of the current state of regret is completed by the comparison of that current state with the counterfactual alternative outcomes. The branching structure contributes to the explanatory function of the narrative by allowing such comparison, thanks to the identification of a crucial node in the story from which different outcomes follow. The regret comes from the comparison, and thus the comparison is needed to explain it. Narratives can fulfil an explanatory function thanks to branching structures (Beatty 2017).

As I have argued, the Dutch Book argument presents a similar branching structure. However, if the structure is similar, the function is different: the Dutch Book argument is not intended to explain some current state of affairs. Instead, it is intended to provide normative support to *Probabilism.* But even though it intends to achieve a different goal, the Dutch Book argument exploits the branching structure for the same reason as Chopin's 'Regret': such structure permits the comparison between alternative outcomes of a single node. Thanks to the branching structure, the agent who finds herself at the starting position can see the outcomes of the options in front of her. Through their comparison, the agent can see that only compliance with *Probabilism* guarantees that she is safe from combinations of betting contracts where she would certainly lose money.

Let us now assume that the agent has the desire not to lose money, an assumption that should not strike as particularly controversial—especially on the background of the economic context in which the argument appears. Then, the Dutch Book argument effectively shows that one of the options in front of the agent serves that desire better than the alternative one, since she can see that having non-probabilistic credences would expose her to the risk of Dutch Book contracts. Therefore, the argument provides support for *Probabilism* precisely on the lines of (3):

> (3) An argument provides normative support to option *o* IF it shows the agent that *o* serves her desire *d* better than the alternative options.

Applying (3) to our case, the Dutch Book argument provides normative support to *Probabilism* because it shows to the agent that *Probabilism* serves her desire not to lose money better than the alternative option, which would expose her to sure loss. If, as I have argued above, (3) is a viable way to attain normative force, then the Dutch Book argument attains normative force. The comparison of outcomes is the mechanism that provides it with its compelling appeal.

Just as a branching structure provides an explanation of Mlle Amélie's regret by putting the current state against its counterfactual alternatives, so another branching structure provides normative support to *Probabilism* by putting its outcomes against those of the alternative option. The two narratives share the same structure (with the due differences noted), use it to implement the same mechanism of outcome comparison, but exploit that mechanism to fulfil two different functions.

Even though the Rational Agent is a fictional character, its actions can carry normative force because the rationality of its properties is supported by normative arguments like the Dutch Book. The Dutch Book provides normative grounds because it provides reasons for the option it supports. It provides reasons because it shows that that option serves the desire not to lose money better than the alternative, and it does so thanks to a branching structure that links the different options to their outcomes.

Thus, we have seen how one argument provides normative grounds to a certain requirement of rationality on the lines of (3) thanks to its branching structure. But this mechanism is not idiosyncratic to the Dutch Book. Indeed, branching structures like the one illustrated convey normativity along (3) in many other arguments in the debate on normative rationality. *Money Pump* arguments in favour of Transitivity (Davidson et al. 1955) follow the Dutch Book structure quite closely, and a similar analysis can be applied there. Even arguments *against* a certain requirement can employ similar mechanisms. One interpretation of the famous *Allais Paradox* (Allais 1953), for instance, identifies precisely in the possibility of feeling regret the justification for the violation of the requirement of Independence (Loomes and Sugden 1982). Tracing (3), this interpretation contends that the Paradox provides normative support to the violation of Independence because it shows that the violation serves the agent's desire to be safe from regret better than the alternative option.[6]

If this is so, then outcome comparison seems to enjoy some degree of robustness as a mechanism for arguments in normative rationality. More specifically, it applies to both supporting and opposing arguments.

But in order to be able to compare different outcomes, the reader must be able to represent things as they are not. This requires the appeal to the representation capacity of imagination. In the next section, I will explore some interesting implications of the role played by imagination in the comparison of outcomes.

6. Imagining Outcomes

Liao and Gendler (2019) characterise the act of imagination as representation "without aiming at things as they actually, presently, and subjectively are". To explain Mlle Amélie's regret, the reader of the story must be able to represent things not only as they *actually* are (in the world of the story): she must also be able to represent things as they could have been. To grasp the normative stance of the Dutch Book argument, the reader must be able to represent things not only as they *presently* are (at the starting state): she must also be able to represent things as they would be, conditional on the direction taken at the starting node. The cognitive act of comparison involves representations coming from what

---

[6] I am grateful to an anonymous reviewer for suggesting this application.

Weinberg and Meskin (2006) call the "imagination box", i.e. the cognitive system responsible of the generation of imaginings.

Therefore, it seems that the mechanism by which the Dutch Book argument gets its normative force is grounded in the cognitive capacity of imagination. This opens new perspectives on the relevance of imagination for action.

Typically, one of the features that philosophers use to distinguish imagination from belief is that the former is somewhat disconnected from the action-guiding system (Currie and Ravencroft 2002, Kind 2013): your imagining a venomous snake in front of you will not cause the same reaction as your believing that there is a venomous snake. While beliefs guide your actions, imaginings do not (typically) do so. Nonetheless, the role that imagination is called to play in the comparison of outcomes points to two routes by which imagination can indeed contribute to action guiding.

First, since imagination is needed to root the normative force of arguments like the Dutch Book, then imagination is needed to provide legitimacy to prescriptions based on such arguments. If a certain course of action is advised on the basis of arguments grounded on the type of normative support described above, then the force of that indication requires the imaginative comparison of different outcomes. Thus, by providing the mechanism from which normative arguments draw their force, imagination generates compelling action-guiding prescriptions. In this normative dimension there is a connection between what is generated in the "imagination box" and action.

Second, the comparison of the outcomes of different options goes beyond normative purposes. According to the classical schema of decision-making, belief and desire are the only components mediating between sensory inputs and action outputs. This schema finds its counterparts in decision theory in terms of probabilities over possible states and utilities over possible outcomes. In this classical binary view, there is no obvious room for imagination. However, some authors claim that imagination does play a role, and that therefore this schema is inadequate. Van Leeuwen (2016) sees a role for imagination in the representation of possible states of the world and possible actions to take, which are needed to build the decision matrix required by decision theories. He does not, however, consider outcomes, which nonetheless need to be represented and inserted in a matrix. Nanay (2016) addresses this dimension more directly, as he sees a crucial component of decision-making in the agent imagining her future self in the imagined outcome.

However, it is important to note that the role of imagination is substantially different from that of belief and desire. While these motivate the agent's choices, imagination provides the mechanism that allows the agent to evaluate the situation and represent all its relevant dimensions. Imagination provides the background against which the agent can represent and compare different outcomes, and thus decide on one of them according to her beliefs and desires. If this is so, then the standard picture is preserved at the level of action motivation. But Van Leeewen and Nanay are right in claiming a role for imagination in decision-making. This role is to act as the cognitive mechanism allowing the representation of the decision problem and the comparison of the different outcomes yielded by the alternative options at hand, not unlike what happens in Mlle Amélie's story and in the Dutch Book argument. Thus, in allowing outcomes comparison in decision-making, imagination finds a further way to connect to action.

7. Conclusions

As any model, microeconomic models involve an array of assumptions. Among these, the rationality of agents plays an undoubtedly central role. In that context, rationality is a technically defined concept consisting of a list of properties that are embodied in the Rational Agent. As these properties are very unrealistic, the Rational Agent is a fictional character that cannot describe real human agents. However, the choices it makes within the models are typically supposed to be normative. But how can the actions of a fictional character bear any normative pull for real agents?

In order to answer this question, I have introduced the Rational Agent and its defining properties. The legitimacy of each property as a feature of rationality is supported by some arguments. But the mere existence of these arguments is not an answer to the question of the roots of normativity. And this is not because the arguments are debated, but because it only shifts the broader question to the narrower question of what makes such arguments normative. Contested as they may be, they have an undeniable compelling pull, or they would not even be discussed. The famous Dutch Book argument in support of probabilistic credences presents a good case: what makes it so compelling that it can function as a normative argument?

The search for the answer has consisted in three steps. First, I have proposed a way in which an argument can provide normative support, i.e. by showing that the option it supports serves some desire of the agent better than its alternatives. While I do not claim that this is the only one, I do claim that this is the type of normative support that the Dutch Book offers. Second, I have identified in the Dutch Book the same branching structure that Beatty (2017) identifies in some narratives. In both cases, the structure points to some crucial nodes at which different routes depart. But while in Beatty's examples the structure fulfils an explanatory function, in the Dutch Book case its function is normative. Third, I have argued that this branching structure permits the comparison of the outcomes resulting from the different options. In doing so, it makes it clear to the agent which option serves her desire best, thus providing normative support in the sense proposed. Interestingly, the Dutch Book is not a special case: similar mechanisms support other arguments in normative rationality. Finally, since the comparison of outcomes requires imagined representations, then this mechanism shows some interesting connections between imagination and action: not only does imagination root normative action guidance, but it also provides a necessary background for decision-making, thus enriching the standard binary belief-desire schema.

References

Allais, M. 1953, "Le comportement de l'hommerationneldevant le risque: critique des postulats et axiomes de l'écoleaméricaine", *Econometrica: Journal of the Econometric Society*, 21, 4, 503-56.

Allais, M. and Hagen, G.M. (eds.) 2013, *Expected Utility Hypotheses and the Allais Paradox: Contemporary Discussions of The Decisions Under Uncertainty with Allais' Rejoinder,* Dordrecht: Springer Science & Business Media.

Beatty, J. 2017, "Narrative Possibility and Narrative Explanation", *Studies in History and Philosophy of Science*, *Part A*, 62, 31-41.

Currie, G. 2010, *Narratives and Narrators: A Philosophy of Stories,* Oxford: Oxford University Press.

Currie, G. and Ravenscroft, I. 2002, *Recreative Minds: Imagination in Philosophy and Psychology*, Oxford: Oxford University Press.

Dancy, J. 2000, *Practical Reality,* Oxford: Oxford University Press.

Davidson, D., McKinsey, J.C.C. and Suppes, P. 1955, "Outlines of a Formal Theory of Value, I", *Philosophy of Science*, 22, 2, 140-60.

Finlay, S. and Schroeder, M. 2017, "Reasons for Action: Internal vs. External", in Zalta, E.N. (ed.), *The Stanford Encyclopedia of Philosophy*, Fall 2017 Edition.

Goldman, A.H. 2009, *Reasons from Within: Desires and Values*, Oxford: Oxford University Press.

Hacking, I. 2001, *An Introduction to Probability and Inductive Logic*, Cambridge: Cambridge University Press.

Hands, D.W. 2015, "Normative Rational Choice Theory: Past, Present, and Future", https://ssrn.com/abstract=1738671 (July 2020).

Jeffrey, R.C. 1990, *The Logic of Decision*, Chicago: University of Chicago Press.

Liao, S. and Gendler, T. 2019, "Imagination", in Zalta, E.N. (ed.), *The Stanford Encyclopedia of Philosophy,* Spring 2019 Edition.

Loomes, G. and Sugden, R. 1982, "Regret Theory: An Alternative Theory of Rational Choice under Uncertainty", *The Economic Journal*, 92, 368, 805-24.

Kind, A. 2013, "The Heterogeneity of the Imagination", *Erkenntnis*, 78, 1, 141-59.

Morgan, M.S. 2006, "Economic Man as Model Man: Ideal Types, Idealization and Caricatures", *Journal of the History of Economic Thought*, 28, 1, 1-27.

Nanay, B. 2016, "The Role of Imagination in Decision-making", *Mind & Language*, 31, 1, 127-43.

Peterson, M. 2017, *An Introduction to Decision Theory*, Cambridge: Cambridge University Press.

Ryan, M.L. 2007, "Toward a Definition of Narrative", in Herman, D. (ed.), *The Cambridge Companion to Narrative,* Cambridge: Cambridge University Press, 22-35.

Savage, L.J. 1954, *The Foundations of Statistics,* Hoboken, NJ: John Wiley and Sons.

Scanlon, T.M. 1998, *What We Owe to Each Other,* Cambridge, MA: Belknap Press of Harvard University Press.

Schroeder, M. 2008, "Having Reasons", *Philosophical Studies*, 139, 57-71.

Van Leeuwen, N. 2016, "Imagination and Action", in Kind, A. (ed.), *The Routledge Handbook of Philosophy of Imagination,* London and New York: Routledge, 306-19.

von Neumann, J. and Morgenstern, O. 1944, *Theory of Games and Economic Behaviour,* Princeton: Princeton University Press.

Weinberg, J. and Meskin, A. 2006, "Puzzling over the Imagination: Philosophical Problems, Architectural Solutions", in Nichols, S. (ed.), *The Architecture of the Imagination: New Essays on Pretence, Possibility, and Fiction*, Oxford: Oxford University Press, 175-202.

Williams, B.A.O. 1979, "Internal and External Reasons", reprinted in his *Moral Luck*, Cambridge: Cambridge University Press, 1981, 101-13.