

Post hoc Theorising in Rational Choice Research on Voting: Revisiting an Old Debate

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Abstract

According to Donald Green and Ian Shapiro, the inclusion of consumption benefits in Anthony Downs' rational choice model of voting by William Riker and Peter Ordeshook is an example of methodologically flawed post hoc theorising. In this article, I argue that Riker and Ordeshook employed a methodologically sound strategy for building theory. This strategy is based on two cognitive procedures: idealisation and concretisation. Idealisation allows researchers to focus on the most important features of the phenomenon being modelled, whereas concretisation enables initially omitted elements to be gradually added back to the model. Concretising a model in response to disconfirming empirical data is a commonly applied method of reconciling theory with reality in the empirical sciences.

Keywords: post hoc theorising; rational choice theory; voting; idealisation; concretisation

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1. Introduction

Political scientists often emphasise that 'voting is perhaps the most common and the most important action considered by citizens in a democracy' (Aldrich, 1997, p. 373). Through voting, citizens not only elect and control their representatives, but also legitimise power, providing it with a democratic basis. High electoral participation can reinforce the representativeness of political decisions, influence the stability of the political system, and foster a greater diversity of voices, thus constituting one of the pillars of a well-functioning democracy.

Anthony Downs (1957) pointed out, however, that voting, despite its many obvious social benefits, is not in the rational self-interest of individuals, and thus began a debate that has been continuing with varying intensity for several decades. Why is voting irrational? According to Downs, the crucial factor is the negligible probability of casting a decisive vote. It tends to cause voting costs to exceed expected benefits. Downs' model of rational voting, a classic example of the application of rational choice theory to political science studies, leads to the conclusion that rational individuals should abstain from voting. However, this conclusion remains at odds with the empirical reality, as many citizens in democratic countries participate in elections. This phenomenon is referred to as the 'paradox of voting' (Owen & Grofman, 1984).

How, then, can we explain the observed voter turnout? One solution to the paradox of voting was proposed by William Riker and Peter Ordeshook (1968), who added the consumption benefits derived from voting motivated by a sense of civic duty and/or the desire to express political preferences to Downs' model. The modification by Riker and Ordeshook has become controversial. Donald Green and Ian Shapiro (1994) identified it as one of the methodological pathologies of rational choice theory.¹ In their comprehensive critique of rational choice theory, they noted the following:

The case of voter turnout is interesting not because it is a failure but because it illustrates the characteristic ways that rational choice theorists have reacted to discrepancies between theory and observation. In their resolute determination to declare some variant of rational choice theory victorious over the evidence (or, alternatively, to declare peace with honour through artful domain restriction), rational choice theorists have trotted out an astonishing variety of conjectures about the costs and benefits of voting, in the process generating an enormous literature, possibly larger in terms of academic citations and sheer bibliographic length than any other rational choice literature in American politics. (Green & Shapiro, 1994, pp. 47–48)

According to Green and Shapiro, the inclusion of consumption benefits in Downs' model is a methodologically questionable strategy to 'rescue' a flawed theory. They defined this strategy with terms such as post hoc theorising, post hoc

theory building, post hoc theory-modification, post hoc explanation and ad hoc modification (Green & Shapiro, 1994, pp. 48–52, 1996, p. 254). Green and Shapiro claimed that rational choice theorists do not recognise empirical anomalies as a cause of replacing rational choice theory with a theory of much higher predictive power. Instead, they modify their models to explain observations that contradict the theory.

According to Green and Shapiro, the research strategy of modifying models to fit the collected data undermines the scientific value of rational choice theory. The categorical stance of Green and Shapiro was met with criticism. Some scholars have pointed out that this stance lacks sufficient methodological justification. It has been directly challenged by scholars who have engaged in polemics with Green and Shapiro (e.g. Chong, 1996; Diermeier, 1996; Johnson, 1996), and indirectly by those who, like Riker and Ordeshook, have included a sense of civic duty/social responsibility in their analyses of the benefits and costs of voting (e.g. Aldrich, 1997; Feddersen & Sandroni, 2006; Goldfarb & Sigelman, 2010) or, following the example of Gordon Tullock (1967), have referred to altruistic motivation (e.g. Edlin, Gelman, & Kaplan, 2007; Jankowski, 2015; Loewen, 2010).

In this article, I follow the position of Green and Shapiro's opponents by developing and reinforcing it. The vision of modelling postulated by Green and Shapiro diverges from the way models are built in the empirical sciences. This is because researchers do not always abandon their models when they are incompatible with the empirical data. It is not uncommon for them to start theorising from a simple initial model which significantly simplifies reality. Such a construct is certainly not sufficiently substantiated by empirical findings and, therefore, requires appropriate modification and further testing. In this paper, I intend to demonstrate that Riker and Ordeshook applied a modelling method commonly used in building scientific theories. It is based on two cognitive procedures: idealisation and concretisation. I would like to emphasise that I am presenting a methodological evaluation, which should be distinguished from theoretical and empirical evaluations. Therefore, the purpose of this article is not to show that the Riker and Ordeshook model yields a flawless explanation of voting, but that the accusation of post hoc theorising as a methodological pathology is too strong in light of how scientific theories are constructed.² However, before discussing Riker and Ordeshook's modelling strategy, I will briefly outline the key assumptions of rational choice theory and its relationship to political science, discuss the paradox of voting and the accusation of post hoc theory development, and introduce the basic issues of scientific modelling.

2. Rational choice theory in political science

Rooted in neoclassical economics, rational choice theory has found a number of applications in the social sciences. The expansion of economics into research areas traditionally belonging to other social sciences stemmed from the conviction that the concept of the rational economic man and highly formalised economic modelling techniques can also be useful for explaining human behaviour beyond the sphere of economics (see Dzionek-Kozłowska, 2018, pp. 90–101). After all, a person must constantly confront their needs with limited possibilities for satisfying them.

When choosing what to spend limited resources on, individuals are generally guided by reason and aim to maximise the satisfaction of their needs. Maximisation, rationality, and self-interest are at the heart of the concept of *homo oeconomicus*. In every area of life, individuals have to manage – not only money and means of production, but also leisure time, space in the flat, political support, a team of players or actors, and even feelings or religious commitment. (Wilkin, 2012, p. 10)

Making choices under conditions of limited resources is, therefore, a feature particularly relevant to human functioning in complex networks of social relations, and this provides – according to the rational choice approach – a basis for the economisation of human action.

The rational choice theory emerged in political science in the 1950s but did not gain greater prominence until three decades later, when the influence of theoretical approaches hitherto dominant in the discipline waned. Some political scientists had high hopes for the use of highly formalised economic models. Klaus von Beyme (2006, pp. 142–144) noted that the following effects were expected (for instance): elimination of ideologically motivated discourse from political science; raising the methodological level of research; strengthening of the position of political science in the academic world, which would allow political scientists to get rid of the feeling of inferiority towards researchers coming from disciplines with a much longer and richer tradition; removal of the constraints imposed by rigid disciplinary frameworks that slow down the development of knowledge; creating of a counterbalance to the hyper-factualist and hyper-empiricist behaviouralist approach, which tended not to pursue theoretical integration.³

Most variants of rational choice theory used in political science are based on three main assumptions. First, socio-political reality must be reduced to the intentional behaviours of agents, who may be individuals or collective entities (e.g. political parties, states). The actions of the latter are treated as ‘aggregates’ of individual actions (Bunge, 1995, pp. 213–214). However, rational choice theorists do

not assume that individuals behave exclusively in an intentional manner; indeed, they recognise that a certain proportion of their activity consists of non-goal-oriented behaviours (Lovett, 2006, p. 240). Intentional behaviours are mainly conditioned by the desires of agents, formally expressed through preferences (Herfeld & Marx, 2023, p. 57).

Second, agents make choices based on their own ranked preferences. The preference ranking must be consistent. The minimum requirements for consistency of preferences, usually adopted in the literature, are completeness and transitivity (Green & Shapiro, 1994, pp. 14–15; Herfeld & Marx, 2023, p. 58). Completeness requires an agent to be able to state their preferences over alternatives available to them. For each pair of alternatives, say *A* and *B*, they either value *A* higher than *B*, or *B* higher than *A*, or are indifferent between *A* and *B*. Transitivity requires the following preference relationship: if an agent prefers *A* over *B* and *B* over *C*, they must also prefer *A* over *C*. An agent with a non-transitive preference – one who would consider *C* to be better than *A* – would not be able to identify which alternative is best for them and, thus, to identify the goal they wish to achieve.

Third, agents seek to maximise their utility. That is, when confronted with several alternatives, they choose the one they believe will bring the greatest benefit (satisfaction) (Green & Shapiro, 1994, p. 15; Lovett, 2006, pp. 240–241). The benefits that an agent associates with the available choice options are mathematically represented by a utility function. It assigns a numerical value to each option, enabling their comparison and identification of the option that will be most beneficial. In modelling decision-making processes under conditions of uncertainty, agents are assumed to make choices based on the expected utility. This allows utility to be assigned to each possible outcome of an action, weighted by its probability of occurrence.

Some rational choice theorists stop at a formal description of the behaviours of agents, while others also make assumptions about the motivation behind the behaviours. The former take a ‘broad’ view of rationality (thin rationality); the latter, a ‘narrow’ view (thick rationality) (Lehtinen & Kuorikoski, 2007, pp. 119–120). The ‘broad’ approach only requires that a rational agent makes a choice according to internally consistent preferences. The fulfilment of the formal conditions gives rise to the recognition of the agent’s choice as rational regardless of the type of motivation behind it. Thus, if an agent ‘decided to do *X* rather than *Y* even though one perceived the cost of *X* as greater than the cost of *Y* and the benefit of *X* as no greater than that of *Y*, one would be acting irrationally’ (Goldfarb & Sigelman, 2010, p. 279). The ‘narrow’ approach, on the other hand, focuses on describing what motivates individuals to take action. It defines rational action as being in line with self-interest. It is used in studies of political phenomena that specify the purpose of an action to avoid the tautological conclusion that every action is rational because it has a purpose and its (expected)

benefits outweigh its costs. For this reason, Downs (1957), one of the pioneers in the application of rational choice theory in political science, specified the ends on which the rational voter focuses:

If it is rational to vote for prestige, why is it not rational to vote so as to please one's employer or one's sweetheart? Soon all behaviour whatsoever becomes rational because every act is a means to some end the actor values. To avoid this sterile conclusion, we have regarded only actions leading to strictly political or economic ends as rational. (Downs, 1957, p. 276)

3. The paradox of voting

Downs' rational voters, therefore, focus on political and economic ends. They pursue a narrowly conceived self-interest, meaning that their decisions are primarily motivated by a desire to improve their own life situation rather than by altruism or concern for the common good. They look out for anything that may bring tangible individual benefits – lower taxes, higher benefits, favourable regulations, etc. Rational voters choose the option that ranks highest in their preference ranking, thus maximising the expected utility of voting (Downs, 1957, pp. 27–28, 36–50). When deciding whether to vote or abstain, they consider three factors: the personal benefits of the preferred election outcome (B), the probability of casting a decisive vote (P) and the costs of voting (C). They will vote only if the expected benefits exceed the costs, that is, if $PB > C$.

Therefore, according to Downs' model, the decision to vote or not to vote is the result of a simple comparison of the subjectively estimated benefits of winning by the preferred candidate (weighted by the probability of casting a decisive vote) against the costs of voting. The costs of voting are mainly the time and effort that voters have to spend both on election day to go to the polling station and cast their vote, and before the election, to acquire, assimilate, and process information about parties and candidates. Pre-election effort includes, for example, analysing political programmes, following debates, and even discussions with other citizens – all of which require a commitment that, for some voters, may prove costly enough to effectively discourage them from being well-informed (see Tullock, 1967, pp. 100–114). By contrast, voting benefits represent the difference in expected utilities from the policies of the two candidates. The voter compares the utility of electing candidates X and Y and assesses how each candidate's programme is likely to affect the voter's life, as well as the chances that a particular candidate will win the election and deliver on their promises (Downs, 1957, pp. 35–40). The relevance of the policies of candidates is relativised to the individual voter. For example, for an entrepreneur, tax cut policies may be key, whereas representatives of the working class may be more focused on regulations aimed

at increasing job security. Importantly, the voter analyses not only the content of political programmes, but also the credibility of the candidates themselves. The voter assesses whether they have a realistic chance and the will to implement the proposed solutions. The greater the difference between the expected utilities of choosing specific candidates (e.g. the greater the potential benefits of choosing candidate *X* compared to choosing candidate *Y*), the more inclined the voter should be to vote – in this situation, they stand to see a relatively significant gain in the event of a preferred election outcome (victory of candidate *X*). On the other hand, if the expected utilities of the election of candidates are equivalent for the voter, they should abstain from voting, which, in light of the model, will save them from unnecessarily wasting resources.⁴

However, despite a strong preference for one candidate, a rational voter may abstain from voting. The reason for this is the extremely low probability that the cast vote will determine the election's preferred outcome.⁵ The extremely low value of *P*, especially in populations of multiple millions of voters, means that the expected benefits of voting (*PB*) are usually close to zero (Edlin et al., 2007, p. 297; Mueller, 2003, pp. 304–305; Owen & Grofman, 1984, pp. 312–315). As Downs noted (1957, p. 244):

Every rational voter realizes that he is not the only person voting. This knowledge radically alters his view of the importance of his own vote. If he is the only voter, the cost to him of voting incorrectly is measured by his party differential, because an incorrect vote elects the wrong party. But in fact there are multitudes of other voters. Therefore the party which eventually wins will probably be elected no matter how he casts his ballot, as long as the other citizens vote independently of him. Thus the cost of his making a mistake cannot be measured by his party differential, since this mistake may not alter the outcome.

Therefore, it is difficult to expect a rational individual to want to vote, especially because participation in elections is not a precondition for participating in consumption of benefits resulting from the victory of the preferred candidate. Everyone can participate in consumption, regardless of whether they went to the polling station on election day and cast their vote or stayed at home (Herfeld & Marx, 2023, p. 68). An analysis of Downs' model therefore leads to a paradoxical conclusion, as in many democratic countries a relatively high level of voter turnout is observed even when electoral competitiveness is low.⁶

As I mentioned in the Introduction, Riker and Ordeshook (1968) proposed a frequently discussed solution to the paradox of voting. Moving beyond Downs' classic approach, they highlighted the diversity of voter motivations. They pointed out that voting can bring not only instrumental benefits but also consumption benefits such as satisfaction from: 'compliance with the ethics

of voting'; 'affirming allegiance to the political system'; 'affirming a partisan preference'; 'simply deciding, going to the polls'; 'affirming one's effectiveness in the political system' (Riker & Ordeshook, 1968, p. 28). The consumption benefits were collectively expressed by Riker and Ordeshook using the factor D , which was then included by them in the Downs model. According to the consumption view, a voter will participate in an election only if $PB + D > C$.

According to Downs' model, the voter casts a vote to bring about the victory of the preferred candidate. In contrast, according to Riker and Ordeshook, an individual may also vote because they perceive participation in elections as a civic duty and/or wish to express their political preferences. Including the D factor in the analysis, regardless of the probability of casting a decisive vote, provides the basis for explaining the paradox of voting. If an individual feels a sufficiently strong sense of civic duty or a strong desire to express their own opinions and beliefs, they will participate in an election, regardless of their personal benefits, costs, and the slim chance of casting a decisive vote. Consequently, the Riker and Ordeshook model provides a basis for explaining high voter turnout.

One of the undesirable consequences of the modelling strategy adopted by Riker and Ordeshook is the risk of tautology. The inclusion of a factor outside the domain of rational choice theory in the analysis of the benefits and costs of voting has led to a reinterpretation of the concept of rationality. Some scholars have noted that recognising that different actions can produce some utility for an individual makes it possible to build a model according to which voting will be rational (the expected benefits of voting will outweigh its costs) regardless of the type of motivation (e.g. Blais, 2000, p. 4; Green & Shapiro, 1994, p. 52; Mueller, 2003, p. 306).⁷

4. Post hoc theorising

Green and Shapiro (1994, pp. 47–71) criticised the method of theory building adopted by Riker and Ordeshook (1968). In their view, the inclusion of the D factor in Downs' model is an example of post hoc theorising, that is, modifying a theory in response to data that challenges its initial assumptions. Green and Shapiro stated that the D factor was introduced into the model to 'rescue' a false theory from falsification, which they considered to be one of the methodological pathologies of rational choice theory.

According to Green and Shapiro, rational choice theorists commit several serious methodological failures, both at the stage of theory construction and during the preparation and conduct of empirical tests:

When systematic empirical work is attempted by rational choice theorists, it is typically marred by a series of characteristic lapses that are traceable to the universalist ambitions that rational choice theorists mistakenly regard as the

hallmark of good scientific practice. These pathologies manifest themselves at each stage of theory elaboration and empirical testing. Hypotheses are formulated in empirically intractable ways; evidence is selected and tested in biased fashion; conclusions are drawn without serious attention to competing explanations; empirical anomalies and discordant facts are often either ignored or circumvented by way of post hoc alterations to deductive arguments. (Green & Shapiro, 1994, p. 6)

Green and Shapiro found that rational choice theorists make additional assumptions (auxiliary hypotheses; see Mueller, 2003, p. 306) when observations arise that are difficult to explain based on the initial assumptions of the theory. They modify their models to address the discrepancy between theory and empirical reality. They use 'the ambiguity in the meaning of rationality to transform successive disconfirming instances into data consistent with a newly recast theory' (Green & Shapiro, 1994, p. 36). In Green and Shapiro's view, another response to disconfirming empirical data is an arbitrary domain restriction. It manifests itself in the tendency of rational choice theorists to focus on 'application in which [their - M.W.] theories appear to have better success' (Green & Shapiro, 1994, p. 44).

Riker and Ordeshook adopted a modelling strategy involving modifications leading to a reinterpretation of the assumption of rationality. They have constructed a theory that, according to Green and Shapiro, has several serious deficits. Green and Shapiro concluded that Riker and Ordeshook should have formulated precise hypotheses which should be abandoned if challenged by the results of empirical testing. In their view, accepting a theory-building strategy of not eliminating erroneous assumptions but upholding them through ad hoc modifications generates and reinforces 'a debilitating syndrome in which theories are elaborated and modified in order to save their universal character, rather than by reference to the requirements of viable empirical testing. When this syndrome is at work, data no longer test theories; instead, theories continually impeach and elude data' (Green & Shapiro, 1994, p. 6).

However, abandoning a model if its underlying assumptions are not adequately justified by empirical findings, as postulated by Green and Shapiro, is only one possible strategy for building scientific theories. Often, theorists, rather than abandoning the claims they formulate, modify and subject them to further empirical tests (Chong, 1996, pp. 44-46; Diermeier, 1996, pp. 61-63). The goal of this 'dialogue' between theory and empirical verification is to develop a model that meets the epistemic objectives set by scholars. Therefore, if the rational choice model resulting from the aforementioned 'dialogue' again 'generates specific explanations at odds with the best available evidence, then we reformulate the model [again - M.W.]; we do not jettison the rationality assumption upon which the more encompassing research tradition is premised'

(Johnson, 1996, p. 86). The modelling strategy adopted by Riker and Ordeshook does not, in my view, constitute a methodological error, let alone a methodological pathology. It is methodologically sound and widely used in science, as shown by the methodological reconstructions of theories from various empirical sciences (e.g. Cassini, 2021; McMullin, 1985; Nowak, 1980; Peruzzi & Cevolani, 2022). In the next two sections, I focus on the key aspects of modelling and contrast the method of theory building adopted by Riker and Ordeshook with the findings of methodologists and philosophers of science.

5. Scientific modelling

Scientific modelling is a complex process in which researchers make a series of decisions regarding the structure and scope of the model to be created. Real-world phenomena can be extremely complex; therefore, simplifications are necessary to obtain a clear picture of their key aspects. The goal of modellers is, therefore, not to faithfully reproduce every detail of the phenomenon under investigation but to highlight those elements and features which, in their view, are decisive for the achievement of the set epistemic objectives.

In the process of creating models, researchers act as agents who take intentional action. Depending on their ontological beliefs about the structure of reality – acceptance of essentialist or phenomenalist assumptions – they decide on a modelling strategy (Brzechczyn, 2019, p. 210). According to the essentialist view, the objective differentiation of reality into essential and inessential implies starting a study with a simple initial model that captures the most important features of the target phenomenon. On the other hand, according to the phenomenalist approach, the studied phenomenon is determined by a set of equally important factors; therefore, the choice of modelled relationships depends primarily on the interests of researchers.

According to Leszek Nowak's (1977, pp. 54–61) idealisational theory of science, the ability to distinguish the essence of a studied phenomenon from its accidental features is characteristic of empirical sciences, which have moved from the empirical-gathering stage of development to a theoretical-explanatory one. In the former, induction is the main method for building scientific theories, whereas the latter results in the development of idealisational theories. By accepting that the impact of some factors is less important and can be temporarily disregarded, the object of the researcher's consideration is not the phenomenon in all its empirical complexity but its idealised model, that is, a construct reflecting the aspects of the real phenomenon considered most important by the researcher. In constructing a model, the researcher isolates and, at the same time, exaggerates the features of interest to them, rather than aiming for the most faithful representation of reality possible. Thus, their modelling strategy resembles the activity of a caricaturist

deforming the features of the person being portrayed rather than the effort of a photographer to capture all the details of the recorded fragment of the world (Nowak, 1980, p. 134; see also Morgan, 2006; Gibbard & Varian, 1978).

Including a wide variety of influences and dependencies in a model can be epistemically counterproductive. Indeed, excessive model complexity can limit its tractability and, consequently, reduce or nullify its explanatory or predictive potential (Cartwright, 1983; Levins, 1966). However, oversimplified models can lead to epistemic errors and false conclusions (Wimsatt, 2007). How do we determine the optimal level of complexity (or simplification) of a model? The answer to this question is relativised to the domain and varies over time. It depends on many factors, as was aptly pointed out by Peter Turchin (2023) when discussing the methodological aspects of modelling historical processes. He stated that ‘there is no single rule that determines how complex (or how simple) a model should be. Model complexity depends on how complex the modeled dynamics are, how much and what kind of data we have, and how precisely we want to know (or can know [...]) the answer’ (Turchin, 2023, pp. 256–257).

According to the idealisational theory of science, two cognitive procedures play an essential role in the construction of scientific models: idealisation and concretisation. Idealisation allows modellers to focus on the aspects of the modelled phenomenon that they consider most important; concretisation allows previously omitted factors to be included in the model.

6. The role of idealisation and concretisation in the construction of Riker and Ordeshook’s voting theory

Green and Shapiro (1994, pp. 191–192) raised the issue of the role of simplifying assumptions in model-based theorising, addressing possible counter-arguments to the critique of the rational choice theory they presented. They stated that while ‘all explanations rest on simplifying abstractions that distort reality’, however ‘if an abstract theory has explanatory power, this is not merely because it is abstract, but because the abstraction in question captures the essence of what is going on causally’ (Green & Shapiro, 1994, p. 191). Green and Shapiro’s statement would be correct if the concept of abstraction were replaced by the concept of idealisation. For it is through idealisation that the investigated phenomenon undergoes a counterfactual simplification (distortion (Weisberg, 2015), deformation (Nowak, 2000b), reduction (Strevens, 2019)), as a result of which it is represented as if it does not have the characteristics it actually possesses. Features of the phenomenon that have some representational significance are omitted, which clearly distinguishes idealisation from abstraction. As a result of the abstraction, the modelled phenomenon is also simplified, but without

significant consequences for the representation itself. Abstraction makes it possible to obtain a general concept from the knowledge of individual objects. To serve as an example of idealisation, let us invoke the perfect roundness of the ball – one of the assumptions made by Galileo to explain the nature of motion. An example of a mental activity typical for abstraction can be the omission of any property irrelevant to movement, such as the colour of the ball, in Galileo's model (Nowak, 1990, p. 193; see also Jones, 2005; Godfrey-Smith, 2009).

Scientists are guided by different, often intertwined motivations when they counterfactually simplify real-world phenomena of interest. The main reasons for applying the idealisation method usually include human cognitive limitations and temporary or absolute computational limitations (Potochnik, 2017), the need to improve the mathematical tractability and efficacy of the model (McMullin, 1985), the desire to focus on key causal patterns (Potochnik, 2017) or on the relationship linking the analysed magnitude to its most important determinant (Nowak, 2000b), the desire to isolate key mechanisms and relationships (Mäki, 1994), the need to explore target systems (Shech & Gelfert, 2019), to facilitate explanation (Batterman, 2009) or understanding (Shech, 2022) of the phenomenon being modelled and the desire to develop theory (Rohwer & Rice, 2013).

Philosophers of science distinguish between different categories of idealisation. For example, Michael Weisberg (2015, pp. 98–105) proposed a three-element categorisation. He distinguished the following idealisations: Galilean, minimalist, and multiple models. Galilean idealisation is strongly pragmatic in nature and involves making simplifications to the model in order to secure and improve its mathematical or computational capabilities. Minimalist idealisation implies focusing on causal factors that determine the occurrence and essence of the examined phenomenon. Focusing on focal causal factors is also the right strategy for multiple-model idealisation. However, it does not rely on the construction of a single best model but on many simple, related, and incompatible models.

According to Weisberg's conception, only Galilean idealisations are subject to de-idealisation. Sometimes, de-idealisation involves the gradual inclusion of initially omitted factors in the model. Modelling, in which de-idealisation represents a reversal of idealisation, can, following Turchin (2023, p. 257), be likened to cooking a soup:

I always start with the simplest possible design and then add 'stuff' to it. It's like cooking a soup. You first get the water boiling and then add meat, vegetables, spices, etc. You keep cooking until the soup tastes great, and then you are done. You need just the right amount and variety of ingredients and seasonings for the best soup, and no more than that. The same goes for the best model. What often happens is that once you get the model to the right level of complexity, adding more stuff to it does not help; in fact, it makes the model worse. And the models that are as simple as possible, but no simpler than that, can be remarkably good.

The 'culinary' modelling strategy of Turchin points to the relevance of the skilful de-idealisation of the model. In the idealisation theory of science, de-idealisation, which involves adding initially omitted factors to the model, is called concretisation. Developed by Nowak (2000b, pp. 117–123), the idealisation-concretisation scheme describes cognitive activities in the process of theory building using the model method. The scheme includes the following elements.

- 1) **Division of factors.** Based on the ontological perspective adopted, a distinction is made between factors that influence and do not influence the analysed phenomenon. The former create an image of the space of essential factors for the investigated phenomenon, while the latter are reduced.
- 2) **Hierarchisation of factors.** Within the set of essential factors, a hierarchy is created, distinguishing between the principal factor and secondary factors. The result is an image of the essential structure of the analysed phenomenon.
- 3) **Idealising.** Idealising assumptions are introduced, which ignore the influence of factors considered to be secondary, and a hypothesis is formulated to determine how the studied phenomenon depends on the factor considered to be the principal one.
- 4) **Concretising.** Successive idealising assumptions are gradually removed, thus modifying the initial hypothesis. This shows how the analysed phenomenon depends on the principal factor and secondary factors.⁸

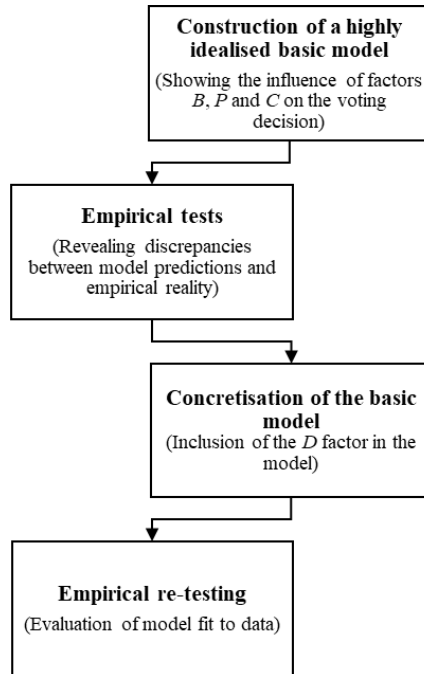
Similar to any theoretical construct, Nowak's modelling scheme simplifies reality and thus has certain limitations. It overstates the importance of concretisation. This is because not all idealising assumptions can be removed in practice. Some of these are deeply rooted in the structure of the model, enabling the application of appropriate mathematical techniques and explanation or prediction (Rice, 2019). The elimination of the selected idealising assumptions may also affect other assumptions upheld in the derivative model. Under certain circumstances, this can upset the equilibrium of the model (Reiss, 2012). Another reason for maintaining a highly idealised model, despite the potential for providing more detail, is sometimes the desire to focus on well-defined causal patterns (Potochnik, 2017).

Therefore, de-idealisation does not always turn out to be a simple 'reversal' of idealisation. Furthermore, it does not always involve adding the initially omitted elements back to the model. Tarja Knuuttila and Mary Morgan (2019) emphasised the complexity and diversity of de-idealisation in research practice. They identified four de-idealising strategies: de-idealising as recomposing, de-idealising as reformulating, de-idealising as concretising and de-idealising as situating. Recomposing involves adding back causal factors initially omitted

from the model, reformulating focuses on changing the language or form of presentation of the model, concretising allows abstract concepts to be filled in with empirical content, and situating aims to adapt the model to the analysed context. Furthermore, as noted by Alexandra Quack (2024), de-idealisation does not always require the development of a new, less idealised model. It can also involve supplementing an existing model with a narrative that recomposes and concretises selected elements and assumptions.

The idealisational theory of science can be successfully used in the methodological reconstruction of those theories of rational choice which employ the method of concretisation in addition to the method of idealisation. This is the case with Riker and Ordeshook's voting theory, itself being a development of Downs' theory. Riker and Ordeshook began building the theory with a simple benefits-costs model, a construct that greatly simplifies reality (see Figure 1). In line with idealisational reconstruction, they adopted, similar to Downs, several idealising assumptions, ignoring the influence of secondary factors. Among other things, they assumed that the decision to vote is not influenced by a sense of civic duty, a desire to express political preferences, altruistic motivation, a desire for change, an assessment of the effectiveness of the political system, etc. Adopting idealising assumptions, they found that concern for narrowly conceived self-interest is the principal determinant, while other determinants are secondary and interfere with the normal decision-making process between voting and voter abstention. The consequence of omitting secondary influences is a model that explains only a small part of empirical reality. The simple benefits-costs model is ineffective in explaining turnout levels, whereas it performs much better 'in explaining differences in turnout *at the margin*' (Geys, 2006, p. 18).

Figure 1:
Development and testing of the rational choice theory of voting



Source: The author.

The low explanatory power of Downs' model led Riker and Ordeshook to concretise it. They removed idealising assumptions, according to which a sense of civic duty and desire to express political preferences do not influence the decision to vote. However, they did not introduce two separate factors into the Downs' model, which would have been a methodologically correct solution; instead, they used a single umbrella factor, denoted by the letter *D*. The broad scope of the *D* factor is a consequence of the specific conceptualisation of the concept of a sense of civic duty. Riker and Ordeshook attributed an extensive set of designations to this concept, including expressive motivation.⁹ The inclusion of the *D* factor in Downs' model, irrespective of the probability of casting a decisive vote, has significantly increased the explanatory potential of the theory. The concretisation of Riker and Ordeshook provides the basis for explaining the paradox of voting: if an individual feels a sufficiently strong sense of civic duty or a strong desire to express their own opinions and beliefs, they will vote, disregarding the personal benefits, costs, and extremely low probability of casting a decisive vote (Dowding, 2005, p. 452; Geys, 2006, pp. 18–19).¹⁰

The models developed by Downs and Riker and Ordeshook explain the same phenomenon but differ in the number of idealising assumptions. The Riker and

Ordeshook model has fewer of these, making it a concretised variant of the Downs model. A one-way analysis of the relationships linking the models in question, and therefore only through the lens of concretisation, shows only one side of the coin. The other side is the possibility of moving back from the less idealised Riker and Ordeshook model to the more idealised Downs model. This reversal is made possible by the idealisation method. Thus, the modelling of rational voting follows the assumptions of the idealisational theory of science, as well as Turchin's 'culinary' modelling analogy. In the construction of rational choice models of voting, concretisation represents a reversal of the idealisation process.

Finally, it is worth noting that the procedures used by Downs and Riker and Ordeshook are widely used in science (as noted before). Due to the limited volume of the article, I will present only one example from the life sciences. Galileo recognised in the law of free fall that in a uniform gravitational field, in the absence of air resistance, all bodies fall with the same acceleration. He, therefore, assumed that in airless space, the acceleration of falling bodies is not proportional to their weight. Galileo treated air resistance as a secondary factor that interferes with the course of the studied phenomenon (Nowak, 2000a; Such, 1973). Downs followed a similar approach, ignoring the influence of social norms and preferences on the decision to participate in the elections. To reconcile the law of free fall with experience, Galileo considered air resistance. Thus, to bring Downs' model closer to reality, Riker and Ordeshook included the consumption benefits.

7. Conclusion

The paradox of voting points to the important limitations of the rational choice theory in explaining electoral participation. The conclusions drawn from an analysis of Downs' model remain in clear contradiction with the empirical data. Riker and Ordeshook's inclusion of consumption benefits in the Downs model provides the basis for explaining the paradox of voting. However, this concretisation has been sharply criticised by Green and Shapiro. They decided that Riker and Ordeshook had carried out methodologically flawed post hoc theorising, the purpose of which was to 'rescue' a flawed theory. In this article, I showed that Riker and Ordeshook adopted a modelling strategy commonly used in the construction of scientific theories. It is based on two basic procedures: idealisation and concretisation. The former allows the researcher to isolate key relationships, whereas the latter allows the researcher to gradually add initially omitted factors to the model. Therefore, modifying a model in response to disconfirming empirical data is not, as I have argued, a methodological error or, even less so, a methodological pathology, but a methodologically sound way of reconciling theory with reality.

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Endnotes:

- 1 Other methodological pathologies discussed by Green and Shapiro (1994, pp. 33–46) are: slippery predictions, vaguely operationalised predictions, search for confirming evidence, projecting evidence from theory and arbitrary domain restrictions. Simon Hug (2014) concisely discusses the debate on rational choice theory sparked by Green and Shapiro.
- 2 The innovation of my approach is that I reconstruct and evaluate the accusations of post hoc theorising using the methodological tools of the idealisational theory of science (Nowak, 2000b). I show that the modification of the Downs' model itself, understood as a concretisation of the basic model, is not methodologically flawed in itself. This argument does not, of course, ultimately resolve the issue of empirical adequacy of Riker and Ordeshook's model, nor does it invalidate other elements of Green and Shapiro's critique. It merely shows that the methodological assessment of the model modification procedure requires criteria that are separate from the assessment of the model's empirical adequacy.
- 3 The theoretical and empirical consequences of economics imperialism have simultaneously become the subject of criticism by political scientists (see Kriesi, 2005).
- 4 In societies where political parties do not offer clear alternatives, minor differences in policy positions may be one of the determinants of voter abstention (see e.g. Çakır, 2022; Dalton, 2008; Hobolt & Hoerner, 2020).
- 5 A single vote can determine the outcome of an election in two ways: it can result in a tie between two candidates, or it can break the tie between them (Matsusaka, 1993, p. 313).
- 6 The problematic nature of the paradox of voting was pointed out, among others, by John Aldrich (1997, p. 373), who stated that 'the rationality of voting is the Achilles' heel of rational choice theory in political science'. It was put even more bluntly by Morris Fiorina (1990, p. 334), who noted that the paradox of voting is 'the paradox that ate rational choice theory'.
- 7 Riker and Ordeshook abandoned a narrow view of rationality, accepting the risk of tautology. They concluded that it is impossible to assess the rationality of behaviour, so 'in a descriptive theory it is unwise for the theorist to impose his own interpretation of goals on the observed behavior' (Riker & Ordeshook, 1968, p. 27). They, therefore, made a conscious methodological choice – they prioritised a fuller and more adequate description of reality over the high predictive power of the theory. This does not mean, however, that Riker and Ordeshook's theory is predictively entirely useless. It proves reliable in predicting turnout at the margin (Dowding, 2005, p. 454).
- 8 The objective of concretisation is not to create a fully realistic model, as it would then cease to be a model. The modellers never carry out final concretisation because they lack complete information on the effect of certain secondary factors. Their influence is then determined by approximation.
- 9 Later papers (e.g. Aldrich (1997); Hamlin and Jennings (2019); Pons and Tricaud (2018)) refine the motivations that Riker and Ordeshook collectively included in the D factor, mainly by explicitly distinguishing expressive motivation and its empirical analysis.
- 10 Riker and Ordeshook's concretisation is justified by the results of empirical research. These results point to the potential importance of consumption benefits in the decision to vote (see e.g. Blais, 2000; Blais & Achen, 2019; Mueller, 2003; Smets & van Ham, 2013).