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The Explanation of Everything. A Critical Assessment of Raymond Boudon's Theory Explaining Descriptive and Normative Beliefs, Attitudes, Preferences and Behavior

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Abstract

Raymond Boudon proposes a theory that explains attitudes, descriptive and normative beliefs, preferences and behavior, in other words: everything – or at least almost everything – social scientists are interested in. The basic idea is that *reasons* are a major causal factor, but there are also *irrational factors* (Boudon's term) such as affective causes. This is the first paper that provides a detailed critical analysis of this theory. We first identify the major problems of the theory. One is its relatively low explanatory power: it is largely left open how to select the causally relevant reasons and irrational factors for a given explanandum. A second problem is the validity of the theory: is it plausible that a single theory can explain the wide range of phenomena Boudon focuses on? A final question is whether Boudon's rejection of utility maximization is acceptable.

To answer these questions two social psychological theories are applied to each of the explananda of Boudon's theory: value expectancy and balance theory. It is shown that the two theories are capable of improving the explanatory power of Boudon's theory. They further confirm that a single theory can explain the explananda of Boudon's theory. Finally, both theories imply that Boudon's rejection of utility maximization is not tenable.

Keywords: Rational choice theory; Raymond Boudon; explanation by reasons; utility maximization; value expectancy theory; balance theory; explanatory power.

Resumen. *La explicación de todo. Una evaluación crítica de la teoría de Raymond Boudon que explica las creencias descriptivas y normativas, las actitudes, las preferencias y la conducta*

Raymond Boudon propone una teoría que explica las actitudes, las creencias descriptivas y normativas, las preferencias y la conducta, en otras palabras: todo —o como mínimo casi todo— en lo que los científicos sociales están interesados. La idea básica es que las *razones* son un factor causal fundamental, pero que existen también, en términos de Boudon, *factores irracionales*, como las causas afectivas. Este es el primer artículo que ofrece un análisis crítico detallado de esta teoría. En primer lugar se identifican los principales problemas de la teoría. Uno es su relativamente bajo poder explicativo: la cuestión de cómo seleccionar las razones y los factores irracionales causalmente relevantes para un determinado *explanandum* se deja abierta en una medida importante. Un segundo problema consiste en la validez de la teoría: ¿resulta plausible que una única teoría pueda explicar un rango de fenómenos tan amplio como el que aborda Boudon? Una última cuestión es si resulta aceptable el rechazo de Boudon de la maximización de utilidad.

Para responder a estas preguntas se aplican dos teorías socio-psicológicas a cada uno de los *explananda* de la teoría de Boudon: la teoría del valor esperado y la teoría del equilibrio. Se muestra que ambas teorías son capaces de mejorar el poder explicativo de la teoría de Boudon. Adicionalmente, dichas teorías confirman que una única teoría puede dar cuenta de los *explananda* de la teoría de Boudon. Finalmente, ambas teorías implican que el rechazo de la maximización de utilidad por parte de Boudon no se sostiene.

Palabras clave: teoría de la elección racional; Raymond Boudon; explicación por razones; maximización de utilidad; teoría del valor esperado; teoría del equilibrio; poder explicativo.

Summary

1. Introduction

Raymond Boudon is the only social scientist who has proposed a theory that is supposed to explain every phenomenon, or at least most of the phenomena, social scientists are interested in: descriptive and normative beliefs, preferences, attitudes and behavior. In contrast to social psychological theories such as learning theories, Boudon's theory is strikingly simple, as will be seen below. Furthermore, because Boudon subscribes to methodological individualism, his theory is supposed to contribute to the explanation of macro phenomena as well. Thus, compared with "grand" theorists, such as Karl Marx or Talcott

Parsons, Boudon's theory refers to micro as well as macro phenomena. And, it seems, it is a testable theory. Another attractive feature of Boudon's theory is that he illustrates it with numerous examples, mostly taken from classical writers such as Émile Durkheim, Alexis de Tocqueville and Max Weber. This relates the theory to the classical core of sociology and is thus rooted in the sociological tradition. Perhaps Boudon's theory is the overarching theoretical system social scientists have dreamt of?

The generality of Boudon's theory, its simple structure and its close relation to the work of major classical writers deserve a detailed discussion. It is surprising that this is lacking so far. The present paper attempts to close this gap.

In what follows, we first present Boudon's theory and discuss its major problems. Two social psychological theories are then applied and it is examined whether they are capable of contributing to the solution of the problems of Boudon's theory: balance theory and value expectancy theory. We apply the theories successively to the different explananda of Boudon's theory: descriptive beliefs, normative beliefs, attitudes, preferences and behaviors. After these detailed analyses, the question is addressed whether Boudon – who is a vehement opponent of rational choice theory – does not implicitly apply a wide version of this theory. It is argued that this is actually the case.

Before we address the issues mentioned, it is useful to define some of the basic concepts. *Descriptive beliefs* – also called representational beliefs (e.g., 2012a: 8)[1], positive or cognitive beliefs – refer to empirical statements such as "X is true" or "the wages of women in Europe are lower than of men." The explanatory question is under what conditions individuals more or less accept such statements as valid.

Another dependent variable of Boudon's theory are *normative beliefs*, that is, beliefs of the kind "X is good." Examples are "the state should support the poor" or "it is not allowed to kill somebody." These statements cannot be validated by confrontation with the real world (1996: 125-126). The question to be answered is when individuals accept such statements.

Attitudes are evaluations of objects, but without an oughtness component. For example, the statements "I like to spend money" or "I like others to spend money" refer to a positive feeling, but do not imply any normative claim that one should spend money.

A discussion of Boudon's work is burdened with the problem that he addresses the same questions in numerous writings and that it sometimes seems that there are incompatibilities. The concern of this paper is not an exegesis or interpretation of Boudon's work. The aim is a discussion of substantive issues. For each claim discussed, citations or quotations are provided. Thus, these theses and claims are held by Boudon. I leave it open whether in other work other claims are made.

1. Citations of years with page numbers refer to papers or books by Boudon.

2. Boudon's Theory

Boudon formulates the "basic principle" of his theory that he calls the *cognitive equilibrium principle* (2012b: 18) or the *cognitivist model* (e.g., 1996) – henceforth abbreviated as CM – in the following way: "… the fact that subject X subscribes to idea Y, that the subject believes in Y, can be explained … by the *reasons* that the subject has for believing in it" (1994: 3, italics in the text). Reasons are thus *causes* (1994: 4) of beliefs. Another formulation of this theory is: "[P]eople believe that X is true, acceptable, good, legitimate, etc. as soon as they have the feeling that X rests upon a set of acceptable reasons." This hypothesis explains beliefs. But the central variable – "acceptable", "strong" or "good" reasons – is also a condition for behavior: "[P]eople have strong reasons to believe what they believe, to do what they do" (1996: 140).

The "reasons" need not be idiosyncratic but may be "transsubjective" (1996: 130) or "collective" in the sense that they are accepted by many other individuals. Reasons may be objectively wrong, but can nonetheless be "good reasons" (1989: 174) for a belief. Beliefs, then, may be wrong. An example is the false belief in the causal impact of rain dances on the generation of rain (see the discussion below). This false belief is based on "good reasons" which are false as well. Important for explaining beliefs and action is thus which reasons an actor accepts. Actors who act on the basis of good reasons are, as Boudon called it, "subjectively rational" or simply "rational." "Good" means that the reasons are plausible in the situation of the actors.[2] To illustrate (1989: 188-189), employers often believe that replacing human work by machines increases unemployment. This is based on their experience because when they buy new machines they release workers. In the economy, however, new machines must be produced and maintained and may therefore increase employment.

What is the meaning of "reasons"? Boudon gives the following general definition: When actors are confronted with a question they try to answer it "by making a guess, a conjecture, or by applying a theory or a general principle valid in many cases" (1989: 176). Reasons are thus also beliefs, viz. descriptive as well as normative beliefs. For example, a good reason for believing in the effectiveness of rain dances is the belief that there are gods that can fulfil the desires of the tribe members. Another belief – a reason – may emerge due to the observation that it often (or most of the time) happens that it rains after the ritual has been performed. In this example, there might also exist a general belief, a sort of everyday induction principle, that A causes B if B occurs relatively often some time after A. Thus, *reasons are a certain type of beliefs* that are

2. There are more detailed descriptions in Boudon's writings about what *good* reasons are. For example: "good reasons have the status of conjectures, principles, or theories that most people with the same level of information and/or interest in the question they are confronted with would endorse" (1989: 180, see also 175; further 1994: 34). We will not go further into what "good" (or sometimes Boudon speaks of "strong") reasons are. It suffices for what follows that reasons are beliefs that are subjectively considered valid by individual actors.

"relevant" for accepting other beliefs – we will return to the relevance criterion later. One could call the beliefs that explain other beliefs *second-order beliefs*. Reasons are thus second-order beliefs. The *first-order beliefs* are those beliefs that are to be explained.

Not only reasons are causes. There are other causes that are called *irrational factors* (e.g., 1996:126). These are, among other things, "affective causes" or "passions" (1994: 4). An illustration is Othello's belief that his wife is unfaithful. The reasons for accepting this belief is the evidence Jago presents to him, but everybody else knows "that the credence he gives to these reasons is itself an effect of his jealousy" (1994: 4). There are further "non-affective causes" that are not beliefs either (1994: 5). These are, for example, "psychic causes located beyond any control of the subject" such as a "primitive mentality" (1989: 180). Biological factors or "consumption of some chemical substance" (cocaine) are causal factors as well. Further examples are "absent-mindedness", "deficiency of cognitive capacities" (1996: 125), "internalization of collective beliefs through socialization" or "effects of cultural or of biological evolutionary processes" (1996: 126). We may add factors such as global warming or a natural catastrophe such as a Tsunami. "Sentiments of justice or injustice, legitimacy or illegitimacy … include an affective dimension: nothing is more painful than injustice" (1996: 145). The norms themselves that are adduced are reasons.

These definitions imply that *preferences* are not reasons, they fall under the irrational factors. But sometimes the terminology is not clear. For example, Boudon notes that reasons can be "cognitive" as well as "utilitarian." In one of his examples, Boudon states that there were "'cognitive' reasons to be anticlerical, but also 'utilitarian' reasons not to oppose the anticlerical actions and declarations" (1996: 140). Thus, preferences seem to be reasons. *Constraints* such as available income are not reasons, only the perceptions of constraints which are then beliefs are reasons.

The "irrational" causes – henceforth we will omit the quotation marks of "irrational" – may give rise to beliefs that are based on "solid reasons" (1996: 128). For example, a person has been taught that "2 + 2 = 4," but the person holds this belief because it is based on "solid reasons" (1996: 128). These solid reasons are taught as well.

There are thus two types of causes – reasons and other causes – that may be conditions for beliefs or actions. "Undoubtedly, irrational factors, notably affective ones, can in many circumstances legitimately be evoked to the effect of explaining beliefs" (1996: 126). Thus, "I do not in any way draw the conclusion that all beliefs have to be explained by reasons" (1994: 20). But in many cases, Boudon argues, his CM (i.e., explanations by reasons) is superior, and often explanations with irrational factors can be legitimately replaced by explanations with reasons (see in particular 1994).

How can the reasons be identified? Boudon mentions "linguistic expressions" (1989: 174) that are normally used. This suggests that the actors themselves provide information about their reasons.

Having a "reason" to believe something or to act in a certain way means that there is a belief that is "relevant" or "meaningful" (1996: 136) or "good" (1996: 136) to the actor. A reason is a belief *for* accepting some other belief or for performing an action. It seems that "relevant" means that the actor perceives some beliefs as a justification or a supporting argument for another belief. What these second-order beliefs are must be empirically ascertained. In his numerous examples Boudon tries to find out what the "relevant" reasons might have been. But, again, he does not provide any criterion of how to measure the relevant reasons.

The previous quotations refer mainly to beliefs. This is the major explanandum Boudon is concerned with. But he also claims (see, for example, 2009b: 192 – the quotation is given below) that reasons explain attitudes, preferences and action (see the respective sections below).

We summarize the theory in the form of an if-then statement:

> If individuals have good reasons for accepting a (descriptive or normative) belief, an attitude, a goal or an action, or if there are irrational factors, then individuals accept the belief, hold the attitude or goal or perform the behavior.

One part could be called the *reason proposition* – if we drop the part "or if there are irrational factors." This is the proposition Boudon focuses on. A summary of the theory must also include irrational factors. Boudon does not specify the kind of irrational factors that determine the explananda. Therefore, the partial sentence mentioned before was added.

3. The Major Problems of the Theory

One criterion for evaluating a theory is its *explanatory power* (or, equivalently, explanatory content or information content). The basic idea is (Popper, 1959): the more a theory excludes or forbids, the higher is its explanatory power. This implies, among other things, that a theory has a high explanatory power if it explains a *large* class of relatively *specific* phenomena – for details see below. If this is the case the theory is incompatible with a relatively large number of predictions. It thus forbids much and, therefore, has a high explanatory power. What is the explanatory power of the CM? This is the first question that is discussed in this section.

A second criterion for judging the quality of a theory is its *validity*. This problem is discussed in this section as well.

3.1. The Explanatory Power of the Theory

The explanatory power of a theory depends, among other things, on the degree to which a theory can explain a large class of very specific phenomena. For example, the hypothesis "if people are frustrated, they act aggressively" can only explain that *some* kind of aggression will occur when people are frustrated.

The explanatory power of this hypothesis would be higher if it could explain for which kind of frustration which kind of aggression occurs. What is the explanatory power of the CM? We discuss this issue only for the explanation of beliefs. The argument also holds for the other explananda of the theory. Let us first assume that *only reasons* are causes. As an illustration, assume that Swiss tennis fans accept the following belief:

> Belief b: Roger Federer will win the next Wimbledon championships in July.

What may be good reasons for this belief? Let the Swiss tennis fans accept the following set of beliefs:

> Belief 1: Federer was among the top five players several months before Wimbledon.
> Belief 2: Federer is a better player on lawn than the other players.
> Belief 3: The unemployment rate is lower in Switzerland than in Great Britain.
> Belief 4: Federer is married.

If the theory has a high explanatory power we would expect that we can predict for any *given* possible reasons (i.e., beliefs) what exactly the ensuing belief is. This would be the case if there is a *selection criterion* specifying *which possible reasons lead to which beliefs*. The theory would then state:

> (1) Given a set of possible reasons r: reasons of type i cause the person's belief of type i.

This would allow us to predict, for example, that beliefs (1) and (2) and not beliefs (3) and (4) are causes for accepting b.

It may be argued that it is difficult to imagine how a theory in the social sciences could be so specific. The theories applied below show that such theories already exist. To add an example from learning theory: it hypothesizes, for example, that a reward for an activity a has the effect that the frequency of a increases. Thus, very specific instances of a large class of phenomena can be explained.

Now assume that we do not know which reasons are relevant for which beliefs, that is, no selection criterion is specified. The theory thus only asserts:

> (2a) Given a set of possible reasons as causes for a belief: the reasons are causes for **some** belief b_1 or b_2 … or b_n.

For example, if an actor accepts beliefs 1 to 4 in our example, it could not be predicted which belief b_i will ensue.

Furthermore, the theory without a selection criterion would imply:

> (2b) Given a belief b as a dependent variable: **one or several** possible reasons (i.e., beliefs) may be causes for b.

Thus, given the previous belief b, it is not specified which of the four possible reasons in our example are causes for b.

The lack of a selection criterion has further the consequence that *falsification is difficult or impossible*. When we don't find a reason we might always assume that we had bad luck or were not intelligent enough to find the right reason or reasons. The lack of a clear selection criterion also opens the door for *ad hoc explanations*. When one wants to explain a belief one always finds other beliefs that actors accept, and these beliefs can then be claimed to be causal factors. This is certainly an unsatisfactory situation.

We have assumed so far that only reasons are relevant for beliefs. The previous analysis can be expanded to *irrational factors*. In the previous cases (1), (2a) and (2b) we only need to replace "reasons" with "irrational factors."

Now let us look at the full theory that assumes that *reasons as well as irrational factors* are relevant. Let us introduce a new *term f* that refers to reasons (i.e., rational factors) or irrational factors. The previous analysis holds for f as well: we only need to replace "reasons" with "factors."

When the previous argument is expanded so that reasons *and* irrational factors are included simultaneously, the explanatory power of the theory decreases dramatically, compared to the separate analysis of reasons and irrational factors. This expanded theory tells us neither which reasons nor which irrational factors from a set of possible reasons and irrational factors lead to a specific belief. This corresponds to case (2a) above. The expanded theory does not tell us either which belief is the consequence if a given set of possible beliefs and irrational factors is given. This corresponds to case (2b) above.

Which of these cases applies to the CM? To be sure, Boudon speaks of reasons "for" a belief, as was said before: "to account for a belief, or an action, always try to find the reasons for it" (1994: 18). But this selection criterion is relatively vague. In none of his examples does it become clear what exactly the general hypothesis (or "rule") is that Boudon applies to select the relevant reasons as explanatory variables. Just stating that the selected reasons are those which are relevant *for* certain explananda is not sufficient advice about how to ascertain the right reasons.

Reasons refer to subjective states of mind. So why not ask persons which reasons were relevant? Boudon is aware of the problems of asking subjects for their reasons. He mentions rationalizations (by citing Freud). We may add that there are spontaneous behaviors where people are not aware why they have done something. Wishful thinking or social desirability effects in surveys show the problems of measuring reasons by simply asking people. Boudon further notes that the reasons are generally "metaconscious in the mind of people" (2014), that is, people are not or need not be aware of the reasons. This makes it particularly difficult to find the right reasons.

So our conclusion is that the explanatory power of the theory is rather low. But assume the reader is very tolerant and argues that Boudon's selection criterion that reasons "for" beliefs or other explananda are relevant is precise enough. But for the irrational factors there is clearly no selection

criterion at all: it is not even insinuated which irrational factors explain which phenomenon.

Nonetheless, the theory is not completely without content. It suggests that certain *kinds of factors* are relevant for explaining social phenomena. Boudon's claim is that it is reasons that are of major explanatory importance. This is an *orienting hypothesis* in Merton's sense (Merton, 1957: 88; for a discussion see Opp, 2014b: 174-177). Perhaps the following quotation shows with particular clarity the orienting character of the CM and, thus, its low explanatory power:

> Firstly, social action in the general case *depends on* beliefs. Secondly, beliefs, actions, attitudes should *as far as possible* be treated as rational, more precisely as the effect of reasons perceived by social actors as valid. Thirdly, reasons of the "cost-benefit" type should not be given *more attention than they deserve.* Rationality is one thing, expected utility another. (2009b: 192, italics not in the original text)

The text printed in italics shows that the theory points in a general way to *kinds of factors* that might be causally relevant. For example, the kind of belief that explains action is not specified. The phenomena to be explained should be explained "as far as possible" as the effect of reasons – what kinds of reasons and what does "as far as possible" mean? It is not denied that actors sometimes maximize utility, but sometimes they do not. If so, how do they decide in which situations?

3.2. The Validity of the Theory

Does it make sense to analyze the validity of a theory if it has such a low explanatory power? The answer is that the theory makes some empirical assumptions that can indeed be empirically tested. There are two assumptions that might compromise the validity of the theory: one is the wide range of phenomena the theory is supposed to explain (i.e., the generality assumption), the other is Boudon's rejection of utility maximization.

3.2.1. The Generality of the Explananda

Is it really plausible that a single theory can explain such diverse phenomena as normative beliefs, descriptive beliefs, attitudes, preferences and behavior? This is the claim of the CM. Such a theory does not exist so far, and there will certainly be many social scientists who are skeptical towards the validity of such a claim. We will provide a plausibility test of this claim: we will examine whether two widely used social psychological theories can be applied or expanded to substantiate this claim.

3.2.2. The Rejection of Utility Maximization

Boudon claims that costs and benefits are often not relevant as explanatory variables, in particular for explaining beliefs. "Reasons," Boudon argues, "can-

not be reduced to mere considerations of costs and benefits" (1996: 124). The CM "is drawn from the 'rational-choice model' by lifting the restriction that the reasons of social actors should always be of the cost-benefit type" (1996: 124). Thus, in some circumstances reasons are not of this type (1996: 147). This claim is inconsistent with major existing theories. So the question arises what arguments Boudon submits for his claim. These are discussed below.

But assume Boudon is right: utility maximization often does not apply. The question then arises as to what the alternative hypothesis is. For example, if the decision to prefer theory A to theory B is made, how do actors decide if they do not in some way maximize utility? Boudon does not answer this question. This has the consequence that the theory has an additional severe problem that *diminishes its explanatory power considerably*: it cannot be explained why people choose certain options, be they beliefs, attitudes, preferences or behaviors. We will return to these questions later in this paper.

3.3. Summary

Let us summarize the major problems of the CM. First of all, a *selection (or relevance) criterion* for the kind of reasons and irrational factors that are causes for the explananda is lacking. Secondly, it is not clear what the *joint effects of reasons and irrational factors* are. These problems refer to the explanatory power of the theory. Another problem is the *validity of the theory:* is it possible to explain the wide range of phenomena, the CM tries to explain, with a single theory? This problem refers to the *generality of the theory*. Another validity problem is the *rejection of utility maximization*.

Despite these problems, the theory can be seen as a general *orienting hypothesis* claiming that in explaining beliefs etc. one should in any event consider beliefs as major causes. In the 21th century this is hardly a very exciting advice, it is rather a truism in the social sciences.

4. How to Select the Causal Factors: Applying Social Psychological Theories to Evaluate Boudon's Theory

How can the CM be improved? One possibility is to compare the CM with social psychological theories that are widely applied in social psychology. This is possible because these theories address at least some of the explananda of the CM. If this is the case it can be examined to what extent the theories give more specific guidelines to select the relevant factors in order to explain relatively specific explananda. Thus, we examine to what extent there are theories that could improve the explanatory power of the CM.

Applying social psychological theories may further shed light on the validity of the CM. To what extent do the theories encompass the wide range of explananda Boudon tries to explain? If they do not, is it plausible to expand their range of explananda? This is a plausibility test of Boudon's generality assumption that holds that only one theory is needed to explain everything

from beliefs to actions. Secondly, applying the theories is a test of Boudon's rejection of utility maximization. Do the theories make this assumption, or is there an alternative hypothesis?

It is striking that Boudon never systematically compared his CM with existing social psychological theories. We don't know whether he had "good reasons" for this. It seems that there are *no* good reasons not to apply social psychological theories. On the contrary, the good reasons for applying social psychological theories are that they could improve the CM or confirm some of its assumptions. Furthermore, the social psychological theories could be improved by expanding their explananda.

There are numerous social psychological theories. We selected two theories that are widely applied in social psychology and that might solve the selection problem: one is balance theory (e.g., Heider, 1958, see also van de Rijt, 2011 with further references), the other value expectancy theory (e.g., Feather, 1982, 1990; for an overview see Wigfield, Tonks and Klauda, 2009).

The two theories are applied to each of the explananda of the CM: descriptive beliefs, normative beliefs, attitudes, preferences and action. For each explanandum the focus is thus on the following questions. (1) Do the theories include reasons as major variables? (2) Do the theories show how reasons as well as irrational factors influence explananda? (3) Are the theories capable of explaining the wide range of phenomena Boudon wants to explain with his theory? (4) Do the theories assume some version of utility maximization?

5. Explaining Descriptive Beliefs

We will begin with one of Boudon's major examples and then examine to which extent two major theories can be applied to solve the problems of the CM, based on the example. These theories are balance theory and value expectancy theory.

5.1. An Example: Explaining the Belief in the Effectiveness of Rain Rituals

One of Boudon's examples to illustrate his theory is taken from Émile Durkheim's "Les formes élémentaires de la vie religieuse" (first 1912, see Book III, chapter II).[3] Durkheim explains why tribes of central Australia believed that rain rituals generated rain. To be sure, the tribes had empirical knowledge about how plants grow and die. Thus, there are correct beliefs that include, among other things, information about the importance of water for the growing of plants. But the tribes did not have at their disposal the results of modern scien-

3. This subsection is largely based on Boudon (2014) which was submitted to a special issue of the *Kölner Zeitschrift für Soziologie und Sozialpsychologie* shortly before his death. This paper thus contains the last version of the CM. Therefore, I use this paper. Page numbers are not included in quotations because the paper has not yet been published. For the explanation of magical beliefs see also Boudon (1989).

ce implying that rituals do not generate rain. According to Durkheim (1915: 25-26), for the "primitive man … there is nothing strange in the fact that by a mere word or gesture one is able to command the elements, … bring rain or cause it to cease." The rites "do not appear more irrational … to his eyes than the technical processes of which agriculturists make use." In other words, the "primitive men" have good reasons for engaging in the rain rituals.

Shouldn't the tribe members learn over time that there is no causal effect of their ritual on rain? There are several "good reasons" for keeping the false belief. First of all, the rituals are practiced at a time when rain is likely to fall anyway. There is thus a relatively close temporal association between the ritual and the rain. The belief of the effectiveness of the ritual is thus, as Boudon writes, "rational": scientists would use the same rule of inference. Second, if it turns out that sometimes rituals do not work tribes use auxiliary hypotheses. One might be that the rituals were not performed in the right way.

A third reason for the persistence of the belief about the effectiveness of the rain ritual is the existence of a general belief that is backed by numerous everyday experiences: if an action is only sometimes successful it is unlikely that it will be completely unsuccessful in the future. For example, if phone calls are sometimes not answered that does not mean that phone calls remain always unanswered. However, if an action is always successful for a relatively long period of time and then suddenly the outcome does not occur anymore, the likelihood is very low that the outcome will occur later. This is consistent with hypotheses about intermittent reinforcement in learning theory (see, for example, Ferster and Skinner, 1957 and any textbook on learning theory like Schwartz and Reisberg, 1991). Applied to the belief in the effectiveness of the rain rituals, tribe members will trust the success of the ritual even if it sometimes does not work.

A fourth reason for the stability of the effectiveness belief is that ineffectiveness is explained by some action of other groups:

> The efficacy of these rites is never doubted by the native: he is convinced that they must produce the results he expects, with a sort of necessity. If events deceive his hopes, he merely concludes that they were counteracted by the sorcery of some hostile group. In any case, it never enters his mind that a favourable result could be obtained by any other means. If by chance the vegetation grows or the animals produce before he has performed his Intichiuma, he supposes that another Intichiuma has been celebrated under the ground by the ancestors and that the living reap the benefits of this subterranean ceremony. (1915: 333)

This is a strategy to immunize the belief of the effectiveness of rain rituals against falsification. Another belief makes the ineffectiveness assumption plausible: the ritual leads to rain because god or the gods make the rain, and the dance is supposed to prompt the gods to let it rain. There is thus a whole set of "good" reasons that the Australians had for their false belief about the effectiveness of rain rituals.

The example clearly shows the problems of the CM: why are the "reasons" Boudon mentions the real causes? What is the role of irrational factors? There is no systematic analysis of these factors. What could they be? Beliefs are often transsubjective – as Boudon puts it –, that is, shared by others, and there is joint action as in the example of the rain rituals. An individual may accept a shared belief because he or she is afraid of sanctions: the tribe members put pressure on each other to accept beliefs. This would be an affective cause and not a reason for accepting a belief. Are there other irrational factors and how important are they, compared to reasons? These questions are not answered.

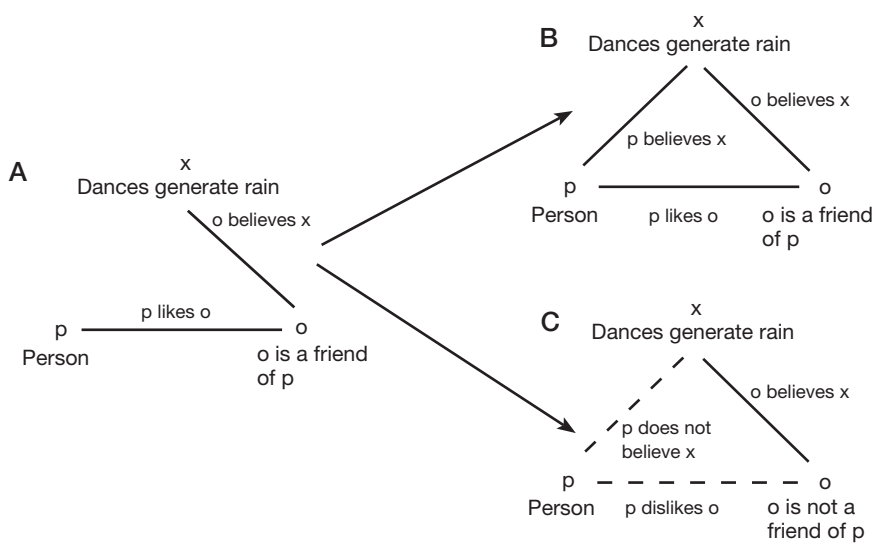
5.2. The Application of Balance Theory

We first provide a short introduction to balance theory (BT). The reader who is familiar with this theory might skip this part. We will then apply the theory to the example. The question is to what extent the theory can solve the problems of the CM.

5.2.1. A Short Introduction to and Application of Balance Theory

We begin with modeling irrational causes. Assume a tribe member, person p, is a friend of another person o (or a set of other persons o). For some reason p does not yet accept that rain dances generate rain. Let p learn that o has this belief x (i.e., that rain dances lead to rain). These three objects – p, o and x – can be depicted in a plane, as figure 1 shows. Graph A shows two relationships:

Figure 1. Application of Balance Theory to Explain the False Belief about the Effectiveness of the Rain Dance.



p likes o and p perceives that o believes x. There are thus a liking relationship L (such as friendship) and a unit relationship U (such as a belief x of a person p).

The relationships in such a pox system may be of different *kinds*: they may be positive or negative (e.g., p may like or dislike o) or they may be present or absent. For example, p might not yet have an opinion about x (graph A of figure 1). Relationships may further have different *intensities*, but we will only assume that relationships are present or absent, and, if present, can be positive or negative. This suffices in this context.

Certain distributions of lines are defined as *balanced* or *unbalanced*. For example, if all three connections in a pox system are positive there is balance. If two relationships are negative and one positive there is balance as well. However, if one is negative and two are positive there is imbalance. Balance is a psychologically pleasant state, imbalance an unpleasant one. To illustrate, assume p has the same beliefs as o and o is p's friend. This means that all three relationships are positive (see graph B of figure 1). Apparently, it is a pleasant feeling when I share my friend's beliefs. However, if the beliefs of my friend and me differ this is unpleasant. For example, if o approves of terrorist activities x and I disapprove of these activities this is certainly unpleasant. It is also unpleasant when I realize that my friend believes x but that I have not yet have formed a belief about x, that is, there is no relationship between p and x (see part A of figure 1). Thus, the pox system is incomplete. It would be more pleasant if I would believe x as well. Balance theory (BT) hypothesizes, among other things, that a lacking relationship in a pox system yields imbalance and is thus unpleasant.

So far we have defined balance and imbalance. A *proposition* is that individuals try to change unbalanced states. In our example, balance would exist if p adopts the same belief as o (see the upper right part B of figure 1).

If a pox system is in an unbalanced state, balance can be brought about by several changes. For example, the imbalance of graph A in figure 1 has been removed by adding a line between p and x (i.e., p adopted belief x; see graph B). There could have been another reaction by p (see graph C of figure 1): p could reject the belief x (i.e., px would become negative) and at the same time terminate friendship with o (po would thus become negative). This would result in a balanced state as well. It is not unpleasant if my beliefs differ from the beliefs of people that I don't like.

Would p prefer the situation depicted in graph B or C? BT assumes that those balanced graphs which require a relatively low number of changes are preferred. The underlying idea is that changing a relationship is costly. One thus prefers a balanced state that requires a relatively low number of changes. Had we introduced intensities, an additional assumption is that the lines with the lowest intensities are most likely to be changed. For example, assume p is quite sure that o believes x and that p could not find any evidence that this belief is wrong. So ox is strong. In addition, let po be strong as well. Thus, for p the least costly change that leads to balance is to add px (graph B).

The pox system can be extended. For example, there could be *other beliefs* (other x's) that are consistent or inconsistent with x (i.e., there may be positive or negative unit relationships with x). For example, x may follow from several religious beliefs. Furthermore, there may be other persons with different relationships to p. We will not discuss more details because this is not necessary for the following analysis.

5.2.2. Some Implications

This very short introduction to BT suffices to illustrate the following points.

(1) BT explains, among other things, beliefs. It is thus possible to compare BT with the CM.
(2) BT specifies a *relevance criterion*. For example, px originates because it makes p better off. Graph C is not chosen because this is costlier than graph B. What about the belief that apples are healthy or that capital punishment does not deter crime? Assume we add these beliefs as elements u and v in graph A. They would be irrelevant because there would not be a relationship of these elements to x and o. But if p perceives that o believes in the deterrence effect of capital punishment then this would be relevant for p's psychic well-being.
(3) BT includes *irrational factors*. A liking relation is not a second-order belief, it is an "affective" relationship. Nonetheless, BT explicitly includes this kind of factor, together with reasons in Boudon's sense. Among the irrational factors are *preferences* as well. We could extend the pox system by assuming that p has a strong motivation to adhere to the *norm* to participate in the rain dances. The norm could be added as an additional object z in the graphs. A preference for adhering to the norm is a positive line between p and z. Thus, irrational factors are included in the theory. Furthermore, BT *integrates* both factors. There is no need to distinguish rational and irrational factors.
(4) An underlying assumption of BT is that there is cognitive optimization or, put differently, *cognitive utility maximization.* In the example, actors do not choose the cognitive structure C but B. The reason is that B is more pleasant or less costly than C. In other words, actors are better off when they choose B instead of C. This is clearly not in line with Boudon's claim that acquiring or changing beliefs has nothing to do with costs and benefits and utility maximization.
(5) BT provides some evidence for Boudon's *generality assumption* (a single theory can explain everything from beliefs to action). Lines between cognitive elements may refer to beliefs (including norms), attitudes, preferences and behaviors.

The previous example suggests *extending Boudon's use of the term "reason."* Reasons are, by definition, beliefs but not feelings. It makes sense to say that p's friendship with o is a "good reason" to adopt belief x because otherwise o

would terminate the friendship relationship. In everyday language, it is certainly a "good reason" to do something in order to achieve a goal and to avoid an unpleasant state of affairs. This suggests that perhaps the meaning of "reasons" should be changed. It could refer to beliefs as well as motivational states.

5.3. Applying Value Expectancy Theory

The theory is usually applied to explain behavior and not beliefs. According to Boudon's generality assumption it seems plausible to expand the range of application of value expectance theory (VET) to explain beliefs as well. We will first provide a short introduction to VET and then explore its capability to explain beliefs.[4]

5.3.1. A Short Introduction to Value Expectancy Theory

The theory asserts that among at least two perceived behavioral alternatives the action with the highest subjective expected utility (SEU) is chosen. This overall utility for a behavior is computed in the following way. A first step is to find the perceived *behavioral alternative*s to a behavior that is to be explained. In a second step the *behavioral consequences* for each perceived alternative must be ascertained. For each consequence, the expected *subjective probability* and *utility* (valuation) must be determined. The sum of the product terms of each behavioral consequence for a *given* behavioral alternative is, by definition, equal to the SEU of the respective behavior. This is its overall utility. The *empirical proposition* is: a person chooses the behavioral alternative that has the highest SEU. The theory becomes more understandable when we apply it to our example.

5.3.2. An Application of VET to Explain the Belief about the Effectiveness of the Rain Dance

VET explains behavior. If its range of application is expanded to explain beliefs, the subjective expected utility should refer to holding a *belief* (instead of performing an *action*). The SEU should depend on the likelihood and utility of the consequences of holding a belief, from a set of alternative beliefs. Is this a plausible expansion of VET?

In order to answer this question we apply VET to our example: can VET explain the adoption of the false belief B about the likelihood that rain dances lead to rain? A first consequence of holding B is that the individual i's belief matches the beliefs of friends. It is assumed that having the same belief as one's friends is beneficial (i.e., it has a positive utility for the actor). This is the same assumption that was made when we applied balance theory. However, VET introduces the subjective probability p that the beliefs of i and his or her friends match. For the members of the Australian tribe this probability is probably

4. There is little work that applies this theory to the explanation of beliefs. See in particular Breen (1999), Matsueda et al. (2006), Breen and Goldthorpe (1997), and Becker (2013).

1 because everybody knows that everybody else accepts this belief. In other situations, however, p may be smaller than 1.

A further consequence of holding B is that it is consistent with the religion (or a set of religious beliefs) that i accepts. If this is the case, this is certainly pleasant for i. If i observes that rain regularly follows the rain dance it would be unpleasant for i not to believe in the causality of the rain dance. Finally, i may be relatively sure that his or her dance influences the intention of the gods to let it rain. Such action is beneficial for i because i believes that this intention will lead to the respective action.

Let us formulate this argument more precisely. We write an equation that consists of the single product terms and thus defines the SEU of holding a belief. We introduce the following abbreviations:

B_i = individual i's belief that rain rituals generate rain
SEU = subjective expected utility of holding belief B_i[5]
p = subjective probability that the consequence occurs
U = utility

The equation for the SEU of B is as follows:

(1) SEU_i (Descriptive belief B_i) = p_{BF} · U(Consistency with friends' B) + p_{BR} · U(Religion is consistent with belief B_i) + p_{BO} · U(Observation that rain follows the dance is consistent with B_i) + p_{BR} · U(Ritual activates Gods' intention to make rain)

The right-hand side of the equation consists of product terms. Each of the product terms consists of a probability that the consequence occurs, given the belief B. The first subscript refers to the dependent variable B, the second to the utility term. This probability could be different if the belief is not held.

A second equation should be added for the SEU for *not* accepting belief B or for accepting perceived alternatives to B. In this equation (or in such equations), the probabilities on the right hand side could be lower than those in the first equation, perhaps even zero. This means that not believing B would in all likelihood not have the consequences mentioned before. The utilities would be the same as in the first equation. The lower probabilities imply that the SEU of the first equation is higher than the SEU of the second equation and that, according to VET, B will be accepted.

5.3.3. Some Implications

The implications are very similar to those for BT.

(1) The previous analysis suggests that VET can explain beliefs. This supports Boudon's *generality assumption*: it is plausible that VET can explain descrip-

5. We assume that in the example "belief" is a dichotomous variable: one may or may not have the belief in the effectiveness of the rain ritual. Were we to distinguish between degrees of beliefs, we would need an equation for each degree.

tive beliefs. Whether the other explananda can be explained remains to be seen.

(2) VET specifies the *kind* of belief that is to be explained, and thus includes a relevance or *selection criterion*. It holds that only those consequences are relevant that are related to the SEU of the belief B. This implies, for example, that the belief that apples are healthy would not be included.

(3) The example includes utilities and thus *irrational factors*. Furthermore, VET *integrates* reasons (in this case subjective probabilities) and irrational factors in the product terms. Again, there is no need to distinguish between rational and irrational factors. It is shown how both factors determine the origin of beliefs.

(4) VET clearly assumes a kind of *utility maximization.* The hypothesis that the action with the highest SEU is chosen means that the actor chooses among the given options the one that is best for him, given his or her subjective beliefs and utilities. This is thus not consistent with Boudon's rejection of utility maximization.

The CM does not include the terms "utilities" and "subjective probabilities." However, the previous argument can easily reformulated by using Boudon's terminology: one could say that each of the consequences provides a "good reason" – referring to the values of the subjective probabilities – for adopting the false belief. The utilities are not to be regarded as reasons. The suggested change of the terminology seems useful here as well: why not say that high utilities are good reasons as well?

The conclusions of applying VET are the same as the conclusions of applying BT: VET remedies some deficiencies of the CM. Our reformulation confirms Boudon's idea that one theory can explain the different phenomena the CM comprises.

6. The Explanation of Normative Beliefs

In discussing Boudon's explanation of normative beliefs we will proceed in the same way as before: we will first describe an example that illustrates the CM and then discuss the theory, based on the example, by applying BT and VET.

6.1. An Example: Why Should Miners Get a Higher Salary than Soldiers?

Boudon's example is taken from Adam Smith's "An Inquiry into the Nature and Causes of the Wealth of Nations" (1776, Book I, Chapter X, Part I.).[6] The question is why there is a strong feeling among 18th-century Englishmen that miners should be paid higher wages than soldiers. The issue is thus to explain a norm. Boudon's explanation is as follows. A salary is a reward. There is a

6. Boudon describes this example in several publications, for example in 1996: 146; 2009a: 36-43. The following is based on Boudon (2014).

general norm that rewards should correspond to contributions to the society. Thus, miners and soldiers should get the same salary if their contributions are equal, as they are valued by the population. Contributions consist of *investments* that are necessary to acquire the competence needed to accomplish the contributions, and the *risk* involved in bringing about the contributions. The investment and risks are similar for soldiers and miners.

However, the *social meaning of the activities* of soldiers and miners is different. Soldiers preserve the existence of the nation, whereas miners perform only economic activities. Furthermore, a soldier's death is considered a sacrifice, whereas the death of a miner is an accident. The soldier thus gets *symbolic rewards* "in terms of moral prestige, symbolic distinctions, glory notably when he has won a battle." These rewards do not accrue to the miner. If the salaries of the miners were not higher, "an unjustifiable *disequilibrium* between the contributions and the rewards of the two categories would appear."

6.2. Applying Balance Theory to Explain Normative Beliefs

The explanandum in the previous section referred to a *descriptive* belief, and it was assumed that important others such as friends accept the belief. As long as p has not formed a belief about the effectiveness of the rain ceremony the situation was unbalanced (see figure 1). Two changes in p's cognitive system were discussed.

Now assume that x is not a descriptive but a *normative* belief (viz., the belief that miners should get higher wages than soldiers). We call this the *wage norm*. As in figure 1, there is a unit relationship ox (p perceives that o accepts norm x) and a liking relationship between p and o. Assume further that p has not yet decided whether the norm about the different wages of miners and soldiers is acceptable (see figure 2, graph A). This is an unbalanced state, as described before. Accepting the normative belief yields balance (see graph B in figure 2). A balanced state would also be achieved if p rejects the norm and terminates friendship with o (graph C). However, balance theory assumes that B is preferable to C, as was said before.

Note that the type of x is irrelevant in BT: x may be a descriptive or normative belief or any other object (such as a third person q). Only the structure of the graph (i.e., the distribution of positive or negative relationships between cognitive elements), and thus balance or imbalance, is of importance.

The example from Adam Smith also refers to *relationships between norms*: there is a general norm about fairness of rewards and a special norm about the fairness of wages. The latter norm is implied by the general norm. This situation is depicted in figure 3. Assume p accepts a general norm g and believes that a special norm s follows from g. It would be a balanced state when p also accepts s. A negative line from p to s would yield imbalance and would thus be costly.

Note that the *perceived* implication of norm s is important, not the actual implication. It may thus be the case that p does not think that s follows from g. For

Figure 2. Application of Balance Theory to Explain the Norm about Fair Wages.

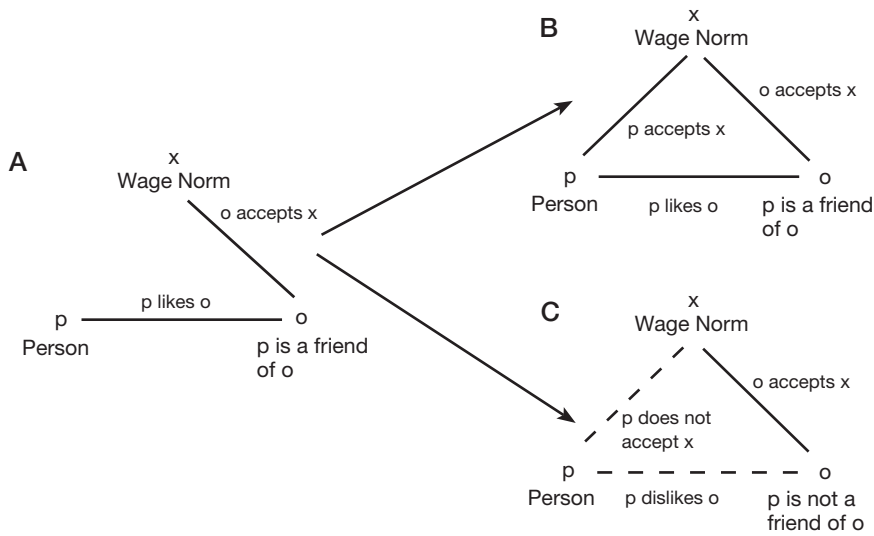
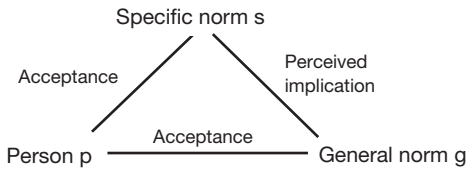


Figure 3. Acceptance of a General Norm and of Specific Norms.



example, p may think that symbolic rewards must not be counted in determining overall rewards. Thus, it is not the logical relationships between norms but the psycho-logical relationships which are relevant. Note further that even in a logical argument where a norm follows from a set of statements that include a norm utilities are involved.

In the previous section about descriptive beliefs some *implications* of the application of BT to explain descriptive beliefs and its compatibility with the CM were discussed. The points that were made there fully apply to the explanation of normative beliefs as well. So we need not repeat these implications.

6.3. Value expectancy theory

In applying VET, the dependent variable would not be a descriptive belief that something *is* the case but a normative belief that something *should*

be the case. If one holds the specific norm s that soldiers should get lower wages than miners, a perceived behavioral consequence is that one follows a general norm g which is beneficial (i.e., provides utility). VET allows us to introduce subjective probabilities. In the extreme case, an actor may be certain that norm s is implied by norm g. However, the probability need not be 1, that is, there may be some doubt about the implication. The equation would thus read:

> (2) SEU (Belief that norm s holds) = $p_{SG} \cdot U$(s is implied by the general Norm g)

This equation includes only one behavioral consequence. We could add others. For example, the belief in norm s could be compatible with the normative expectations of friends. We will not add further components because our goal is only to show that VET can be applied.

In the discussion of descriptive beliefs, several *implications* of VET were discussed. The points made there hold for the application of VET to explain normative beliefs as well.

7. Explaining Attitudes and Preferences

In this section, we will first present a version of VET to explain attitudes because this version – the Fishbein-Ajzen theory – is well confirmed and widely used in social psychology. Based on this analysis we will apply BT. This is an easy exercise because we can build on our previous analyses.

7.1. Applying Value Expectancy Theory to Explain Attitudes

Boudon does not explicitly deal with the explanation of attitudes, although he sometimes mentions them (e.g., 2001: 200). Furthermore, it seems that he does not clearly distinguish between attitudes and norms. An attitude is, by definition, a positive valuation without any implication of oughtness. The lack of distinction between attitudes and norms is apparent when Boudon discusses the example that people may "prefer" to drive relatively fast in the city and for this reason regard traffic lights as a "good" (yet unpleasant) thing. This is because "traffic is more fluid with traffic lights than without." Therefore, the "value statement" that "traffic lights are a *good* thing" is accepted (Boudon, 2001: 150-151, italics in Boudon's text). It can be doubted that the previous statement – "traffic lights are a *good* thing" – is a norm. The term "good" may mean "effective" and, thus, may express the *fact* that traffic lights prevent accidents or make traffic faster. Furthermore, "good" may refer to a positive attitude toward the consequences of traffic lights. This implies that oughtness or morality is not involved. In general, traffic rules are just conventions that serve some purpose, and one does not have a bad conscience when they are violated, and there is no intrinsic valuation.

When discussing his example, Boudon explains the valuation of traffic lights by the fact that existing traffic lights have consequences that people like (or consider "good"). This argument is consistent with the well-confirmed attitude theory by Fishbein and Ajzen (see, e.g., 2009). The theory hypothesizes that there will be a positive attitude towards an object if an individual associates with this object positive features with high subjective probability. This is also held by VET, but the dependent variable there is attitudes and not behaviors.

Let us apply this version of VET to Boudon's example of the rain dances. One would predict that the Australians do not only engage in the rain dances as an instrumental activity (i.e., to bring about rain), but that they also like the dances or participation in the dances. Thus, a positive attitude toward the rain dance develops. What might be the "good reasons"? The explanation of the Fishbein-Ajzen theory would be that the rain dances are associated with very positive features. One is the rain. Furthermore, the members of the tribe might enjoy the social gatherings for their own sake.

A simplified example of an equation of VET where the dependent variable is an attitude (i.e., the SEU of having a positive attitude toward the rain dance) is the following:

(3) SEU(Attitude toward the rain dance) = $p_{AR} \cdot U(\text{Rain}) + p_{AF} \cdot U(\text{Friends present})$

Thus, the tribe members will like participating in the rain dance (i.e., they have a positive attitude toward the attitude object "rain dance") if the subjective probability p_{AR} that it rains and the utility U of rain is high and, furthermore, if it is likely that friends are present and if this has a high utility as well.

7.2. Explaining Preferences with Value Expectancy Theory

Attitudes differ from goals or preferences, but it often happens that goals develop if objects are valued positively. For example, if someone values computers very positively he or she will often have the goal of buying or possessing one. Boudon briefly addresses the explanation of goals and illustrates it with an example (2014). He assumes that the educational and social goals individuals acquire are due to taking as a reference people "they are mainly in relation with." This would yield the following equation:

(4) SEU (Educational goals) = $p_{EI} \cdot U(\text{Consistency with goals of important others})$

One could speculate that having a positive relationship to important others and not sharing their goals is psychologically unpleasant.

In general, it seems plausible to expand the previous equation by including other consequences. We will not explore this possibility further. For the

purpose of this paper it is important to note that VET is apparently capable of explaining preferences.

7.3. Applying Balance Theory

There is no question that BT can be applied to explain attitudes as well. To illustrate, it would be unpleasant if p perceives many *single* features of an object (z_1 to z_n of an object x – there are thus unit relations between x and the features z of an object) that are positively valued and ascribed with high probability, but if a negative evaluation is attributed to the *entire* object.

In regard to the explanation of preferences BT would imply, po would be the positive relationship of p and the important others. If p perceives that o (the important others) want, for example, to attend university (x), it would be unpleasant not to have the same preferences.

We will not explore the details of the applications sketched before. For the purposes of this paper it is only of importance that BT can apparently explain attitudes as well as preferences.

7.4. Conclusion

It is plausible that Boudon's explanation of attitudes and preferences could also be improved by applying the two social psychological theories: the selection problems can be solved, and irrational factors (such as affective factors) are included and integrated. Furthermore, the two theories clearly imply utility maximization. Finally, Boudon's general claim that there needs to be only one theory that explains a wide range of phenomena is confirmed by the previous analyses.

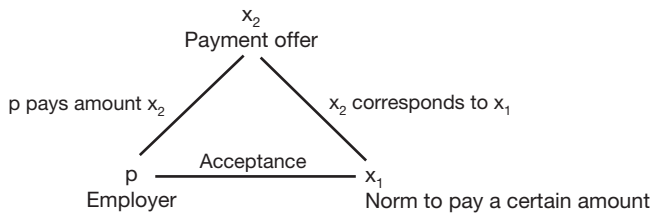
8. The Explanation of Behavior

As was said before, the major application of VET was the explanation of behavior. BT can explain behavior as well. We will show this by sketching the application of BT and VET with the previous Adam Smith example. This time, the explanandum is not the wage *norm.* The question we address is: will employers *pay* workers the wage they deserve according to the fairness norm outlined before? Assume an employer knows that there is a norm (say a law) that miners have to get a certain wage, and assume a miner applies for a job and is interviewed. The employer first makes an offer.

BT would be applied in the following way. Let the offer of p (the employer) be x in a pox system, where o refers to the important others. The employer knows what the important others (o) pay. There would thus be positive relationships between p and o on the one hand and o and x on the other. The expectation is thus that the wage offer would be x.

Assume instead that the cognitive system consists of p, x_1 (norm to pay an amount x) and x_2 (payment offer x) – see figure 4. It would be dis-

Figure 4. Explaining Payment Offers



sonant not to pay the amount that is demanded by the norm. In this case, px_2 would be negative. The system could be extended by including o and assuming that o pays x_2 and accepts the norm x_1. The reader might write o next to x_2 and connect these elements with a line. This would result in a balanced system.

In order to apply VET, let us change our example to explain participation in the rain dance. The following consequences could be included in a behavioral equation. Let there be a norm to participate in the ceremony, and let non-compliance be sanctioned negatively. The tribe members might value the company of others and they might have developed a positive attitude toward the ceremony itself. This yields equation 5:

(5) SEU(Participate in rain ceremony) = $p_{PN} \cdot$ U(Follow the norm to participate) $-$ $p_{PS} \cdot$ U(Negative Sanctions for not participating) $+$ $p_{PC} \cdot$ U(Company of others) $+$ $p_{PI} \cdot$ U(Intrinsic Motivation of participation in the rain dance)

So far we have formulated a total of five equations. They are a *hierarchical explanatory argument*. Equation (5) includes utilities which can be explained by previous equations. For example, probabilities are descriptive beliefs which could be explained by equation (1). The norm in equation (5) can be explained by equation (2).

Our conclusions for the explanation of behavior are the same as those for the explanation of descriptive and normative beliefs, attitudes and goals (or preferences): the two theories solve the problems of the CM; they are inconsistent with Boudon's rejection of utility maximization; and they confirm the generality assumption.

9. Boudon's Implicit Background Theory: The Wide Version of Rational Choice Theory

VET and BT are versions of RCT: they assume utility maximization and that preferences and constraints are determinants of the explananda (for details see below). The constraints are, for example, the perceived properties of the social network. Boudon is an emphatic opponent of RCT: he wrote three articles that attack this theory (1998, 2003, 2009b), and there are critiques in passing in

numerous publications. If Boudon's critique of RCT is correct then perhaps BT, VET and other social psychological theories have major weaknesses so that it is not meaningful to apply them in order to remedy problems of the CM. So perhaps one replaces one evil with another. It is thus important to examine to what extent Boudon's critique of RCT is tenable.

A major problem of Boudon's critique of RCT is that he does not distinguish between different versions. This is of utmost importance because these versions face different problems. RCT is not a single theory but a family of theories. In general, a critique of "the" theory of rational action is completely mistaken.

In analyzing Boudon's critique of RCT, the following questions are discussed. (1) It is first necessary to clarify which version of RCT is Boudon's target: is it an outdated narrow neo-classical version or an increasingly accepted social psychological wide version? (2) Does Boudon's critique hold for a wide version of RCT as well? (3) What are the differences between the CM and the wide version of RCT? (4) In regard to Boudon's rejection of utility maximization we examine whether his arguments are acceptable. The general conclusion is that the CM is consistent with a wide version of RCT.

9.1. A Brief Outline of the Narrow and the Wide Version of Rational Choice Theory

There are three hypotheses that characterize every version of RCT.[7] It is held that preferences and constraints determine behavior, and that individuals choose the behavior with the highest utility. The different versions impose restrictions on the kinds of variables and on the kind of utility that is maximized. It is useful to distinguish a narrow and a wide version. In a nutshell, the wide version admits a wide range of preferences and constraints and assumes that utility maximization occurs from the perspective of the actor. A narrow version does not accept these assumptions. In particular, the differences are as follows.

(1) It is often held that only egoistic preferences matter. In contrast, a wide version includes all kinds of preferences. In particular, altruistic preferences are admitted and goals to follow internalized norms.
(2) There are no restrictions on the kinds of constraints in the wide version either: not only material constraints, but also, for example, social sanctions or expectations of others are admitted (which may be constraints if they affect goal attainment of the actors).
(3) A narrow version assumes that reality is perceived as it is. According to a wide version, perceptions, or equivalently beliefs (which may be wrong), are explanatory variables.

7. For a detailed discussion of the different versions see Opp (1999) and Kroneberg and Kalter (2012); for the role of norms in RCT see Opp (2013a, 2014a). See further Braun and Gautschi, (2014) for an innovative new formal model of a wide RCT version.

(4) Utility maximization in the narrow version means that the actor chooses the behavior that is objectively (i.e., from the perspective of an omniscient observer) best for him or her. In a wide version, the actor chooses the alternative that is best from his or her perspective.

It goes without saying that the specific kinds of preferences and constraints that are assumed to be relevant for a behavior must be determined empirically. Obviously, circular reasoning or tautologies are excluded.

The wide version is increasingly accepted. To social psychologists, it is obvious that all kinds of motivation and perceptions are relevant. This is shown in numerous applications of VET. Unexpected empirical findings in economics have led to increasing skepticism about a narrow model that only admits egoism. For example, in the ultimatum and dictator game people typically apply fairness norms. The assumption of pure egoism would suggest that a subject in an experiment who can decide to keep a given amount of money or share part of it with an unknown subject would keep the whole amount. Actually, this happens rarely (see, for example, Henrich et al., 2004). In the same vein, the phenomenon of altruistic punishment (e.g., Fehr and Gächter, 2002) and much work in behavioral economics that points to subtle incentives (e.g., Thaler and Sunstein, 2009 and Ariely, 2009) are not compatible with a narrow version of RCT.

This short discussion indicates that it is absolutely necessary in critiques of RCT to distinguish different versions. It is a major problem of Boudon's critique of RCT that he attacks RCT as if it is one theory and not a whole family of theories.

9.2. Boudon's Critique of Rational Choice Theory and His Alternative

To be sure, Boudon grants that rational choice theory "is a family of theories with many versions" (2009b: 180). But he does not address their differences in detail. Instead, he presents six postulates (2003: 3-4, see also 2009b: 180) that describe RCT "in a general way" (2009b: 180) – see the summary in Table 1. But he does not show which of these postulates pertain to which version. As a matter of fact, the postulates address a mixture of the wide and the narrow version. The former seems to be Boudon's CM. Let us look at the postulates in detail.

Boudon's first postulate P1 with which he characterizes RCT is methodological individualism, that is, the claim to explain macro phenomena by processes on the micro level. This is shared by every version of RCT. P1 is thus consistent with the CM and Boudon's methodological orientation. P1 as well as P2 refer to the interpretive sociology ("Verstehende Soziologie") of Max Weber (Boudon, 2009b: 186). P2 contends that the "meaning" of an action to an individual is an explanatory variable, and this meaning consists of the reasons that an actor regards as valid (2009b: 192). P3 is an equivalent formulation of P2. P1 to P3 characterize what Boudon calls "the general theory of rationality" (2009b: 186). It is equivalent to the CM.

Table 1. Boudon's Characterization of Rational Choice Theory, the Narrow and Wide Version of Rational Choice Theory and Boudon's "Cognitivist Model" (CM)

Postulates	Rational Choice Theory: Boudon's characterization	Consistency of the postulates with the narrow, the wide version and the CM
P1	"[A]ny phenomenon is the effect of individual decisions, actions, attitudes etc." (methodological individualism).	This refers to micro-macro explanations which is a goal of any version of RCT and of the CM.
P2	"[I]n principle, an action can be understood."	The action's meaning (i.e., the reasons of an action) to the actor is important. P2 is held by the wide version and the CM.
P3	"[A]ny action is caused by reasons in the mind of individuals" (rationality postulate).	P3 is identical with the wide version and the CM.
P4	"[T]hese reasons [see P3] derive from consideration by the actor of the *consequences* of his or her actions as he sees them" (consequentialism, instrumentalism).	Restrictions to "instrumentalism" in a narrow sense (see the text) are an assumption only in the narrow version of RCT. The wide version and the CM address norm compliance and other motivations.
P5	"[A]ctors are concerned mainly with the consequences to themselves of their own action" (egoism).	Restrictions to egoistic motivations are an assumption only in the narrow version. All kinds of motivations are admitted in the wide version and the CM.
P6	"[A]ctors choose the line of action with the most favorable balance" (maximization, optimization).	*Boudon rejects P6.* Plausible: Boudon assumes that actors maximize *subjective* utility (see text). This is consistent with the wide version of RCT.

There can be no doubt that these postulates are in line with the wide version of RCT. Micro-macro explanations are a major goal of proponents of this version, and "reasons" are included in this version as well.

P4 to P6 are, Boudon argues, only sometimes true. They are the distinguishing features of RCT and the CM. This can only mean that these are postulates of the narrow version. Let us look at these postulates in more detail.

P4 clearly differs for the two versions of RCT. Boudon asserts that RCT can only deal with "instrumental rationality." This excludes internalized norms. Norm following in this sense is not "instrumental," in contrast to pursuing goals like earning more money. However, those who act according to internalized norms also pursue goals, namely following a norm or avoiding a bad conscience (for details see Opp, 2013a). One might distinguish several kinds of goals. Some goals refer to external states (such as earning money), others to internal states (such as doing one's duty). A wide version of RCT includes all kinds of goals. Pursuing norms is explicitly a motivation in the wide version *and* in the CM.

P5 (see also Boudon, 2012a: 17) is certainly correct for applications of RCT in many fields such as economics. Egoistic preferences are the only driving force of actors. But a wide version of RCT holds that *any* preferences may be explanatory factors. Accordingly, preferences may vary: people may more

or less take into account others' welfare (i.e., may be altruistic). At least this is explicitly considered as a possible motive in the wide version. In commenting on P5, Boudon criticizes that RCT does not explain normative phenomena. However, as has been argued before, RCT can actually be applied for explaining these phenomena as well. Anyway, Boudon's critique does not hold for the wide version. Furthermore, the claim not to restrict the theory to egoism is endorsed in the CM as well.

P6 means, Boudon asserts, that actors maximize utility from the perspective of an impartial and omniscient observer. This is held by proponents of a narrow version, but definitely not by those who advance a wide version. Here the hypothesis is that actors engage in *subjective* utility maximization. This means that actors do what they think is best for them in a given situation. Boudon rejects P6 without making any distinction about different versions of this assumption. We will return to P6 in the next sub-section.

In other writings where Boudon criticizes RCT without mentioning the previous postulates explicitly, he clearly refers to the narrow version. For example, he asserts that RCT "introduces the fiction of a solipsistic *homo sociologicus,* whereas the CM recognizes the *homo sociologicus* as a social being" (2012b: 18). This critique is clearly directed towards the narrow version. Obviously, the social environment imposes various costs and benefits on actors and is taken account of in a wide version and in the CM as well (see in particular Boudon, 2014: XX). In his preface to a collection of his essays in German (2013), he asserts that rational choice theory "postulates that the reasons which stimulate individuals are egoistic and instrumental," whereas in his CM there can be "supraindividual and cognitive reasons" (translation by KDO). The former are clearly a characterization of the narrow version, whereas the latter – if it means that reasons might be shared by a group of individuals – refer to the wide version.

Boudon's critique of the narrow version can be illustrated with his discussion of so-called "paradoxes," in particular with the paradox of voting (see, for example, Boudon, 2003: 6-7; 2012a: 7-8) that, in his opinion, RCT is not able to solve. From a narrow RCT it follows that nobody will participate in an election because a single voter has no influence on the outcome of an election. In reality, however, we find that election participation is far from zero. From the perspective of a wide version, various kinds of costs and benefits (in M. Olson's terms: selective incentives) may have an impact on voting. Which ones are important has to be tested empirically.[8] Boudon strongly criticizes this procedure. His argument is that introducing these other incentives is ad hoc and unacceptable. The exact reasons for this critique are not clear. RCT is a general theory that says that preferences and constraints influence individual behavior and that people do what they think is best for them. The theory imposes no limitations on the kinds of preferences and constraints. These

8. For a more detailed discussion of Boudon's analysis of the paradox of voting, see Opp (2014a) and also Opp (2001).

limitations – such as only considering egoistic preferences or ignoring internalized norms – are introduced ad hoc. The social psychological version of VET shows this clearly: no social psychologist sees any problem in introducing all empirically relevant consequences and testing their influence. This procedure is by no means ad hoc in order to "salvage" the theory (Boudon, 1998: 821), it is embodied in the theory. This critique is strange because factors such as (false) beliefs are also ingredients of the CM.

As was said before, the CM lacks an explicit reference to utility maximization. We will therefore discuss this assumption in more detail in the following section.

9.3. A Reconstruction of Boudon's Implicit Use of the Assumption of Utility Maximization

It happens that scientists explicitly reject certain hypotheses or methodological rules but actually apply them. For example, many scholars are against rational choice theory but actually apply it in their work (which holds, incidentally, for Analytical Sociology, see Opp, 2013b). This might be the case with Boudon's work as well. It is therefore instructive to look at some of Boudon's examples in order to examine the extent to which he implicitly assumes utility maximization.

Boudon tries to explain why clerks in a firm had violent conflicts on minor issues such as "being seated closer to a source of heat or light" (1996: 144 – the example is based on C.W. Mills's *White Collar* from 1951). A "cognitivist interpretation" of this "overreaction paradox" (2009b: 183) is the following. All workers get equal pay and their work is similar. There is further a norm that contributions to the production should match rewards. Any unequal reward (such as sitting closer to a window) is perceived and intolerable. As soon as the advantage of sitting close to a window is due to the decision of a supervisor it is an injustice. From a "utilitarian viewpoint" (as Boudon puts it), sitting close to a window matters little, but it is regarded as an injustice and therefore instigates conflicts.

Boudon claims that this is contrary to RCT. This is wrong when a wide version is used: norms such as equal pay for equal work are included as possible factors, and it is also possible to include environmental factors such as the workplace in the explanation. They are perceived constraints. So far, then, the explanation of the CM and the wide version of RCT do not differ.

However, the wide version would further argue that eliminating the injustice makes individuals better off. Thus, if this elimination is brought about by the conflicts, individuals prefer the new situation to the previous one. This is exactly what Boudon implicitly assumes. The conflicts are solved when no one has a privilege such as sitting close to a window. And this is in the interest of the workers – which is implied in the example. This is equivalent to arguing that solving the conflicts makes the workers better off or maximizes their subjective utility.

Let us look at the Adam Smith example again. Boudon's argument lacks a central explanatory step if an assumption about utility maximization is not included. On the one hand, Boudon writes that violation of a justice norm results in a "disequilibrium" (see the quotation above), which is obviously unpleasant. In other words, this situation is costly. Boudon's implicit assumption is that individuals want to avoid the disequilibrium. If this is not assumed, why is the disequilibrium regarded as relevant for the explanation? Isn't the assumption also that avoiding the disequilibrium is better for individuals than staying with the disequilibrium? Thus, individuals choose what is best for them. This is the assumption of subjective utility maximization.

Another assumption in this example is that the general fairness norm implies the acceptance of the norm that miners should get a higher salary. Why do individuals accept the implication of the general norm? Apparently, individuals would feel uneasy if they would not. This would be costly. Furthermore, accepting the implication is best from the viewpoint of the individual.

Utility maximization is further plausible when we imagine that the Australian tribes come into contact with modern science and learn that the traditional belief that rain dances generate rain is wrong. They are taught which processes lead to rain. Assume further that the new beliefs are acquired because they are convincing. The latter term means that they are regarded as true or superior to the competing traditional belief.

One explanatory step is missing: if modern science is convincing: *why will the traditional beliefs be given up*? Why not hold both types of beliefs? Apparently, holding both beliefs (i.e., beliefs that are inconsistent such as "p and non-p") is highly unpleasant, and therefore costly. It is not only cognitively unpleasant but will also be punished by important others. If you tell your friends, for example, that you believe "apples are healthy" and "apples are not healthy," you will be considered feeble-minded.

Holding a belief that is regarded as wrong further violates goals that most people subscribe to, namely, knowing the truth (at least for some matters). Reaching such a goal is beneficial. That is to say, not accepting a true statement is a cost.

In addition, accepting the belief supported by modern science has concrete advantages. The time and other resources invested in performing the rain dances could be used for setting up irrigating systems. Thus, giving up the false belief is clearly a benefit, and holding it is a cost.

The confrontation with modern science will probably lead to rejecting an entire *system* of traditional beliefs and replacing it with a new belief system. This is not only a question of just checking what is acceptable (see the previous quotation from Boudon, 1998: 824). It is a painful psychological process where some form of subjective utility maximization is involved.

Thus, in general, arguing that an actor prefers a (descriptive or normative) belief A to another belief B (or an action A to another action B) because he or she has good reasons for A and not B, means that he or she has *better* reasons for A than for B. This means that there is some choice, and that an individual

is *better off* when a certain belief is chosen and not another. In other words, the actor chooses what is subjectively better for him or her. This holds for the choice between descriptive beliefs, normative beliefs (see the discussion in Opp, 2013a, see also Opp, 2001), attitudes, preferences and behaviors.

These examples illustrate that Boudon seems to implicitly assume that actors do what they think is best for them. This is actually subjective utility maximization. If this is granted, then the CM is consistent with the wide version of RCT.

Many formulations in Boudon's work come very close to or are even identical to the hypothesis of utility maximization. For example, the CM states that "social actors try to act in congruence with reasons they perceive as valid" (2009b: 192). Why do they try to reach congruence if that doesn't make the actors better off? Another statement by Boudon is that an actor prefers the theory that accounts "for given phenomena in the most satisfying possible way (in accordance with given criteria)" (2009b: 184). "Satisfying" points to the fact that acceptance is "more satisfying" than non-acceptance – a clear case of subjective utility maximization. Given various goals, Boudon argues (2009b: 193), actors "are rational in the sense that they look for the best or at least for a satisfactory system of reasons able to provide a ground to their answer." Can there be a clearer description of subjective utility maximization?

But assume we accept Boudon's claim. What is the alternative to subjective utility maximization? In regard to beliefs, the answer that an actor accepts a belief that is convincing begs the question of why this is done. Why not keep the old belief?

What are Boudon's *explicit arguments* against utility maximization? Let us look at some quotations. The CM "is drawn from the 'rational-choice model' by lifting the restriction that the reasons of social actors should always be of the cost-benefit type" (1996: 124). In another article, Boudon argues (1998: 824): "endorsing a theory is a noninstrumental action … the question the actor is confronted with here is not to maximize a cost-benefit balance, but to check whether, to the best of his knowledge, an idea is acceptable." It is striking that no empirical evidence is provided for his rejection of utility maximization. He just asserts that it is false. Furthermore, Boudon does not put forward an alternative proposition.

The most important argument against Boudon's claim is that it is inconsistent with major social psychological theories. This holds true for the two theories applied before, but also for other theories such as learning theories. Their assumption which is usually not formulated in an explicit way is that individuals choose a situation that they think is best for them, in a given situation.

10. General Conclusions

Boudon's basic idea that everything social scientists are interested in can be explained by a single theory is new and has been confirmed in the previous

analyses. This should encourage social scientists to try to expand the range of application of their theories to encompass not only behavior. It would be an important research program to work on an encompassing theory that Boudon had in mind.

The basic idea of Boudon's theory that beliefs (i.e., "reasons") are explanatory variables of a wide range of phenomena is nowadays widely accepted in quite different schools of the social sciences. However, alternative approaches focusing on objectivist propositions such as a narrow RCT and on methodological collectivism are still strong. So discussing Boudon's work and expanding it may in general strengthen a subjective approach that is advocated by this author as well.

The title of the paper is "The Explanation of Everything." Are there questions social scientists are interested in that are not addressed by the CM? The answer is yes. Among the questions not answered by Boudon's theory are at least the following. (1) The question of when a behavior is planned and when enacted spontaneously has become a focus of social sciences since the rising interest in dual-process theories. This question has not yet been addressed in the present paper and I have not found any detailed analysis in Boudon's work either. (2) Another issue is the role of objective factors in the formation of beliefs. We know at least since the work of Kahneman and Tversky that misperceptions are ubiquitous. But we still know little about the conditions of when people believe what. (3) When does a negative attitude develop toward a behavior and when does a norm come into being? For example: when do people not *like* it when somebody smokes in their presence, and when does a *norm* emerge that one should not smoke in one's presence? This question is rarely addressed in the literature and is not dealt with in the CM either. But perhaps Boudon would answer: a norm and not only an attitude will emerge if the actor has good reasons for demanding something. This raises the question of what these reasons might be.

For this writer, the most fascinating part of reading Boudon's presentations of his theory was his creative use of the work of classical writers, in particular Max Weber, Émile Durkheim and Alexis de Tocqueville. Boudon's reconstructions of these explanations are fascinating in their own right.

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