

Ranking Policy Options for Sustainable Development

Georg Brun

Gertrude Hirsch Hadorn

Final draft. The original version is available at www.springerlink.com.

Published in *Poiesis & Praxis*, 2007. <http://dx.doi.org/10.1007/s10202-007-0034-y>

Abstract Sustainable development calls for choices among alternative policy options. It is a common view that such choices can be justified by appealing to an evaluative ranking of the options with respect to how their consequences affect a broad range of prudential and moral values. Three philosophically motivated proposals for analysing evaluative rankings are discussed: the measured merits model (e.g. Chang), the ordered values model (e.g. Griffin), and the permissible preference orderings model (Rabinowicz). The analysis focuses on the models' potential for making transparent how an evaluative ranking can contribute to a justified choice among options, particularly in situations that involve diverse values as typically found in debates on sustainable development. Such transparency plays a crucial role when policy rankings are going to be used as arguments in political decision processes. The measured merits model is found to have questionable consequences for the concept of sustainability, while the ordered values model calls for an axiological framework that cannot plausibly be spelled out for sustainability. The permissible preference orderings model is more promising. Its formal structure and its ability to deal with value-pluralism provide an interesting re-structuring of the problem of justifying choices in sustainability issues.

Zusammenfassung Nachhaltige Entwicklung verlangt, zwischen alternativen Strategien bzw. Verfahrensweisen zu wählen. Es ist üblich, eine solche Wahl mit Verweis auf eine evaluative Rangordnung der Optionen zu rechtfertigen. Dabei muss berücksichtigt werden, wie die Konsequenzen der Optionen unterschiedlichste Werte betreffen. Werden Rangordnungen von Strategien als Argumente im politischen Entscheidungsprozess verwendet, spielt Transparenz eine zentrale Rolle. Wir diskutieren drei philosophisch motivierte Modelle evaluativer Rangordnungen: das Messwertmodell (z.B. Chang), das Wertordnungsmodell (z.B. Griffin) und das Modell der zulässigen Präferenzordnungen (Rabinowicz). Die Analyse konzentriert sich auf den Beitrag der verschiedenen Modelle, die Rechtfertigung einer Wahl zwischen Optionen transparent zu machen. Während das Messwertmodell fragwürdige

Konsequenzen für das Konzept der nachhaltigen Entwicklung hat, verlangt das Wertordnungsmodell eine axiologische Struktur, die für Nachhaltigkeit nicht plausibel ausgearbeitet werden kann. Das Modell der zulässigen Präferenzordnungen scheint vielversprechender zu sein. Seine formale Struktur und die Möglichkeit, Werte-Pluralismus zu modellieren, erlauben es, das Problem, wie Nachhaltigkeitsentscheidungen gerechtfertigt werden können, neu zu strukturieren.

Résumé

Le développement durable exige de choisir entre différentes stratégies ou politiques. Il est courant de justifier un tel choix par un classement évaluatif des options. Il faut à cet égard tenir compte du fait que les conséquences de ces options touchent différentes valeurs. Lorsque le classement de stratégies est utilisé comme argument dans le processus de décision politique, la transparence joue un rôle central. Nous amenons la discussion sur trois modèles de classement évaluatif motivés par une pensée philosophique: le modèle des valeurs mesurées (p. ex. Chang), le modèle des valeurs classées (p. ex. Griffin) et le modèle des classements préférentiels admissibles (Rabinowicz). L'analyse se concentre sur la contribution des différents modèles à rendre transparente la justification d'un choix entre les options. Tandis que le modèle des valeurs mesurées a des conséquences discutables pour le concept du développement durable, le modèle des valeurs classées exige une structure axiologique qui ne peut être élaborée de manière plausible pour la durabilité. Le modèle des classements préférentiels admissibles semble beaucoup plus prometteur. Sa structure formelle et la possibilité de traiter le pluralisme de valeurs permettent de structurer de manière nouvelle le problème de la justification des choix dans le domaine de la durabilité.

1. Introduction: Sustainable development, evaluation and justification

The concept of sustainable development was introduced into the political debate about development and environment in 1980 by the international environmental organisations in their "World Conservation Strategy" in the following way: "For development to be sustainable it must take account of social and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long term as well as the short term advantages and disadvantages of alternative actions." (IUCN et al. 1980, Introduction; on the history of "sustainable development" see Leisinger 1998 and

Robinson 2004) In the course of its successful history the term “sustainable development” has been adapted to such a great variety of uses that the IUCN-definition now faces a whole battery of rival definitions.¹ Moreover, it is also open to divergent interpretations (Robinson 2004). Nevertheless, the statement quoted contains some points that continue to play an important role in assessing public and business policies (see e.g. Munasinghe and Swart 2005; WBSC 2005:8). Sustainable development requires justified choices among alternative policy options. While there is a consensus that such choices need and can be justified, it is debated how such a justification can be given. A key approach to justifying choices – but not necessarily the only legitimate one – is to point out that the choice in question is based on an evaluative ranking of the available options; that is, a ranking which results from comparing the options with respect to some values. If this characterisation should not beg substantial questions, the term “value” has to be interpreted in a broad sense as anything which may be considered as a reason that speaks in favour of an option. In the context of sustainability, evaluative comparisons will typically assign a crucial role to the consequences of the options. But other factors may be relevant as well, such as whether realising an option complies with certain rights and duties. The IUCN-definition also makes clear that such an evaluation must take account of a wide range of values. This contrasts with uses of “sustainable” which reduce the meaning of the term to that of a quasi-synonym of “long term” (e.g. Redclift 1993).

The IUCN-formulation further assumes that the values related to sustainability can be classified, at least broadly, as pertaining to a social, economic or environmental dimension of sustainability. This should be understood neither as denying interdependencies between these three dimensions nor as implying that this classification is exhaustive.² Rather this point, known as the “sustainability triangle” or

¹ Additional variation in the meaning of “sustainable” has been generated by using it attributively in combination not only with “development” but many other terms, such as “use”, “growth” and so on. Sometimes “sustainable” is also used with respect to one aspect of sustainable development only, as in “sustainable economics”. In this paper we use “sustainability” and “sustainable” exclusively as a shorthand for “sustainable development”.

² There is, for example, the question whether moral values are included in this concept of sustainability. As it stands, the definition is open to various readings on the basis of different theories of value and morality. While some interpret the social,

the “triple bottom line”, must be understood as taking a stance against two rival positions (Robinson and Tinker 1998; WBGU 2001; Paehlke 2002). Firstly, against positions which reduce one of the three dimensions – social, economic and environmental – to another one; and secondly, against positions which assume some lexical ordering of these dimensions, such that one simply trumps the other. Many authors go a step further and claim that social, economic and environmental values are of *equal* importance for sustainability. Furthermore, if one accepts the “triple bottom line”, it is hardly controversial that sustainability involves complex values resulting from interactions between values pertaining to diverse dimensions (see e.g. WBGU 2001:170).

The following discussion does not assume that this interpretation of the IUCN-definition gives the only valid or best definition of sustainability. It relies merely on the following features:

- (1) Diversity: Sustainability involves diverse values that are interrelated (complex), cannot be reduced to one another and are not lexically ordered.³

These points are not peculiar to the IUCN-definition.⁴ They can also be found in many alternative accounts, such as the “Brundtland”-definition introduced in the WCED-report “Our Common Future” (WCED 1987:43) or the more recent approaches of the CSD (Commission on Sustainable Development of the UN Department of Economic and Social Affairs). The sustainability indicators developed by this commission in 1996 and 2001 operationalise a four “pillars” (social, economic, environmental and institutional) concept of sustainability. CSD’s current redesign of the indicators has abandoned this four-dimensional structure in favour of a multi-dimensional approach, further emphasising the crucial aspects of the concept of sustainability mentioned in (1) (CSD 2006).

economic and environmental values linked to sustainability as prudential values, others take sustainability itself, or the three dimensions mentioned, in a moral sense.

³ Important statements, definitions and quotations are numbered to facilitate reference, without implying that we endorse all these claims.

⁴ Arguably, (1) applies to more specific goals of public policies as well. However, analysing parallels and differences between various goals of public policies lies outside the scope of this paper.

In what follows we discuss three models of evaluative comparison. The leading question of our analysis is: can the models discussed explain the structure of evaluative comparison in a way that shows how this contributes to a *justified* choice in matters of sustainability? Special attention will be given to the various models' capability to deal reasonably and transparently with diverse and complex values as they are involved in judgements about sustainability. In their abstract form, these challenges are often treated under the label "incommensurable values". For reasons to be discussed in the next section we will reserve "incommensurability" for a specific problem relating to diverse values.

There are several points worth noting about this line of investigation. Firstly, assuming that an evaluative comparison of options may contribute to a justified choice does not imply that the choice itself or its justification can be reduced to such a comparison. For one thing, choosing an option based on evaluative comparison requires a criterion of choice (such as optimality, maximality, or sufficiency), which needs to be defended as rational on its own right. Additionally, whether a choice is justified may also be dependent on the procedure adapted for carrying out the choice. Whereas this aspect often plays a minor role for justifying an individual's decision in private matters, it is undoubtedly important for public choices in general and particularly for choices related to sustainable development. In fact, after the "Agenda 21" conference in Rio (UNCED 1992) the concept of sustainable development has often been interpreted as including a political dimension related to standards of decision making such as participative institutions. Consequently, evaluative comparisons may contribute to justifying choices in matters of sustainability but they alone do not yet constitute such a justification.

Secondly, models of evaluative comparison aim at providing a structure that explains how evaluative comparison may be reasonably carried out in cases involving diverse and complex values. In this role such models are prominent in philosophical discussions about the methodology of evaluative comparison and its implications for justified choice. Since we focus on models of evaluative comparison, we will leave aside several aspects of the debate about how options can be reasonably compared and ranked with respect to sustainability. We will not address value-theoretical questions that do not directly pertain to the structure of evaluative comparison, such as substantial divisions of values into intrinsic and extrinsic or subjective and objective. Furthermore, whether a comparison of options is justified can be analysed in two respects. There is the material question whether the comparative judgements actually are correct. This issue will not be addressed in this paper since it cannot be dealt with in the abstract but calls for analysing concrete options with respect to specific values linked to

sustainability and a given context of evaluation. We will rather restrict ourselves to the second, methodological question of how evaluative comparison can be carried out in a way that makes transparent the reasons why some options are judged to be better than others. In the context of sustainability this is a key question, since transparency of reasons becomes crucial when rankings of policy options are used as arguments in political decision processes.

The three models discussed in the following section have been proposed as models for dealing with evaluative comparisons that involve diverse and complex values. We will analyse whether they can plausibly meet this expectation when applied to evaluating options with respect to sustainable development.

2. The measured merits model

The question “What kind of evaluative ranking is capable of backing up a justified choice?” is most often answered by using non-evaluative comparisons as a model for the evaluative comparison of consequences of options. The leading picture is this: in non-evaluative comparisons, such as comparing the size of two shirts, comparing two options means comparing amounts of a particular attribute of these options on an ordinal or cardinal scale which represents the dimension of comparison. Five factors are involved in such a comparison: options compared, attributes relevant to comparison, amounts of these attributes, a dimension of comparison and a scale. For example, two shirts (options) may be compared with respect to their length (dimension) in centimetres (scale) by measuring their physical extension from top to bottom (attribute), which is, say, 48 and 46 (amount) respectively. Alternatively, an ordinal scale such as XS–S–M–L–XL may be used or an even simpler one by relying on a direct comparison of the physical extension of the two shirts.

Unfortunately, these distinctions tend to get lost in debates about evaluative comparison, because the term “value” can be used in an unspecific way for referring to any of the five factors mentioned. In this paper we will use the following terminology for discussing evaluative comparisons: the dimension of comparison is an evaluative concept or “value” for short; the attributes responding to the dimension are the “indicators”; the relevant amounts are called the “merits” of the options,⁵ which are the

⁵ The term “merit” should not be interpreted as implying a unidirectional dimension of comparison because with respect to some values more merit is not equivalent to

“bearers” of value. Any value used as a dimension of comparison is also called a “covering value”, or more traditionally a *tertium comparationis*. That it “covers” some options means that it makes sense for the options to be compared with respect to this value. Often, covering values are not simple but comprise a range of dimensions, which are called their “contributory values”. If a covering value is assumed to meet the further condition that it comprises all that matters for a given choice, it is also called a “choice-value”. (Cf. Chang 1997 for this terminology.)

The measured merits model proposes to interpret evaluative rankings of options as effected by ordering options on an ordinal or cardinal scale according to their merits with respect to a given covering value. Following Griffin (1991) this model is also called the “super-value model”, since within an utilitarian paradigm the covering value must be interpreted as a single substantial value that incorporates a range of evaluative concepts and covers all consequences of options – an idea Griffin rejects. We will use “super-value” without monistic or utilitarian connotations as a label for any meaningful covering value that is supposed to comprise all values which are relevant for the evaluation at hand (if and only if this evaluation is all that matters for choice, it is also a choice-value). So if the measured merits model is going to be applied to evaluative comparison in issues of sustainability, sustainability must be interpreted as a super-value, irrespective of whether it plays the role of a choice-value as well.

A comparison within the framework of the measured merits model can run into many different kinds of problems, both theoretical and practical. Following Chang (1997), one may distinguish two important theoretical problems:

- (2) Incomparability: Can there be cases in which one option is neither better than, worse than, nor equally good as another one?
- (3) Noncomparability: Is there always a meaningful covering value for any given evaluative comparison?

Question (2) raises the problem whether there may be comparisons which cannot be accommodated to the following claim:⁶

betterness. Just as a negative voltage can be higher than a positive one, being less ready to take risks can be better than being more ready to take risks.

⁶ The trichotomy thesis does not claim that there are three irreducibly different value-relations but is compatible with the standard definitions of “better”, “worse” and “equal” in terms of “at least as good”. Applying these definitions turns the

- (4) Trichotomy: Two options x and y are comparable with respect to V if and only if either x is either better than, worse than or equal to y with respect to V .

Trichotomy is a fundamental precondition for the application of most decision theoretical methods. It claims that value-bearers not instantiating one of the three positive value-relations mentioned must be considered incomparable (or even noncomparable) options. Critics of the trichotomy thesis claim that there is a further positive value-relation, which cannot be expressed in terms of “better”, “worse”, and “equal”. This fourth value-relation is called “on a par” (Chang 1997) or “roughly equal” (Griffin 1986; Raz 1991; Broome 1997). Some of these critics also argue that alleged cases of incomparable options can in principle be reconstructed as meaningfully comparable in the sense that this fourth value-relation holds between them (Chang 1997; Broome 1997). Others (Griffin 1997) insist on incomparability still being different from rough equality in case of vague comparisons. (Cf. Qizilbash 2000) These issues are often treated under the label “incommensurability”. But for reasons of clarity this term should be reserved for options that cannot be ranked on a cardinal scale, whereas “comparability” as used in (4) and implied by (2) and (3) requires only that a ranking is possible on an ordinal scale (cf. Chang 1997:1–2).

Noncomparability (3), however, points to a possible problem which is even more fundamental than incomparability. It arises if a comparison cannot be carried out because there is no meaningful value covering the options one wishes to compare. This problem has been involved, for example, in debates about the use of cost-benefit analysis in sustainability assessments. Cost-benefit methods are based on various techniques for measuring costs and benefits of alternative options in monetary terms. The use of these methods sparked a wide-ranging controversy when they were employed by Working Group III of the Intergovernmental Panel on Climate Change. In their second report on the social consequences of anthropogenic climate change the authors referred to literature on monetary valuation of statistical lives and aggregated statistical lives across countries. In this assessment monetary values are used to cover human lives and it is claimed that human lives differ in monetary “value” (i.e. monetary merit), since national circumstances including opportunity costs differ greatly between developing and developed countries (IPCC 1995:50). These calculations were strongly

trichotomy thesis into the simpler but less suggestive claim that two options are comparable if and only if one of them is at least as good as the other.

contested in public (see e.g. GCI 2006). Most objections insisted that differences in the “value” of human lives cannot be accepted for moral reasons.⁷ On the face of it, this may look like an attack on the differences in monetary merits assigned to human lives. But *stipulating* the results of economic methods of *measurement* would be absurd. The objections are therefore better understood not as targeting the resulting merits but as attacking the covering value; that is, as claims of noncomparability.

In the context of sustainability the two problems (2) and (3) are intertwined with a third one resulting from (1). Sustainability is an evaluative conception of societal development which includes a range of diverse contributory values. Evaluating options with respect to sustainability therefore calls for taking into account all those contributory values. And it also gives rise to the problem of how they may contribute to the super-value of sustainability.

In her defence of the measured merits model Chang argues that a meaningful comparison is possible even for super-values with diverse contributory values. Her argument relies on two points:

- (5) Nominal-notable principle: “Nominal-notable comparisons succeed by definition.” (Chang 1997:15)
- (6) Chaining argument: “Between two evaluatively very different items, a small unidimensional difference cannot trigger incomparability where before there was comparability.” (Chang 2002:674)

Notables are defined as options with extraordinary high merits with respect to a covering value, while nominals are options whose merits are extraordinarily low. Nominals are XXS-options, while notables are XXLs, so to speak. Therefore, comparisons between nominals and notables succeed by definition, even if the covering value is a super-value that includes diverse contributory values. Drawing on the intuition of the chaining argument, she argues that Mozart and Michelangelo, for instance, are comparable with respect to creativity, despite all difficulties involved in comparing the creativity of a musician and a painter. The reasoning is as follows:

⁷ Another quite different objection was that monetary costs are not the only thing that matters in sustainable development. Many advocates of cost-benefit analysis concede this point when they say that results of cost-benefit analysis do not constitute a sufficient but only a necessary reason for choosing an option (e.g. Arrow et al. 1996:221; Sunstein 2005:385).

Mozart and a poor painter called “Talentlessi” are comparable, because Mozart is a notable and Talentlessi is a nominal with respect to creativity. But Michelangelo differs from Talentlessi only in improvements regarding to the same contributory values. Therefore, the chaining argument can be applied repeatedly by imagining slightly better versions of Talentlessi until one reaches Michelangelo, who is thereby shown to be comparable with Mozart as well. Hence, Chang concludes, diversity of contributory values per se is no reason for incomparability. (Chang 1997:15–16; Chang 2002:673–374)

However, if one tries to apply Chang’s argument to issues of sustainability, it faces many challenges. We concentrate on difficulties of the nominal-notable principle.⁸ Firstly, classifying an option as a nominal or a notable would be straightforward if we could assume that it always suffices to show that it has extremely low or high merits with respect to at least one contributory value. But it is far from clear that such a procedure can be defended as rational in all cases. There may well be super-values which do not allow for classifying an option as a nominal or a notable unless it has very high or low merits with respect to some important contributory value, to a certain combination of contributory values, or even with respect to all contributory values. Indeed, such problems arise for sustainable development as a super-value, if this notion incorporates the idea (1) that social, economic and environmental dimensions of sustainability cannot be reduced to one another and are not lexically ordered or even are of equal importance.

Secondly, under what conditions is the application of the nominal-notable principle meaningful? More specifically, are there any limits to the plurality of contributory values, if the nominal-notable test should remain meaningful in relation to the super-value? Chang addresses this question by arguing that “a covering consideration might be nothing more than a stipulated consideration that is a bare conjunction or list of all the considerations relevant to the comparison” (2002:667). But this argument misses the point. If evaluative comparisons should be more than a mere expression of arbitrary taste, they must be backed up by a judgement which secures that the super-value is not a bare stipulation. Precisely the fact that lists of contributory values can be arranged differently threatens to make any such judgement impossible. Chang tries to dispel such worries by claiming that different lists of contributory values are “different ways we can sharpen our understanding of the covering value” (1997:22). And differently

⁸ For the debate about the chaining argument see, e.g. Broome 1997; Chang 2002.

sharpened understandings yield different comparisons resulting in multiple rankings of options with respect to the same super-value:

- (7) Value plurality: Different legitimate sharpenings of a super-value yield multiple rankings of options, which are on a par.

This claim generates difficulties for the measured merits model both on a conceptual level and with respect to its application. To begin with, the line of reasoning leading to (7) involves two distinct meanings of the terms “value” and “evaluative comparison”. This introduces a confusion about the role of evaluative comparison in justified choice. If sharpening a value concept consists in a comparative ordering of its contributory values, then this is not an evaluative comparison in the sense employed so far, since it is not an ordering of value-bearers according to their merits. Instead, it is an ordering of contributory values with respect to their importance or weight for the complex unity of these contributory values, the super-value. This turns evaluative comparison of value-bearers into comparison of contributory value-dimensions. But surely there is an important difference between evaluating options with respect to sustainability on the one hand and judging whether certain values are involved in sustainability and what their relative importance is on the other hand.

A second problem is related to the term “legitimate” in (7). It can either be read in a schematic sense as requiring that any sharpening of a super-value must meet some formal criteria (e.g. inclusion of all contributory values) or it can be understood as calling for sharpenings that are not only formally but substantially correct. If taken in the first sense, all possible arrangements of contributory values will count as equally legitimate sharpenings of a super-value. This is not a sensible result in the case of sustainability assessments. (See e.g. Farrell and Hart 1998; Jacobs 1999; Paehlke 2002.) Such assessments become worthless for policy development if different outcomes are simply treated as being on a par. If, alternatively, (7) is interpreted as relying on a distinction between substantially correct and incorrect sharpenings of a super-value, then the measured merits model is seriously incomplete. It lacks the conceptual resources of an axiology; that is, it cannot account for relations between value-dimensions, since comparing value-dimensions cannot be reduced to comparing merits of value-bearers. Either way, the measured merits model does not answer the question how evaluative comparison can contribute to justified choice in sustainability issues.

In the next section we discuss a model of evaluative comparison which contrasts with the measured merits models in putting more weight on axiological relations between value-dimensions.

3. The ordered values model

Alternatives to the measured merits model characteristically reject the reduction of value-judgements (e.g. “x is better than y”) to evaluative comparisons modelled after non-evaluative comparisons. An important exponent is Griffin, who disputes the idea that justified choices can be backed up with evaluative comparisons that are restricted to measuring merits of value-bearers with respect to substantial values (Griffin 2000; cf. Qizilbash 2000). The alternative he defends rests on the claim “all that is needed for comparison is that the notion of ‘value’ itself be quantitative, that it be capable of appearing in basic judgements of ‘more’, ‘less’ and ‘equal’, which it can” (Griffin 1997:36). These judgements are basic in the sense that “they do not depend on any other judgement about amount of value” (Griffin 1997:262 n. 6; cf. Griffin 1986:87–88), and they do not rely on a judgement that relates the comparison at hand to a substantive super-value.

- (8) Basic value-judgements: Comparative value-judgements are basic; they are not backed up by any further judgements about merits of value-bearers.

Moreover, according to Griffin values-dimensions can be ranked if they can be conceived of as elements of a background list of values within a formal conception “capable of supplying a broad framework within which comparisons can take place” (1997:40). His example is quality of life, conceived of not as a further substantive value, but as a formal overarching framework for a broad range of prudential values.⁹ These are plural elements of a good life such as enjoyment, deep personal relations, autonomy and many more. Various options of leading a life are conceived of differently, depending on which values appear in a certain form of life and how they do so. Different forms of life can all be worth pursuing, although they might turn out to be incompatible, as for instance a contemplative and an active life. If they are both of high quality but not equal because they differ with respect to their meaning and consequences, they can be seen as being “in the same league” nevertheless. And this means that they are comparable, namely they are “roughly equal” (Griffin 1997:38).

- (9) Value rankings: Values can be ranked, if they can be conceived of as elements of a background list of values within a formal conception.

⁹ Griffin’s use of this example is not intended to imply a sharp distinction between prudential and moral values. Cf. Griffin 1997:40.

- (10) Rough equality: Plural organisations of such a formal conception can be roughly equal.

Griffin claims that it is possible to order the plural prudential values that are the elements of the formal framework “good life” since “in the right [i.e. epistemically ideal] conditions we recognize that certain things make life go better” (1991:110). Furthermore, he argues that in successfully deliberating over prudential value-judgements we recognise not only that something is valuable, but also how valuable it is, at least to a certain extent:

- (11) Recognition: “Belief that something is important runs into belief about why it is important, which runs into belief about how important it is.” (Griffin 1991:108)

Now, does it make sense to conceive of sustainability as a formal evaluative framework that includes a broad range of economic, ecological and social values, which can be rationally ordered because in ideal epistemic conditions we recognise that some of these values are more important for sustainable development than others? For several reasons, attempts to put up such a general background list of values run into serious trouble.

Firstly, sustainability assessments are confronted with a high variability of natural, social and economic aspects relating to different contexts. Considerations of equity and partiality among and between generations make this a particularly pressing point. (e.g. Anand and Sen 2000) Therefore, actors and people affected as well as their contexts have to be taken into account in order to determine which elements of the sustainability conception are relevant for the evaluation at hand and in order to specify the respective weight of these elements. But the ordered values model precludes this by demanding a *general* evaluative ordering.

Secondly, owing to its socio-political nature, sustainable development is an essentially contested concept (Jacobs 1999; relying on Gallie 1955–56). In particular, every ordering of values within the sustainability conception as a general framework is likely to be disputed among the parties engaged. This undermines the analogy between the notion of an individual’s good life and the concept of sustainable development as applied to public policies. Alternative conceptions of a good life within a general framework of well-being can be regarded as being roughly equal. But alternative conceptions of sustainable development cannot be treated this way, because they result from aggressive and defensive uses of interpretations of “sustainability”. In short, ordering components in sustainability assessments is essentially political, in contrast to the individualistic conception of a good life. Is this a threat to rationality in evaluating

the sustainability of options? At this point a third model that restructures the landscape of value comparison may provide some help.

4. The permissible preference orderings model

Problems of incomparability and incommensurability related to diverse and complex values have been the subject of extensive discussion since the publication of Chang (1997) and the issue on incommensurability in *University of Pennsylvania Law Review* 146/5 in 1998. Recent publications show that the issue calls for a much more detailed formal treatment (Gert 2004; Rabinowicz 2004; Chang 2005; Carlson 2006). The model proposed in Rabinowicz (2004) is particularly promising for the analysis of evaluative comparison in matters of sustainability.

Based on a critical discussion of Gert's proposal, Rabinowicz develops a conceptual analysis of evaluative relations between value-bearers ("value-relations" for short) in terms of permissible preferences. The starting point for his analysis is the idea that value-judgements can be understood as normative assessments of preferences: to claim that a value-bearer is better, i.e. more valuable, than another one amounts to claiming that it is rational to prefer it.¹⁰ The obvious threat of circularity – explaining rational preference by appeal to merits – is avoided by interpreting preferences as dispositions to choose in the sense of a deliberate and reasoned choice among options with respect to a covering consideration.¹¹ Three features of this conceptual framework play a crucial role for the subsequent analysis of value-relations. Firstly, restricting preferences to deliberate and reasoned dispositions to choose makes it possible to qualify them with the deontological modalities "permissible" and "required". Secondly we must not assume that preferences always amount to a disposition to choose one option rather than another. There is also the additional possibility of indifference; that is, having a reasonable disposition to choose either of two options, to "equi-prefer" the two options. Thirdly, we nevertheless need not and in fact should not assume that for

¹⁰ This account of value-judgements – also known as "buck-passing account of value" – can be traced back to Brentano (1969). For a more extensive discussion see Rabinowicz and Rønnow-Rasmussen (2004, 2006).

¹¹ Rabinowicz and Rønnow-Rasmussen (2006) also consider the option of accepting such a circularity.

any two options there will always be a corresponding preference – in some cases, it may well be reasonable to lack any disposition to choose.

Despite some similarities, this conceptual framework differs from the measured merits model in several ways. Although preferences cannot be assessed as rational absolutely, but only with respect to a covering consideration, the role such a covering consideration plays must be clearly distinguished from the role covering-values play, since such rationality assessments must not be judgements about merits. Furthermore, the permissible preference orderings model – again unlike the measured merits model – draws much less on an analogy of evaluative rankings with non-evaluative comparisons and measurements. The most important difference is its insistence on preferences being deliberate and reasoned, which also blocks any straightforward descriptive interpretation of preferences as, for example, revealed preferences.

Rabinowicz’ account of value-judgements based on rational preferences can now be developed in two steps. First, value-relations are informally analysed in terms of choice-dispositions, exploiting the modal qualifications “permissible” and “required” as follows (Rabinowicz 2004:6–12)¹²:

- (12.1) Option x is *better* (*worse*) than y if and only if it is rationally required to prefer x to y (y to x).
- (12.2) Two options are *equally good* if and only if it is rationally required to be indifferent.
- (12.3) Two options x and y are *on a par* if and only if it is rationally permissible to prefer x to y, and y to x.
- (12.4) Two options are *incomparable* if and only if it is not rationally permissible to prefer one to the other or to be indifferent.¹³

This analysis then serves as a blueprint for a formal definition of value-relations. Without going into details, Rabinowicz’ (2004:19–26) formal reconstruction of value-relations can be sketched as follows: the core element is the notion of a class of

¹² For the sake of simplicity definitions (12) and (13) ignore Rabinowicz’ distinction between (in)comparable/on a par and *fully* (in)comparable/on a par (see Rabinowicz 2004:9–12, 20).

¹³ In other words, incomparability occurs if there is no permissible preference with respect to the two options.

permissible preference orderings of a given domain of options. These permissible preference orderings can be defined in the standard way as generated by a transitive and reflexive relation of weak preference; that is, a preorder of the domain.¹⁴ In order to allow for parity as well as incomparability it is not assumed that the preference orderings are complete. On this basis the value-relations mentioned in (12) are defined as follows:

- (13) For every class K of permissible preference orderings:
- (13.1) Option x is *better* (*worse*) than y in K if and only if x is preferred to y (y to x) in every permissible preference ordering in K.
- (13.2) Two options are *equally good* in K if and only if they are equi-preferred in every permissible preference ordering in K.
- (13.3) Two options x and y are *on a par* in K if and only if there are two permissible preference orderings in K such that x is preferred to y in one and y is preferred to x in the other.
- (13.4) Two options are *incomparable* in K if and only if in every permissible preference ordering in K neither x is preferred to y, nor y to x, nor are x and y equi-preferred.

As an example, Rabinowicz (2004:20) considers a domain of six options (d, a, a⁺, b, b⁺, c) and a class K of three permissible preference orderings (P₁, P₂, P₃), which are as follows (“x > y” stands for “x is rationally preferred to y” and “x, y” for “x and y are equi-preferred”),

- (14) P₁: a⁺ > c > a > b⁺ > d > b
P₂: b⁺ > c > b > a⁺ > d > a
P₃: a⁺, b⁺ > d > c > a, b

According to definitions (13), we get the following value-relations in K: a⁺ and b⁺ are better than a and b respectively, a⁺ and b⁺ are both better than d, and c is better than both a and b; furthermore, a, b and d are on a par, as well as a⁺, b⁺ and c or again d and

¹⁴ x is preferred to y if and only if x is weakly preferred to y but y is not weakly preferred to x. Equi-preference between x and y is weak preference of x over y and vice versa.

c, a and b^+ , and a^+ and b; finally, there are no incomparable options, since all three orderings are complete.

To see how such a formal structure can account for diversity and plurality of values when applied to an issue of sustainability, we may imagine four different options of energy policy a, b, c, d and in addition a^+ and b^+ as improved versions of a and b respectively. In a first step, these six options are ranked in three different permissible preference orderings according to – for example – economic, ecological and social considerations. (Of course, the limitation to six options and three complete permissible orderings is rather simplistic.) While the measured merits model and the ordered values model interpret these different considerations in terms of a diversity of values, the permissible preference orderings model treats them as a class of different permissible rankings of options.¹⁵ In a second step, the formal definitions given in (13) identify the value-relations which hold between the options with respect to the class of orderings considered.

We are now in a position to compare the permissible preference orderings model with the measured merits model and the ordered values model. Firstly, we can note that the definitions given in (13) are precise and formal. They not only give a clear and coherent meaning to the value-relations *better*, *worse*, *equally good*, *on a par*, and *incomparable*, they also do away with the metaphorical traits of “on a par” and “roughly equal” which used to influence the discussion about the measured merits model and the ordered values model. Secondly, the permissible preference orderings model relies neither on comparing merits, nor on ordering values, but on relations between orderings of options. This “holistic” approach avoids the measured merits model’s difficulty of finding a common scale for measuring merits, as well as the ordered values model’s difficulty of providing a formal framework for ordering contributory values. Thirdly, the very weak assumptions about the structure of preference orderings keep the model free of all problems related to more structured scales, such as those introduced by monetisation. (That these problems do not affect the model directly does not imply that they become irrelevant altogether. See below.) Although this comes at the price that with greater variety in the class of permissible preference orderings the model will tend to place more options on a par. Finally, the

¹⁵ In another interpretation of the structure (14), the three orderings could also be used to model plural rankings with respect to the same (e.g. economic) covering consideration (see Rabinowicz 2004:4–8).

model does not introduce any distinctions between permissible preference orderings. This contrasts with the ordered values model's assumptions about our ability to come to judgements about axiological relations based on judgements about the merits of options (11).

Several factors make the permissible preference orderings model a promising candidate for analysing sustainability assessments. To begin with, as shown in the example discussed above, the permissible preference orderings model gives a clear positive meaning to the view (1) that the various dimensions of sustainability are neither reducible to one another nor lexically ordered. And the same goes for the claim that social, economic, and environmental aspects should be of equal importance in sustainability assessments, which is put forward by many authors as an interpretation of the "triple bottom line". Secondly, and more importantly, the model gives us complete freedom in establishing permissible preference orderings, as long as three basic restrictions are met: preferences are rationally permissible, they are not dependent on judgements about merits of value-bearers, and the resulting structure meets the minimal condition that weak preference is a preorder. Since the model imposes no further restrictions on how we go about ranking options and defending preferences as permissible, one may proceed to do so in very different ways: relying, for example, on deontological deliberations about rights and duties, on utilitarian measures of costs and benefits, and so on. Therefore, the permissible preference orderings model is open for plural prudential values as well as for moral pluralism in practical reasoning. In fact, instead of getting "buried" in a method of aggregation or criteria of choice, such pluralism is made transparent. Since the model itself does not prescribe a specific criterion of choice (such as optimality, maximality or sufficiency; see Rabinowicz 2004:26–28) problems of deciding are disentangled from problems pertaining to ranking options. All this helps to prepare the ground for informed and fair deliberations among people and parties involved.

On the other hand, it must also be noted that there are many questions about evaluative comparison in sustainability issues which are not addressed by the permissible preference orderings model. They are only put in place, so to speak. Most difficulties relate to the central problem, how permissible preference orderings are to be established. This has three important aspects. Firstly, setting up a permissible preference ordering presupposes epistemic access to the relevant options, more particularly to their aspects which are important in light of the covering consideration. Without such knowledge it is pointless to qualify preferences as permissible or required (Rabinowicz 2004:6–7). Secondly, such qualifications of rationality must be established by appropriate arguments. Thirdly, for many covering considerations – especially, but

not only, economic ones – establishing an adequate preference ordering will call for the use of a scale with more structure than the model prescribes. Although doing so is compatible with the permissible preference orderings model, it will bring us back to many problems which can result from using, for example, cardinal scales, such as incommensurability of options, fixing and handling thresholds and so on.

Even though these problems may prove difficult to solve, they are not specific to the permissible preference orderings model. And they do not threaten to render the model itself meaningless or incoherent. Nevertheless, its potential for being used for ranking policies in sustainability assessments must be studied in further research.

5. Conclusions

Each of the three models discussed draws a conspicuously different picture of evaluative comparison and its possible role in justified choice when applied to sustainability issues. Using the terminology introduced at the beginning of section 2, the models can be compared as follows:

Within the measured merits model, evaluative comparison of options with respect to sustainability is based on assessing their merits with respect to a range of values contributing to sustainability. At the core of the model are “measurements” which determine merits of options; its focus lies on value-bearers and their merits. Diverse values pose a serious problem to this model. If sustainability is interpreted as a super-value, the model presupposes an axiological ordering of contributory values, which cannot be accounted for within the model. Instead of providing resources for making such an ordering of value-dimensions explicit, it leaves them subject to arbitrary interpretation.

According to the ordered values model, sustainability of options is assessed directly on the background of the relative importance of the various values contributing to sustainability. This model is based on our ability to form basic value-judgements, that is, basic judgements about merits, and to derive relations between values from these judgements. With respect to diverse values, this model focuses on the axiological structure they form. However, it seems very doubtful whether such an axiological structure can be spelt out convincingly for sustainability. Moral values, high context-sensitivity and its essentially contested character result in a very demanding challenge. Furthermore, the ordered values model does not provide a formal structure that could be used for a transparent account of how axiological relations are derived from judgements about merits of options.

Finally, for the permissible preference ordering model, evaluative comparison of options with respect to sustainability is based on their value-relations, which in turn are generated by a plurality of rationally permissible orderings of the options. In contrast to the first two models, the permissible preference ordering model focuses on a formal account of value-judgements. Its main achievement is to enable us to disentangle at least some of the problems which diverse values create for justified choices: epistemic access to relevant aspects of options, establishing a preference ordering of options, defending such an ordering as rationally permissible, deriving value-relations between options, and finally selecting a choice-criterion. Although only the problem of deriving value-relations is directly solved by the permissible preference ordering model, the proposed restructuring of the problems may prove to be an important progress in developing a satisfactory account of how evaluative comparison may contribute to justified choice in sustainability issues.

Acknowledgements

This paper is based on the author's research within the project TUMSS (Towards an Improved Understanding of Methane Sources and Sinks and their Role in the Past, Present and Future Climate) at ETH Zurich. Earlier versions have been presented at the universities of Basle, Constance and Zurich and at ETH Zurich. We would like to thank all participants for helpful comments.

References

- Anand S, Sen A (2000) Human Development and Economic Sustainability. *World Development* 28:2029–2049
- Arrow KJ, Cropper ML, Eads GC, Hahn RW, Lave LB, Noll RG, Portney PR, Russell M, Schmalensee R, Smith VK, Stavins RN (1996) Is There a Role for Cost-Benefit Analysis in Environmental, Health, and Safety Regulation? *Science (new series)* 272 (5259):221–222
- Brentano F (1969) [1889] *The Origin of Our Knowledge of Right and Wrong*. Routledge, London
- Broome J (1997) Is Incommensurability Vagueness? In: Chang R (ed) *Incommensurability, Incomparability, and Practical Reason*. Harvard University Press, Cambridge, Mass., pp 67–89

- Carlson E (2006) Incomparability and Measurement of Value. In: McDaniel K, Raibley JR, Feldman R, Zimmerman MJ (eds) *The Good, the Right, Life and Death: Essays in Honor of Fred Feldman*. Ashgate, Aldershot, pp 19–44
- Chang R (1997) Introduction. In: Chang R (ed) *Incommensurability, Incomparability, and Practical Reason*. Harvard University Press, Cambridge, Mass., pp 1–34
- Chang R (2002) The Possibility of Parity. *Ethics* 112:659–688
- Chang R (2005) Parity, Interval Value, and Choice. *Ethics* 115:331–350
- CSD [United Nations Department of Economic and Social Affairs, Commission on Sustainable Development] (2006) *Global Trends and Status of Indicators of Sustainable Development*. http://www.un.org/esa/sustdev/csd/csd14/documents/bp2_2006.pdf
- Farrell A, Hart M (1998) What Does Sustainability Really Mean? The Search For Useful Indicators. *Environment* 40:26–31
- Gallie WB (1955–56) Essentially Contested Concepts. *Proceedings of the Aristotelian Society, New Series* 56:167–198
- GCI [Global Commons Institute] (2006) Defending the “Value of Life”. <http://www.gci.org.uk/vol/vol.html>
- Gert J (2004) Value and Parity. *Ethics* 114:492–510
- Griffin J (1986) *Well-Being: Its Meaning, Measurement, and Moral Importance*. Clarendon Press, Oxford
- Griffin J (1991) Mixing Values. *Proceedings of the Aristotelian Society, Suppl. Vol.* 65:101–118
- Griffin J (1997) Incommensurability: What’s the Problem? In: Chang R (ed) *Incommensurability, Incomparability, and Practical Reason*. Harvard University Press, Cambridge, Mass., pp 35–51
- Griffin J (2000) The Incommensurability of Values. In: Crisp R, Hooker B (eds) *Well-Being and Morality: Essays in Honour of James Griffin*. Clarendon Press, Oxford, pp 285–289
- IPCC [Intergovernmental Panel on Climate Change] (1995) *IPCC Second Assessment Climate Change 1995: A Report of the Intergovernmental Panel on Climate Change: Summary for Policymakers: The Economic and Social Dimensions of Climate Change*. IPCC Working Group III. [http://www.ipcc.ch/pub/sa\(E\).pdf](http://www.ipcc.ch/pub/sa(E).pdf)

IUCN [International Union for the Conservation of Nature and Natural Resources], UNEP [United Nations Environment Programme], WWF [World Wildlife Fund] (1980) *World Conservation Strategy: Living Resource Conservation for Sustainable Development*. IUCN, Gland

Jacobs M (1999) Sustainable Development as a Contested Concept. In: Dobson A (ed) *Fairness and Futurity: Essays on Environmental Sustainability and Social Justice*. Oxford University Press, Oxford, pp 21–45

Leisinger KM (1998) Sustainable Development at the Turn of the Century: Perceptions and Outlook. *International Journal for Sustainable Development* 1:73–98

Munasinghe M, Swart R (2005) *Primer on Climate Change and Sustainable Development: Facts, Policy Analysis, and Applications*. Cambridge University Press, Cambridge

Paehlke R (2002) Methods for Sustainability Assessment: Sustainability Indicators. In: Hirsch Hadorn G (ed) *Unity of Knowledge in Transdisciplinary Research for Sustainability*. Encyclopedia of Life Support Systems. EOLSS Publishers, Oxford. <http://www.eolss.net>

Qizilbash M (2000) Comparability of Values, Rough Equality, and Vagueness: Griffin and Broome on Incommensurability. *Utilitas* 12:223–240

Rabinowicz W (2004) Modelling Parity and Incomparability. In: Rabinowicz W, Rønnow-Rasmussen T (eds) *Patterns of Value: Essays on Formal Axiology and Value Analysis*. Vol. 2. Department of Philosophy, Lund University, Lund. <http://www.fil.lu.se/publicationfiles/pp77.pdf>

Rabinowicz W, Rønnow-Rasmussen T (2004) The Strike of the Demon: On Fitting Pro-Attitudes and Value. *Ethics* 114:391–423

Rabinowicz W, Rønnow-Rasmussen T (2006) Buck-Passing and the Right Kind of Reasons. *The Philosophical Quarterly* 56:114–120

Raz J (1991) Mixing Values. *Proceedings of the Aristotelian Society, Suppl.* Vol. 65:83–100

Redclift M (1993) Sustainable Development: Needs, Values, Rights. *Environmental Values* 2:3–20

Robinson J (2004) Squaring the Circle? Some Thoughts on the Idea of Sustainable Development. *Ecological Economics* 48:369–384

Robinson J, Tinker J (1998) Reconciling Ecological, Economic, and Social Imperatives. In: Schnurr J, Holtz S (eds) *The Cornerstone of Development: Integrating Environmental, Social, and Economic Policies*. International Development Research Centre, Ottawa; Lewis Publishers, Boca Raton, pp 9–43.

<http://www.idrc.ca/openbooks/842-2/>

Sunstein C R (2005) Cost-Benefit Analysis and the Environment. *Ethics* 115:351–385

UNCED [United Nations Conference on Environment and Development] (1992) *Agenda 21*. United Nations, New York.

<http://www.un.org/esa/sustdev/documents/agenda21/english/Agenda21.pdf>

WBGU [German Advisory Council on Global Change] (2001) *World in Transition: Conservation and Sustainable Use of the Biosphere*. Earthscan, London

WBSC [World Business Council for Sustainable Development] (2005) *Annual Review 2005: From Awareness to Action*. <http://www.wbcsd.ch/>

WCED [World Commission on Environment and Development] (1987) *Our Common Future*. Oxford University Press, Oxford

Georg Brun

Gertrude Hirsch Hadorn

Department of Environmental Sciences

ETH Zurich

CHN H 73.2

Universitätstraße 16

8092 Zurich

Switzerland

Georg.Brun@env.ethz.ch (G. Brun)

hirsch@env.ethz.ch (G. Hirsch Hadorn)