

Comparing Values

Essays on Comparability, Transitivity, and Vagueness



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Abstract

The primary aim of this thesis is to examine some of the arguments that have been leveled against the idea that all value bearing entities are comparable. A secondary aim is to investigate some putative properties of the relation '*better than*', especially transitivity and (to some degree) vagueness. Also, some of the consequences of accepting incomparability are investigated, both with regards to other value theoretical issues, such as the implications for monadic value predicates, and with regards to more applied issues, such as the comparison of risks. **PAPER I** is a critical examination of the so-called small-improvement argument for incomparability. It is demonstrated that the value structure this argument is able to distinguish is compatible not only with incomparability but also with a kind of evaluative indeterminacy that is distinct from incomparability. **PAPER II** argues that if the possibility of non-conventional value relations is granted it follows that some things that have value are neither good, bad, nor neutral. This counterintuitive conclusion is reached by combining two individually plausible analyses of value. **PAPER III** addresses the phenomenon of incomplete preferences. It is shown how it is possible to model incomplete preference orderings by means of probabilistic preferences, and how to reveal an agent's incomplete preference ordering within a behaviorist framework. **PAPER IV** examines another version of the small-improvement argument designed to establish the rationality of incomplete preferences. It is argued that while there might be reasons to believe each of the premises in this version, there is a conflict between these reasons. The conflict is such that we are not provided with a reason to believe the conjunction of the premises. And without support for the conjunction of the premises the small-improvement argument for incomparability fails. **PAPER V** defends the common sense claim that '*better than*' is transitive against the compelling counterexamples provided by Larry Temkin and Stuart Rachels. It is demonstrated that the contradiction that follows from accepting Temkin and Rachels' premises trades on the vagueness of '*better than*', and so does not warrant the rejection of transitivity, but rather the conclusion that '*better than*' is vague. **PAPER VI** applies the notions of incommensurability and incomparability to comparative risk analysis. It is argued that if risks are incommensurable, and thereby resistant to accurate comparisons in terms of severity, we cannot perform accurate and cost effective trade-offs between risks and their associated benefits.

List of Papers

This thesis consists of an introduction and the following six papers (in the three co-authored papers the authors contributed equally):

- PAPER I** Espinoza, N. (2008) “The Small Improvement Argument”, *Synthese* 165:1, pp. 127-139
- PAPER II** Espinoza, N. “Some New Monadic Value Predicates”, accepted for publication in *American Philosophical Quarterly*
- PAPER III** Espinoza, N. and Peterson, M. (2008) “Incomplete Preferences in Disaster Risk Management”, *International Journal of Technology, Policy, and Management* 8:4, pp. 341-358
- PAPER IV** Espinoza, N. and Gustafsson, J. “Conflicting Reasons in the Small Improvement Argument”, submitted manuscript
- PAPER V** Bjurman, A. and Espinoza, N. “The Transitivity and Vagueness of Better than”, submitted manuscript
- Paper VI** Espinoza, N. (2008) “Incommensurability: The Failure to Compare Risks” in Roeser, S. and L. Asveld (Eds.) *The Ethics of Technological Risk*, Earthscan Publishers, London, pp. 128-143

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Three of the six papers were co-authored. I am very thankful for having had the chance to work with my colleagues Dr. Anna Bjurman-Pautz, Mr. Johan Gustafsson, and of course my supervisor Martin.

Most of my work was done sitting in my luxurious free-floating chair in my Luleå office. For some reason I have always had my best ideas there. Perhaps this is due to the always pleasant and friendly atmosphere of the Department of Languages and Culture. I am thankful for having had the chance to experience Luleå and Luleå University, and for the opportunity Clarence Larsson and Martin gave me by taking me in. Special thanks also to Anders Persson and Per Sandin for sticking it out with me in the “coal mine”.

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1. The Aim and Scope of this Thesis

This thesis falls within the sub-domain of ethics called *formal axiology*. Formal axiology can be broadly construed as the field of study in which one, ideally, tries to analyze value theoretical issues with mathematical rigor. Another ideal of formal axiology is that its results should be silent on substantial meta-ethical or normative issues. The goal is rather to provide a neutral background against which competing moral views can be assessed.¹ I have tried to keep to these ideals throughout the thesis.

The scope of the thesis is narrow. I deal mainly with some structural aspects of monadic value predicates, like ‘good’ and ‘bad’, and dyadic value predicates, like ‘better than’ and ‘worse than’.² The general aim is primarily to examine some of the arguments that have been leveled against the idea that all value bearing entities are comparable. A secondary aim is to investigate some putative properties of the relation ‘better than’, especially transitivity and (to some degree) vagueness. Although the question whether ‘better than’ is transitive is separate from the question whether values are comparable it is obviously closely related. Indeed, according to Joseph Raz, incomparability is marked by the failure of transitivity.³ Finally, I consider some consequences of accepting incomparability, both in regards to other value theoretical issues, such as implications for the monadic value predicates (PAPER II), and in regards to more applied issues, such as the comparison of risks (PAPER VII).

With regards to the comparability issue, I am inclined towards what Donald Regan calls the “eccentric” view, the view that all value-bearing objects are comparable.⁴ However, I do not offer a positive argument for this position. My arguments are merely negative, in that they aim to refute attempts that have been made to establish incomparability. So the thesis can be seen as an *indirect*

¹ That said, it seems quite obvious that formal results will sometimes, at least indirectly, have substantial implications. The present thesis is a case in point: whether or not there are incomparable values is a typical question dealt with in formal axiology. However, if it were determined that incomparability does occur then this would constitute, among other things, a substantial objection to utilitarianism. Another example is discussed by Dancy (2000). He argues that to accept the buck-passing account of value, a putatively formal issue, is to prematurely resolve the consequentialism-deontology distinction.

² cf. Broome (1991, Chap I), (1999, Part II), and (2004, Chap 4).

³ Raz (1988)

⁴ Regan (1997)

argument for the complete comparability of values, or in other words, for what Ruth Chang has called the trichotomy thesis, that is, that exactly one of the relations ‘*better than*’, ‘*worse than*’, or ‘*equally as good as*’ holds between any two value-bearing objects.⁵

There are not many arguments that do not solely rest on thought experiments and intuitions that threaten the trichotomy thesis. However, the one argument that stands out in this respect, which is also the argument most often employed in the contemporary debate, is the so called *small improvement argument* (SIA). Oddly enough, the validity of this argument has seldom been criticized and is often taken for granted both by those who defend, and by those who reject incomparability. One of the central aims of this thesis is to show that the SIA fails (PAPER I and PAPER IV). Without the SIA in play the incomparabilist is left with not much more than mere intuitions about “hard choices”, intuitions that can be accommodated by views less drastic than that of incomparability, such as vagueness.⁶

Besides value relations I also discuss preferences, as it is often thought that there is a tight connection between value relations and preferences, such that they can be analyzed in terms of each other. One way of performing such an analysis is to say, for instance, that *x* is better than *y* if and only if *x* ought to be preferred to *y*.⁷ It is then arguably the case that if *x* and *y* are incomparable one ought not to prefer *x* to *y*, *y* to *x*, or be indifferent between them. There is thus a natural way of relating incomparable values with incomplete preferences.⁸

Granted this connection between value relations and rationally required preferences, a positive argument against incomparability could be roughly sketched in the following way:

- A. An ideal rational agent has preferences that reflect the relations that hold between values.⁹
- B. An ideal rational agent has complete preferences, which is to say that complete preferences are rationally required.

⁵ Chang (1997)

⁶ See e.g. Broome (1997) and Harris (2001)

⁷ See e.g. Rabinowicz (2008)

⁸ But see Andreou (2007) for an interesting argument for the asymmetry between incomplete preferences and incomparable values.

⁹ More specifically this means that the agent i) prefers *x* to *y* iff *x* is better than *y*, ii) is indifferent between *x* and *y* iff *x* and *y* are equally as good, and iii) has an incomplete preference between *x* and *y* iff *x* and *y* are incomparable.

C. Therefore, the trichotomy thesis holds.¹⁰

In this thesis I take a first step towards defending this argument by refuting attacks against B, the claim that complete preferences are rationally required (I take it that A is uncontroversial). Again, the argument I attack is the small improvement argument, but this time as it is tailored to apply to preferences (PAPER IV).

One could, however, make it easy for oneself and dispense with the above defence of the rationality of complete preferences. All one need do instead is to claim that incomplete preferences are not even conceptually possible. For while it is rather easy to make sense of incomparable values, due to the common idea that there is a plurality of values¹¹, it is not as easy to make sense of incomplete preferences, at least when considered from within a *revealed preference* framework.¹²

According to revealed preference theory, preferences are revealed through choice behaviour. And since a choice between two mutually exclusive alternatives will result in a choice for either one, there is no conceptual space for incomplete preferences, since, putatively, no such preference could possibly be revealed. The revealed preference view has received heavy criticism for precisely this reason. In response to this criticism I suggest a method for revealing incomparability in line with the behaviourist spirit in revealed preference theory. At first glance this may seem to be at odds with my overall goal, as I here seem to be defending incomparability. However, if one is sympathetic towards revealed preference theory, but unsympathetic towards incomparability, one could be criticised for dismissing incomparability before it even gets off the ground. Therefore it is my aim to show that incomparability is compatible with revealed preferences (PAPER III), but in spite of this, as is argued in the other papers, there is no convincing argument for incomparability.

¹⁰ This argument is similar to Kelly (2008)

¹¹ See e.g. Kekes (1993) and Stocker (1990)

¹² See e.g. Eliaz and Ok (2006)

2. Some Preliminary Remarks on Incomparability

Traditionally, it is assumed that the logical space of value relations that may obtain between any two items is exhausted by the relations '*better than*', '*worse than*', and '*equally as good as*'.¹³ We can refer to this thesis as the *trichotomy thesis*, and proponents of it as *traditional comparabilists*.¹⁴ There are, however, those who claim that the trichotomy thesis is false. They can be categorized as *incomparabilists*, on the one hand, and *non-traditional comparabilists*, on the other.

Incomparabilists believe that there are comparisons in which objects may be so different, or instantiate such different values, that it is false that one is better than the other, and false that they are equally as good. A classic example is the comparison between apples and oranges. Whatever reasons one may have for believing that the trichotomy fails in a particular (fruit) comparison, the traditional comparabilist would have to concede that it cannot be excluded *a priori* that it could be the case; trichotomy failure is at least a conceptual possibility. However, conceding to the possibility of trichotomy failure comes at a high price. Not only would non-trichotomous values question the cogency of certain moral theories, as well as theories of the good, but they would also threaten practical rationality: for, arguably, if an agent must choose an option which is at least as good as all other options, in order to be rational, but there is no such an option, there are situations in which it is impossible to be rational.

Non-traditional comparabilists do not think that the failure of the trichotomy thesis implies incomparability and its ensuing problems. They argue that when two objects are not appropriately related by any of the usual value relations, and one would be inclined to think that they are incomparable, they are actually comparable by some other, fourth, value relation. Derek Parfit's concept of *rough comparability*¹⁵, James Griffin's similar notion of *rough equality*¹⁶, as well as Ruth Chang's more recent notion of *parity*¹⁷, are all proposals targeted at filling the putative relational void. Hence, like the incomparabilist, the non-traditional comparabilist believes that the trichotomy thesis is false, but unlike the

¹³ cf. Chang (1997)

¹⁴ Regan (1997)

¹⁵ Parfit (1984)

¹⁶ Griffin (1986, pp. 96-98)

¹⁷ Chang (1997)

incomparabilist and the traditional comparabilist they do not think that this failure implies that the objects are incomparable, since the objects are nonetheless comparable by an extra-trichotomous value relation.

This thesis is not mainly concerned with these new types of value relations, and how they fit together with practical rationality. For although the project of investigating the possibility of a fourth value relation is an interesting one, I believe it is ultimately unnecessary. This is because the need to introduce a fourth value relation only arises if the trichotomy ever fails, which I shall argue is false. Therefore, we can from now on disregard the distinction between incomparabilists and non-traditional comparabilists, and simply dub anyone who thinks the trichotomy thesis is false, an “incomparabilist”.

The general notion of incomparability employed in the appended papers, is the following:

(1) *Incomparability (general form)*: x is incomparable to y if and only if it is false that x is better than y , false that y is better than x , and false that x and y are equally as good.

Note that in this definition of incomparability x and y are taken as particular value-bearing items, or states of affairs, rather than as abstract values. Hence, the definition does not refer to the incomparability between for instance liberty and equality, but rather to the incomparability between a particular instantiation of liberty x and a particular instantiation of equality y . This should not be considered a limitation of the definition since, arguably, any statements about incomparable abstract values can be interpreted in terms of statements about incomparability of particular bearers of value. Incomparability of value bearers is thus a more fundamental issue than incomparability of abstract values (Carlson 2006).

One reason it may be unclear whether, to use one of Chang’s examples, one artist is better than or equally as good as another, is simply because the relation holds with respect to some aspects but not with respect to others. For instance, Michelangelo is a better artist than Mozart when it comes to sculpting but Mozart is a better artist than Michelangelo when it comes to composing. To avoid this kind of impreciseness we often specify the value with respect to which we wish to make the comparison. In the case of the artists one such specification would be to determine who of Michelangelo and Mozart is the better artist *with respect to creativity*. This “with respect to”-qualification specifies the value-measure that functions as a standard or reference for assessing the value of an object; which is

what Chang and others call the *covering value*.¹⁸ Chang introduces the notion of a covering value because she believes that it does not make sense to talk about '*better than*' *simpliciter*. Something can only be better than something else *in a certain way*, i.e. with respect to some specific value. This is parallel to the point made by Judith Thompson that it is only meaningful to speak of goodness as "goodness-in-a-way".¹⁹ I shall take on this convention but most of the time I will suppress the actual wording "with respect to". It is assumed unless indicated otherwise. The relativized, "with respect to", form of incomparability is thus:

(2) *Incomparability (relativized form)*: x and y are incomparable with respect to the value V if and only if it is false that x is better than y with respect to V , false that y is better than x with respect to V , and false that x and y are equally as good with respect to V .

This definition might seem strange to those who think that incomparability arises in comparisons between items that bear *different* values. For instance, someone might say that an afternoon walk in the park is incomparable to staying at home reading a book, simply because the two activities do not bear the same value. However, when deliberating over some choice that one faces, whether it be something simple as how one should spend one's afternoon, or something more important as how one should spend one's life, there will be certain considerations that one feels matter and that one wishes to take into account before choosing. The main thing that matters when planning your afternoon is, perhaps, that your afternoon is enjoyable; so when choosing between going for a walk and reading a book you try to determine which is the *most* enjoyable. In that sense then, the two activities do share a common value - they are both enjoyable. Had you not considered them both to be enjoyable, the choice would not have been hard to make. The problem is when they are enjoyable in very different ways, or put differently, when there are widely differing contributing values that make up what it is for something to be enjoyable. So, even though it may initially seem that two activities are trivially incomparable, due to radically differing values, it is nevertheless possible to view them as instantiating the same value, namely a general value that matters to you in choosing between them.

¹⁸ Chang (1997)

¹⁹ Thompson (1997)

Matters are more complicated, however, when more than one value is what matters when making a choice. Take again the choice concerning how to spend one's afternoon. Perhaps what matters then is both intellectual stimulation *and* humorous entertainment. Going to the movies may satisfy one of these values while staying home reading a book may satisfy the other. None of the alternatives satisfies both. What to do? To say in this case that the two options are incomparable, with respect to the values that matter, necessarily implies that the values that matter are *incommensurable*. This means that there is no "conversion rate" or "trade-off function" between the two values, such that, intellectual entertainment to some degree x is equal in value to humorous entertainment to some degree y . We can call this criterial incommensurability. Although criterial incommensurability is a necessary condition for incomparability it is by no means a sufficient condition. A further necessary condition is that neither of the two options is better than the other.

Next we distinguish between a strong and weak version of the relativized form of incomparability. Let *V-in-way-p* and *V-in-way-q* be different ways in which an object may bear the value V , and let P be the set of objects that bear the value *V-in-way-p*, and Q the set of objects that bear the value *V-in-way-q*. Then, the strong generalized form of incomparability reads as follows:

(3) *Incomparability (strong relativized form)*: x in P is incomparable to y in Q with respect to V , if and only if *all* x in P are incomparable to *all* y in Q with respect to V .

According to the strong generalized form, one particular cup of tea is incomparable to one particular cup of coffee (where tea is an enjoyable hot beverage in one way and coffee is an enjoyable hot beverage in another way), if and only if, any cup of tea is incomparable to any cup of coffee. Arguably, this version of incomparability is *too* strong. The reason is that someone who accepts (3) would have to reject what Stephen Grimm and others call *easy cases*, and what Chang calls the *notable-nominal* distinction. Grimm writes

although it may sometimes seem as if certain values are in such fundamental conflict that they cannot be put on the same scales with one another, it is always possible to concoct easy cases – especially, cases involving a massive sacrifice of one value for the sake of a small gain in the other – that show that the values are in fact commensurable after all.

Suppose, for example, that the values at stake in a particular choice situation were environmental preservation and industrial development. Although in some cases it will be very difficult to decide which of the two values is weightier, in other cases it seems downright easy. When the choice is between some minor environmental loss (say, uprooting a few daisies) as against a significant industrial advance (say, a much-needed factory), the rational choice to make in such situations just seems obvious.²⁰

So, even if it may be that one particular instance of environmental preservation (or tea) is incomparable with one particular instance of industrial development (or coffee) it is easy to imagine other instances of the same values that are comparable. Hence, if we accept the intuitive idea of easy cases we see that (3) is implausible. Chang's notable-nominal distinction serves to make a similar point: Suppose that two artists of different kinds, a composer and a painter, are incomparable with respect to creativity (you may choose any one of each kind to make it plausible that they are incomparable). If strong incomparability holds it follows that Mozart, who is a notable composer, is not better than Talentlessi, who is a nominal painter. Nor is Michelangelo, who is a notable painter, better than Tonedearfi, who is a nominal composer. Hence, the incomparabilist who accepts easy cases (which any reasonable incomparabilist should), or the notable-nominal distinction, cannot accept (3). We can express the commitment to this idea as:

(4) (*Easy Cases*): For all x in P there is some y in Q , such that x is better than y with respect to V , x is worse than y with respect to V , or x is equally as good as y with respect to V .

Some have argued that not only is there a conflict between (4) and (3), but there is also a conflict between (4) and (2). Chang, however, argues that there does not have to be a conflict if we introduce a fourth value relation. She argues that there are trichotomy failures as defined in (2), but that these should not be construed as cases of incomparability. However, as was mentioned previously her argument fails already at the first step, since the small improvement argument fails.

²⁰ Grimm (2007, p. 27)

3. Summary of Papers

3.1 The Small Improvement Argument (PAPER I)

This paper is a critical examination of the small improvement argument (SIA). SIA runs as follows: Let two alternatives x and y be valued in such a way that x is not better than y and y is not better than x . According to the trichotomy thesis it then follows that x and y are equally as good. However, if a small bonus is added to x , and it turns out that this slightly improved $x+$ is still not better than y , it cannot have been the case that x and y were equally as good. If they had been equally as good then the small bonus would have tipped the scale in favor of the improved alternative.

As was indicated in the sections above this argument plays an integral part in the philosophical debate concerning value incomparability. Joseph Raz, for instance, believes that the argument may serve as an instrument to detect incomparability, and Ruth Chang has recently utilized the small improvement argument in her two-step argument to establish the possibility of a fourth positive value relation which she calls parity.

The first step of Chang's argument is to establish that some value bearing items are not related by any of the traditional value relations '*better than*', '*worse than*', or '*equally as good as*'. This is established by the small improvement argument. The second step is to show that when none of the usual value relations hold, it may nonetheless be argued that the items are comparable by way of parity. In this paper I argue that Chang's argument fails already in the first step, because the SIA fails to establish (trichotomous) incomparability. The reason is that the small improvement argument does not take into account the possibility that value relations are vague and so may be indeterminate. A reformulated argument that does take indeterminacy into account is, however, invalid.

In particular, the paper argues that the purpose of SIA is to identify a certain value structure that is characteristic of incomparability. This structure can be described as a set of consistent value relations. The consistent set of value relations that picks out incomparability is the set $\{\sim(x>y), \sim(y>x), \sim(x=y)\}$. The SIA, however, does not manage to pick out this set unambiguously based on what is given at the outset, namely that $\sim(x>y)$ and $\sim(y>x)$. The reason is that these two relations also appear in another consistent set of value judgments namely $\{\sim(x>y), \sim(y>x), I(x=y)\}$, where $I(x=y)$ means that it is indeterminate whether x is equally

as good as y . If this set is indeed possible then the SIA conflates two completely different value structures, and thus fails in establishing incomparability.

3.2 Some New Monadic Value Predicates (PAPER II)

In the previous papers I argued that the main argument for incomparability fails. However, this does not mean that incomparability is impossible, there may very well be some other argument, yet to be put forward, that succeeds in establishing incomparability. And arguments aside, many seem to take the possibility of incomparability intuitively for granted, claiming that some things simply are incomparable, end of story. I have nothing to say about these intuitions other than that I fail to have them. But, nonetheless, I think it is important to take them seriously. Therefore, in this paper I examine one of the more interesting consequences of accepting the possibility of incomparability.

What motivates the paper is a reflection over how the debate concerning value relations has transpired rather independently from ideas concerning the monadic predicates ‘good’ and ‘bad’. But say we have expanded our stock of dyadic value predicates, ‘better than’, ‘worse than’, and ‘equally as good as’, to include incomparability and also parity. Then it seems to me that we must also expand our stock of monadic value predicates, ‘good’, ‘bad’, and ‘neutral’, to include what I call ‘void’ and ‘paral’. This is demonstrated by merging two influential analyses of value – (i) the classic *Chisholm-Sosa analysis* of value, which holds that all value facts can be viewed as facts about betterness, and (ii) the *fitting attitudes analysis* (FA-analysis) of value (of which one version is the *buck-passing account*), which is roughly the view that the axiological may be analyzed in terms of the normative.

3.3 Incomplete Preferences in Disaster Risk Management (PAPER III)

In this paper it is argued that the usual deterministic (or algebraic) way of modeling incomparability is inadequate. To see why, consider the following example. Someone who finds Wagner's and Verdi's music incomparable may ultimately choose to listen to Wagner rather than Verdi six times out of ten, while someone else who also finds them incomparable may choose Wagner nine times out of ten. Both individuals have incomplete preferences but yet their preferences

are different somehow. The fact that the first agent is less likely to choose Wagner (six is less than nine) shows that her preferential attitude is not exactly the same as that of the second agent. There is a difference here, which is of interest to anyone wishing to predict and explain human behavior. But this difference cannot be coherently described in traditional analyses of preference. The difference has to do with the degree to which the two decision makers feel indecisive, i.e. the degree to which they consider the two items to be incomparable. Hence, a more nuanced analysis of incomparability is needed, one that is able to represent varying degrees of incomparability. This paper suggests a novel way of representing varying degrees of incomparability by recasting the notion of preference into probabilistic terms. Roughly, a preference is viewed as the probabilistic prediction of choice, and incomparability as any such probability larger than zero but smaller than one (save the special case of indifference which is defined as the prediction of choice such that there is a fifty percent chance that either option is chosen, but where if one of the alternatives is modified to the better then that alternative is chosen for certain).

3.4 Conflicting Reasons in the Small Improvement Argument (PAPER IV)

In this paper the perspective is turned from values to preferences. When applied to preferences the small improvement argument can be used to argue for the rationality of incomplete preferences. In this case however it is less plausible to start out from the idea that there are vague preferences, parallel to the idea that there are vague value relations, in order to show that the argument fails. So another approach is needed. Instead we question the *reasons* one may have for accepting the premises of the SIA argument. It turns out that the reason one has for accepting PI-transitivity is not compatible with the reason one has for accepting the particular preference structure employed in the SIA. By compatible we mean that the reasons for the individual premises of the argument must satisfy what we call the assumption of other conjuncts (AC). This principle provides a plausible necessary condition for the circumstances under which a set of reasons for individual conjuncts combine into a reason to also accept the conjunction. In particular,

- (AC) the reasons to believe the individual conjuncts of a conjunction provide a reason to believe the conjunction only if they are reasons to believe each conjunct under the assumption that the other conjuncts are true.

We demonstrate that the reasons usually given to support the premises of SIA fail to satisfy AC, and therefore SIA fails.

3.5. The Transitivity and Vagueness of Better than (PAPER V)

In this paper we argue that Temkin's and Rachels' famous counterexample to the transitivity of better than fails. We do not attempt to reject any of the premises of their argument. Rather, we show that the conclusion to draw from examples like those employed by Temkin and Rachels point to another conclusion than the one that transitivity fails. The alternative conclusion is that better than is transitive and vague.

We first argue that a sorites paradox can be spelled out given Temkin's and Rachels' original premises. This suggests that the conclusion that '*better than*' is non-transitive is unwarranted since it may be that '*better than*' is vague. So, the conclusion of this first argument is merely that there are other alternatives to the conclusion that '*better than*' is not transitive. Second, we argue that there is good reason to think that there are borderline cases involving '*better than*', which also suggests that '*better than*' is vague. Next, the third argument aims to show that if there is no vagueness in the use of '*better than*' then there are no counterexamples to the claim that '*better than*' is transitive. Thus, there is only one possibility: '*better than*' is vague. Altogether, this does not point to a conclusion of the kind '*better than*' is unconditionally transitive, but rather to the conclusion that '*better than*' is transitive, but in addition to the specification 'all things considered', we need to add the condition that '*better than*' is transitive if and only if the vagueness of '*better than*' is irrelevant.

3.6 Incommensurability: The Failure to Compare Risks (Paper VI)

This last paper is an attempt to see if the theoretical concepts of incommensurability and incomparability have any concrete implications for the applied field of comparative risk assessment. It is argued that two risks A and B are incommensurable if and only if the severity of risk A cannot be represented on the same cardinal scale as the severity of risk B. If risks are incommensurable in this way, and thereby resistant to accurate comparisons in terms of severity, we cannot perform accurate and cost effective trade-offs between risks and their associated benefits. According to the developed account, incommensurability among risks is due to when at least one of the two risks is undefined. However, the fact that risks are incommensurable does not automatically imply that they cannot be compared or ranked. Incomparability among risks, when risks cannot even be ranked, arises in situations in which the following two conditions are satisfied: (1) the risks are incommensurable, and (2) the evaluative relation that holds between the two risks (*more severe than*, *less severe than* or *equally as severe as*) is insensitive to small alterations in the probabilities (or values) associated with the risks. This latter point can be demonstrated via a risk-modified version of the so-called small-improvement argument.

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