

Economic Betterment (Value): Are all betterments commensurable?  
And, are you capable of comparing the relief from a fix for global warming with the pleasure of chocolate?

Edward Morey: draft Jan 2, 2017

[Edward.Morey@colorado.edu](mailto:Edward.Morey@colorado.edu)

This note and the thoughts conveyed are works in progress.

Abstract: The choice theory that supports the valuation of ecological and environmental resources assumes you have a full ranking of paths (states-of-the-world) in terms of betterment. Assumption: *Experiencing a higher-ranked path is better for you, from your perspective, than experiencing a lower-ranked path.* Where: *Every path for you is a conceivable life-path and world as it would unfold through time, including its ecological resources.* Ranking paths requires that all of your different feelings and thoughts are commensurable in terms of how they affect betterment (all types of betterment and worsement collapse onto one dimension). Even if you know in what way and to what extent each aspect of each conceivable path betters you, it still might be impossible to collapse those betterments onto one dimension. For example, you have to be able to compare the betterment caused by dates with Wanda and the betterment caused by saving gorillas, and caused by saving gorillas vs. religious freedom. In opposition to choice theory, many people reject complete benefit commensurability. This note summarizes the arguments and findings.

Consider my props: Coke, Pepsi, Trump, prospering giraffes, less global warming, freedom to practice the Christian religion, freedom to practice Islam, and chocolate bars. These are things that might, or might not, affect your level of well-being.

In your Principles of Micro class you likely talk about, or allude to, people having preferences (a ranking of bundles). And as part of that discussion you might talk about the marginal rate of substitution between Coke and Pepsi, or Coke and chocolate. In my class, since I am an environmental economist, I might talk about the MRS between chocolate and the rate of global warming.

You might think about your MRS, if you have one, between, for example, the rate of global warming and freedom to practice the Christian religion.

This note draws heavily on the set of articles in *Incommensurability, Incomparability, and Practical Reason*, Ruth Chang (ed.).

Let's start by making the assumptions that produce a complete ranking based in betterment.

I will start with what I mean by a *path*.

*A path for an individual is a conceivable life and world as it would unfold through time. It includes the goods and services they would consume through time (their consumption bundles), what they would know and not know at different points in time (their knowledge), what others would consume (other's consumption bundles), what others would know, plus the individual's relationships (social, sexual, work related), the relationships of others, and the environment (who is now and will be the future Prime Minister of England, air qualities, crime rates, etc.). Risks and uncertainties are part of every path.*

If you were taking an introductory microeconomics course, your path would be defined only in terms of the amounts of each market good you would consume, and it would be called your *consumption bundle*. But most of us care about much more. Every path generates a flow of

feelings, but, as I have defined it, a path, it is not those feeling. You and I might be on the same path, but experience different feeling.

Now assume:

*Assumption 1: At every point in time the individual can and must be on only one path*

*Assumption 2: At every point in time, the individual has a unique ranking/ordering of all conceivable paths—1<sup>st</sup>, 2<sup>nd</sup>, ..., 76<sup>th</sup> .... The individual has a ranking, if for all paths  $j$  and  $k$ , either Path  $j$  is ranked higher than Path  $k$ , Path  $k$  is ranked higher than Path  $j$ , or Paths  $j$  and  $k$  have the same rank.<sup>1</sup>*

Assumption 2 simply says that if you present an individual with any two of all the conceivable paths, the individual knows (not necessarily consciously) which path is higher in his ranking.

Assumption 2 does not imply the ranking is based on betterment.

Finally, let's throw in betterment.

*Assumption 5a: Taking a higher-ranked path is better for the individual, from their perspective, than experiencing a lower-ranked path.*

The question for us today is what is required of you if you are to have a complete ranking of paths based on betterment.

Note that while we often describe preferences in terms of tradeoffs, specifically in terms of marginal rates of substitution, having a complete ranking does not require that there are any paths between which you are indifferent. [An example demonstrates: consider two goods (more of each is better): chocolate and degree of religious freedom where paths with more religious freedom are always better, independent of the amount of chocolate in each path. No two paths are ranked the same and there is not a finite MRS between the two goods.] So, when discussing the ability to compare paths it will be important to distinguish between a ranking of paths in terms of betterment and marginal rates of substitution between components of paths.

I will mostly avoid the words *utility* and *preferences*: words fraught with multiple meanings and words that mean different things to different people. I will sometimes use the words *value* or

---

<sup>1</sup> A complete ordinal ranking is, by definition, transitive. Transitivity implies that if Path  $j$  is ranked higher than Path  $c$  and Path  $c$  is ranked higher than Path  $a$  then Path  $j$  is ordered higher than Path  $a$ .

*values*, but I worry about those words as well as I will explain below. Rather I will use the terms *better off* and *worse off*. Auxiliary terms will be *betterment* and *betterments*; as in, if all else you experience remains the same, a betterment makes you better off. The plural is betterments: there is more than one way to be better off. I chose *better off* because I will, hopefully, be able to specify it in a way no one will object to: my specification will not be inconsistent with what is commonly meant by *better off*, and it is not commonly used in the economic choice literature, so has little baggage.<sup>2</sup>

For the purpose of this note imagine our concern is only one individual, you, a human. Betterments (and worsements) are types of feelings, sensations, and thoughts. I will assume betterment is self-assessed and that there is no difference between your betterment and your self-assessed betterment.<sup>3</sup> For simplicity assume a world of certainty and full information.

### Begin by considering the distinction between different types of *betterment* and *bearers of betterment*.

A bearer of betterment is a commodity, action, or situation that generates one or more types of betterment. For this note, the bearers of interest are all conceivable paths (states-of-the-world) and their components. The question is whether you **can** have a complete and unique ranking of paths in terms of overall betterment. To be clear, the question is not whether you have a complete and unique ranking in terms of betterment, the question is whether such a thing is even possible.

You experience a path as a sequence/set of feelings, sensations, and thoughts. Experiencing certain sensations is a type of betterment, so if two paths were to produce the same thoughts, the one that has more betterment sensations is better. For example, if two paths were identical except one has more of the sensation of taste sweet-‘n-salty, I would be better off with that one.

Alternatively, if two paths were to generate the same sensations and feelings but I think my life more satisfying with the second path (a thought), it is better. I have identified two types of betterment: enhanced life-satisfaction and the taste sensation sweet-‘n-salty. Bacon and salt taffy

---

<sup>2</sup> My use of *better* and *worse* is not without precedent. See Schroeder (2012).

<sup>3</sup> I ignore the important possibility that there are betterments the individual does not self-assess as a betterment.

are bearers of this sensation betterment, having children that prosper might be a bearer of life-satisfaction. Deaton and Kahneman () refer to these two types of betterment as *emotional well-being* and *life-satisfaction well-being*.

If a philosopher was giving this talk (hopefully none are in the room), she might identify freedom, equality and pleasure as betterments and the Bill of Rights as a bearer of freedom and equality. If she were talking to other philosophers, she would likely use the words *values* and *bearers of value* rather than betterments and bearers of betterment, but as noted I am trying to avoid the *value* word.

There is no agreed list of betterments and worsements, and what might be a betterment for me might be a worsement for you. Candidates include: different sorts of pleasure (sexual, taste), happy, contentment, excited, calm, relaxed, a rich life, a meaningful life, desire fulfillment, satisfied (including life-satisfaction), other positive thoughts (including positive thoughts about the future), learning, proud, loving, loved, longing, sense of accomplishment, interactions with others including companionship, interactions with animals and nature, being free, being equal or being superior, justice being served, different sorts of personal pain, anxiety, worry, depression, hunger, thirst, embarrassment, fear, sadness, anger, sickness, and disability, the experience of these by others, negative thoughts, loneliness, discriminated against, being inferior, and being controlled. What is on the list is not the critical issue, the critical issue is that there are different ways you can be better off and different ways you can be worse off.

Most people, including most of us, are *betterment pluralists* (a philosopher would say *value pluralist*). The utilitarian Jeremy Bentham was not a betterment pluralist: he was a betterment monist; he assumed the only betterment is pleasure (a pleasure/pain continuum), and pleasure is a sensation that varies only in terms of magnitude and duration.<sup>4</sup> The philosopher and legal scholar Donald Regan is, I believe, a rare example of a modern monist. Quoting him (1997, 129):

---

<sup>4</sup> Whether the utilitarian J.S. Mill was a betterment pluralist is a matter of debate. The philosopher Martha Nussbaum identifies him as one, counting, for example, “music, virtue and health as major pleasures” (Nussbaum 2012, 338). In contrast, Mark Schroeder in his survey of Value Theory (2012) notes that “whether Mill properly counts as a pluralist about value depends on whether his view was that there is only one value — happiness — but two different kinds of pleasure which contribute to it, one more effectively than the other, or whether his view was that each kind of pleasure is a distinctive value,”

*In this volume I am the ‘designated eccentric’, appointed to take a position no one else would touch with a barge pole,...Specifically, I believe the following two propositions: (1) There is one and only one sort of value that matters to practical reason in the final analysis. This unique final value is G.E. Moore’s ‘good’ [‘good’ as in approved of].<sup>5</sup> (2) Given any two items (objects, experiences, states of affairs, whatever) sufficiently well specified so that it is apposite to inquire into their (intrinsic) value in the Moorean sense, then either one is better than the other, or the two are precisely equal in value.*

## Incomparable and incommensurable:

Distinguish between comparing betterments (more freedom vs. more sexual pleasure) and comparing bearers of betterment (Is path F overall better than path C? Are  $x$  more Pandas better than  $y$  more Pepsis?). If two **types** of betterment are not comparable, philosophers tend to use the word *incommensurable*. If two **bearers** of betterment are not comparable, they tend to use the word *incomparable* (Chang 1997). The adjective betterment is implicit on both words—we are only concerned with comparing in terms of betterments.

Paths A and B are incomparable if none of the following statements are correct: A is overall better than B, B is overall better than A, or A and B are of equal overall value.<sup>6</sup> They are comparable if one, and only one, of these statements is correct.

Thinking about comparability in terms of marginal rates of substitution, a sufficient condition for two bearers of betterment to be comparable is their MRS is always a finite number. But this is not necessary as my earlier example of chocolate and religious freedom shows: more religious freedom was always preferred to less, independent of the amount of chocolate, so there is no amount of chocolate that would compensate for a loss of religious freedom, but the individual is comparing them. In contrast, if I were to say, “I have no basis on which to compare chocolate

---

<sup>5</sup> As in the sentence, “It is good that you are here.”

<sup>6</sup> This is viewed by some as a *weak* notion of incomparability. Chang (1997) suggests that in addition to better than, worse than, and equally good, A and B can be “on par”. *Strong* incomparability would be when none of the four conditions hold. This distinction is beyond the scope of this note.

with religious freedom,” the two are incomparable. Choice Theory explicitly assumes all paths are comparable; economists don’t talk much about commensurability.

Even if paths A and B are incomparable in terms of overall betterment, they still could be comparable in terms of a specific betterment (e.g. Path B generates more happiness than A, but less life satisfaction).

Turning to the **commensurability of betterments**: Betterments  $i$  and  $j$  are incommensurable if you are incapable of comparing one for another in terms of overall betterment (Wiggins 1997). For example, for you, personal freedom and equality are incommensurable if there is sometimes (or always) no answer to the question of much how social equality you would sacrifice, if any, to get one more unit of personal freedom. So, for example, commensurability requires that you are able to compare sexual pleasure with the relief from finding out that Pandas won’t be going extinct. Commensurability means you have a complete ranking over all conceivable packages of betterments. If one want to think about commensurability in terms of MRS, think in terms of the MRS between two betterments, not the MRS between two bearers of betterment. So, a sufficient condition for betterments  $i$  and  $j$  to be commensurable is that  $MRS_{ij}$  is finite for all levels of  $i$  and  $j$ . One way to avoid the commensurability issue is to assume there is only one betterment, which is what Bentham did.<sup>7</sup>

A complete ranking of paths based on overall betterment requires complete path comparability which, in turn requires complete betterment commensurability.<sup>8</sup> That is, lack of complete betterment commensurability is sufficient to guarantee that there cannot be a complete ranking of pathss based on overall betterment.<sup>9</sup> So sweet-‘n-salty must be commensurable with life-satisfaction, along with all other types of betterments.

---

<sup>7</sup> Note that while betterment pluralism is necessary for there to be incommensurability, it is not sufficient—all betterments might be commensurable.

<sup>8</sup> A more difficult question is whether complete betterment commensurability is sufficient for complete path comparability. It seems to be, but the answer is not important for our discussion.

<sup>9</sup> There can be partial rankings. For example, if all the different tastes, feelings, and thoughts produced by eating chocolate of different types and quantities are commensurable, there will a ranking over paths that vary only in terms of types and quantities of chocolate produced.

A problem for choice theory and welfare economics is that many people, including many (but not all) philosophers, reject complete commensurability. They believe there are incommensurables (betterments that cannot be compared), and if correct there is often no answer to the question of what is your highest-ranked feasible path.<sup>10</sup> And, overall betterment and economic value are not well-defined concepts.<sup>11</sup> As economists we can of course reject their arguments, but we still should be aware of them and be able to articulate why we reject them.

Commensurability requires that the feelings, sensations, and thoughts generated by an act or situation can be separated from that act or situation.

For example, the pleasure you get from eating chocolate must be separable from the eating, and the pride you have in your children must be separable from what they did to make you feel proud. If such separability was not the case, betterments could not be aggregated independent of the bearers of those betterments. This condition is referred to as *betterment/bearer separability*—think of it as a type of consequentialism (only the consequences of the action matter).

Note that complete betterment/bearer separability is necessary, but not sufficient, for commensurability—an example demonstrates: the separation of happiness from the bearers of happiness and the separation of life-satisfaction from its bearers does not imply that happiness and life-satisfaction are commensurable.

The rejection of betterment/bearer separability goes back to Aristotle. The philosopher Martha Nussbaum (2012) explains:

*Throughout his [Aristotle's] work, he insists on the tremendous importance of qualitative distinctions among the diverse constituent parts of human life; he later suggests that these distinctions affect the proper analysis of the concept of pleasure.... pleasure is something that comes along with, supervenes on,*

---

<sup>10</sup> They don't reject the idea that some experiences are commensurable (the pleasure of Coke vs. Pepsi), just that some aspects of betterment cannot be compared. For example, feelings produced by environmental injuries and animal extinctions might not be comparable to those produced by drinking a Coke.

<sup>11</sup> The statement, "Path D is overall better than Path B," is equivalent to "Path D is more valuable (embeds more value)."

*activity, “like the bloom on the cheek of a young person.” In other words, it is so closely linked to the relevant activities that it cannot be pursued on its own, any more than bloom can be adequately cultivated by cosmetics. To get that bloom, you have to pursue health. Similarly, one gets the pleasure associated with an activity by doing that activity in a certain way, apparently a way that is not impeded or is complete. It would seem that what Aristotle has in mind is that pleasure is a kind of awareness of one’s own activity, varying in quality with the activity to which it is so closely linked. In any case, pleasure is not a single thing, varying only in intensity and duration... It contains qualitative differences, related to the differences of the activities to which it attaches.*

Nussbaum goes on to argue that J.S. Mill rejected betterment/bearer separately. She then goes on to say that “Modern philosophical discussion of pleasure follows Aristotle and Mill” (2012, p 338). I interpret this to mean that she believes many modern philosophers reject betterment/bearer separability.

While this note is about humans, I imagine that the extent to which betterments can be separated from their bearers varies greatly across species: becoming more difficult the greater the species’ ability to cogitate. Humans experience feeling and sensations, consciously process those sensations in terms of their past experiences, their knowledge, and the big picture. This cogitating then produces additional feeling and sensations to cogitate about. And while all this is going on, new actions and circumstances are producing new feeling and sensations. Contrast this with animals that experiences positive and negative sensations but do not have the cognitive capacity to assess and evaluate them. In terms of dogs and worms, my conjecture, maybe wrong, is that it is likely easier for my dog than for me to separate a pleasure from the activity that produced it, and easier for a worm than for my dog.

Related to the above conjecture is the conjecture that dogs have fewer betterments than humans, and worms have fewer betterments than dogs. Consider, as an example, your ability to separate a simple sensation such as pain from the activity or circumstance that produced it. The same chest pain could be because you just ran your best marathon, because you are getting divorced, because you are having a heart attack, or because you just reached the top of Mt. Everest.

Whether the pain is a betterment or worsenment, and of what sort, depends on whether you chose it, whether you think it will be gone in the morning, what you imagine is causing it, and whether experiencing it helped you achieve an important goal. Since humans think about the causes of their sensations, this suggests difficulty in separating the feeling from what caused it. Most other animals can't cogitate about their sensations.

In thinking about bearer/betterment separability in terms of the environment, first distinguish between environment-specific betterments and bearers of those betterments. More wilderness, less global warming, and moving a species off the endangered species list are bearers of environmental betterment, not betterments. The first question about environmental betterments is are there such things? That is, are there betterments that only the natural environment can provide? This is not a question I am going to fully answer, but many people believe there are environment-specific betterments. Examples include the special freedom of being in wilderness, environmental self-reliance, experiencing animals and plants in their natural state, and experiencing the unity of the natural world, including our place in it.<sup>1213</sup>

I have sympathy for betterment/bearer inseparability, but suspect it depends a lot on the specific bearer and the specific betterment, and the extent to which the betterment has a significant cognitive component.

A common argument made for both complete comparability and complete commensurability is that people make choices, and given that most people are betterment pluralists they must be making tradeoffs between all the betterments associated with each alternative (having and calculating all the MRS's). I have trouble with the logic of this argument: it is circular. Make a distinction between behavior, a choice, and the correct choice. Economists make two assumptions: most behaviors are chosen (you drank Coke rather than Pepsi because you chose

---

<sup>12</sup> In contrast there are betterments that are often experienced in natural settings such as thrill of going fast on skis, a bike, or a snowmobile that are, arguably, not environmental-specific betterments.

<sup>13</sup> It is important to contrast an environmental betterment—something that makes a human better off in way that can only be generated by environmental resources—and other reasons for preserving environmental resources such as inherent value (environmental resources are valuable for their own sake, independent of their effect on humans), they have a right to exist, independent of mankind, and humans have a responsibility towards other species given our position in the pecking order.

Coke over Pepsi), and it was the best choice (Coke was the best alternative given your options). If you start by assuming that people make choices and those choices are based on overall betterment, then betterment commensurability is assumed. See Morey (2016) for a review of the psychological and neurological research on these assumptions.

### Other arguments against complete commensurability include:

You cannot compare certain betterments because it would be unacceptable (morally) to even imagine such tradeoffs—it is culturally or religiously wrong.

Consider, for example, the question of how much money you would have to be paid to push the button that would forever eliminate elephants from the earth, or the button that would open the pipe and dump a million tons of PCBs in Lake Michigan, or the button that would eliminate equal rights. Many normal people—but not economists?—would find it off-putting and wrong to even consider such tradeoffs. That is, if it is wrong to make certain comparisons, they are not made.

Another reason why you might not have complete betterment commensurability is if you have no ability to control how much of a betterment you experience (its level is fixed from your perspective), so you do not compare it with other betterments.

Put simply, you do not sweat what you cannot influence. Elizabeth Anderson (1997) articulates this argument more generally by saying that it is there is often no good reason for thinking about how you would trade off one betterment for another, and besides it being a waste of your time, it would, for many, be something to avoid. Economists, in contrast, assume you have a complete ranking over all conceivable paths so reject the idea that MRS are created as needed.

Economists, like me, who value in dollars environmental resources assume you have a well-defined MRS between money and the betterment from less global warming (e.g. your WTP for the betterment from less global warming) even before you see your first global warming CVM survey. We would say that a CVM survey is simply a way for the surveyor to find out your WTP to reduce global warming (less global warming is the bearer). In contrast, I suspect Anderson would say that you don't show up at the survey center with a WTP for Panda-preservation betterment because it never crossed your mind that you could buy Panda-preservation betterment. And, you would not create it during the survey unless you were convinced by the

survey that it was for sale. Those of us in the actual business of creating and using CVM surveys to value environmental resources have sympathy for her point, but not enough to reject the commensurability of money-betterments and less global-warming betterment.

### Two betterments might be incommensurable if comparing them is incompatible with experiencing one or both of those betterments

The argument is that there are some betterments that are inconsistent with you being willing to give them up for money or goods. An example is companionship (Raz 1986). Raz argues—in my words not his—that you cannot have a MRS between companionship and money, because being in a meaningful relationship with someone requires that neither you nor your partner has a MRS between your relationship and money. Of course some people do have a MRS between companionship and money, but they are then not in a meaningful relationship, or so the argument goes. Another example, consider the Grace-of-God. God is unlikely to shed his graces on you if you have a MRS between the Grace-of-God and money—at least I wouldn't if I were God.

I find this argument compelling for religious betterments and personal-relationship betterments (romantic love, companionship, friendship, love of family, etc.) but that does not mean there are environmental betterments that have the property that experiencing them is incompatible with being willing to give them up for money or goods? Environmental betterments, unlike companionship, do not necessarily require another human, and the natural environment, unlike a partner, does not care how you think about it, so one cannot argue that nature will toss you, if you are willing to dump it for money. The argument needs to be that there is something **within you** that make it impossible for you to experience a betterment if you are willing to sacrifice it for money. If that something within you is that it would be morally wrong to sacrifice it for money, it is the above argument, not this argument. So if this argument is to apply it would have to be something else that makes experiencing an environmental betterment incompatible with being willing to sacrifice it for money. I am unclear on what that might be, but it might be a belief that nature is special in that our relationship to it is fundamentally different from our relationship with produced goods and services, and that a willing to sacrifice our relationship with nature for goods and services would be a rejection of its specialness.

The above are, of course, all philosophical arguments.

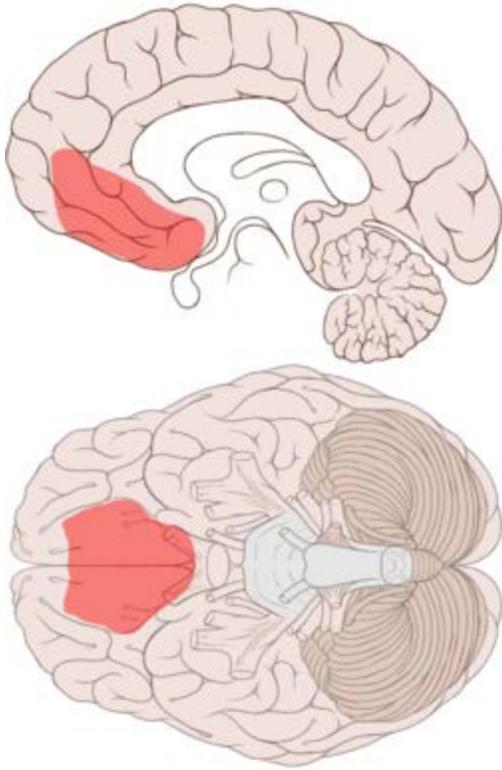
### Some neurological research on betterment commensurability?

Contrasting the philosophical arguments that some betterments are not commensurable are recent research findings on the neurobiology of choice which suggest based on a meta-analysis of MRI data (Levy and Glimcher 2012) that

*Neuroimaging studies in humans have recently begun to suggest the existence of a small group of specific brain sites [the ventromedial prefrontal cortex] that appear to encode the subjective values of different types of rewards on a neural common scale, almost exactly as predicted by theory [economic choice theory].*

Quoting Levy and Glimcher (2012), “But what happens in the brain when we need to choose between a large amount of water and a single apple? Or a small amount of water and two apples?” The brain needs to assess both “reward type” and the quantities of each type.

*Indeed, there is now broad consensus in the neuroscience of the decision-making community that reward magnitude is represented in a small number of well-identified areas. Here we conduct a meta-analysis using evidence from human functional magnetic resonance imaging (fMRI) studies conducted over just the past few years that suggest that one of these reward magnitude encoding areas, the ventromedial prefrontal cortex/orbital frontal cortex (vmPFC/OFC), can be thought of as representing the value of nearly all reward-types on a common scale that predicts behaviorally observed comparison and choice*



*Figure 1: Medial and ventral vies of the Ventromedial Prefrontal Cortex*

In the studies reviewed, subjects were presented with different alternatives or asked to choose between different alternatives while an fMRI machine scanned their brain to see what lit up and what did not light up (where energy was being expended). For example, one can see which brain regions light up when the subject is presented with different amounts of the same reward, when presented with different reward types, and when presented with a choice where the alternatives differ by reward type and magnitude. The studies considered alternatives such as money (magnitude, and when it will be delivered), college trinkets (hats, etc.) pain, pictures of females that varied in attractiveness, and snack foods. It should be noted that in all of the studies that involved choosing, money was one those alternatives.

Put simply, the reviewed studies show that no matter what options were presented, the ventromedial prefrontal cortex was always activated. The question is what is suggested and what is implied. These findings imply that what happens in this region of the brain always affects what the individual does (the alternative they indicate). This suggests, but does not imply, that the regions converts everything onto the same the same betterment (value) scale, and the

individual identifies (chooses) the alternative with the most betterment. Said more weakly, the findings do not contradict the possibility that all aspects of the alternatives are placed on the same betterment scale by the ventromedial prefrontal cortex. Further support for the conjecture that this area converts all the alternatives onto the same scale is that there is a correlation between how a subject says they would trade one alternative for the other, and the activation of different parts of this region (see in particular Smith et al. (2010) and Levy and Glimcher (2011)).

So summarizing, the neuro-imaging research surveyed by Levy and Glimcher suggests that individuals can convert, for the money and commodities studied, different sorts of betterments onto the same betterment scale. This suggests that humans are capable of betterment commensurability, at least to some extent. I don't think many of those who reject complete betterment commensurability would be surprised by this finding, or disagree with it. Rather, I think they might say that betterment commensurability between money and snacks, or money and pain, does not imply complete betterment commensurability.

If I had to criticize Levy and Glimcher's assessment of the data, I would say that they start by assuming betterment commensurability, and then look for the spot in the brain where it might be happening. Repeating my earlier point, just because you did A rather than B does not imply that you chose to do A rather than B, and if you chose to do A rather than B it does not mean you are better off doing A rather than B.

## Conclusions:

The foundation of economic choice theory (the standard variant) is based on complete-path comparability in terms of overall betterment, which requires complete betterment commensurability. The intent of this note isn't to claim that there is or isn't complete betterment-commensurability, but to review the issues, arguments, and present some relevant research. Choice theory was originally about estimating the demand functions for market goods, its span has been creeping wider over time—which is why this note defines a ranking over paths (states-of-the-world) rather than bundles of market goods. Environmental economists, for one, have widened the scope of a bundle to include environmental, ecological and nature-based

recreational resources, many of which provide both use and non-benefits (or damages). Pushing back against the notion of putting economic values on the environment are environmentalists and environmental ethicists who question whether and why environmental resources are comparable to goods and services in terms of the betterments they provide.

## References:

Elizabeth Anderson (1997) "Practical Reason and Incommensurable Goods" in in *Incommensurability, Incomparability, and Practical Reason*, R. Chang (ed.), Cambridge: Harvard University Press.

Ruth Chang (1997) "Introduction," in *Incommensurability, Incomparability, and Practical Reason*, R. Chang (ed.), Cambridge: Harvard University Press.

Daniel Kahneman and Angus Deaton (2010) High income improves evaluation of life but not emotional well-being, *Proceeding of the National Academy of Sciences* 107(38): 16489-93.

Dino Levy and Paul Glimcher (2011) Comparing apples and oranges: using reward-specific and reward-general subjective value representation in the brain. *J Neuroscience* 31:14693-14707. Description by Levy and Glimcher (2012): The authors identified for each subject outside the scanner the exchange rate between money and food. They then showed that activity in a subregion of the vmPFC/OF correlated across subjects with this subject specific exchange rate.

Dino Levy and Paul Glimcher (2012) The root of all value: a neural common currency for choice, *Current Opinion in Neurobiology* 22:1027-38 (part of a themed issue on decision making)

Edward Morey (2016) *An economist's quirky look at behavior, choice, happiness and ethics*. A working draft is available on his web page.

Martha Nussbaum (2012) Who is the happy warrior? Philosophy, happiness research, and public policy, *International Review of Econ* 59:335–361

Joseph Raz (1986) *The Morality of Freedom*, Oxford: Clarendon Press.

Donald Regan (1997) "Value, Comparability, and Choice," in *Incommensurability, Incomparability, and Practical Reason*, R. Chang (ed.), Cambridge: Harvard University Press.

Mark Schroeder (Summer 2012 Edition) "Value Theory", *The Stanford Encyclopedia of Philosophy*, Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/sum2012/entries/value-theory/>

Smith DV, Hayden BY, Truong TK, Song AW, Platt ML, Huettel SA (2010) Distinct value signals in anterior and posterior ventromedial prefrontal cortex. *Journal of Neuroscience* 30:2490-2495.

Description by Levy and Glimcher (2012): The first human study to provide evidence for a common currency representation in the brain. The authors established for each subject an explicit exchange rate between the value of viewing female faces and money and found that the activity in the posterior parts of the vmPFC/OFC correlated across subjects with the subject specific exchange rate.

D. Wiggins 1997, "Incommensurability: Four Proposals," in *Incommensurability, Incomparability, and Practical Reason*, R. Chang (ed.), Cambridge: Harvard University Press.