

From travel-cost models to moral philosophy

Edward R. Morey
Department of Economics
University of Colorado, Boulder CO
Edward.Morey@Colorado.edu
<http://www.colorado.edu/economics/morey/>

September 25, 2009

Abstract

The intent of applied welfare economics is to distinguish good from bad, so it is a branch of moral philosophy/ethics. Said another way, welfare economists are in the business of determining whether a policy will increase or decrease happiness. For thirty-odd years I have done environmental valuation: trying to estimate in dollars or Euros individuals' willingness-to-pay for changes in the environment, estimating how and why willingness-to-pay might vary across individuals, and using these estimates to guide policy decisions. The foundations of this practice are the following: Economists believe, or assume, an individual has one, and only one, stable *ordering* of states of the world, believe the individual knows their ordering and will *choose* the highest-ranked available state, and believe that achieving a higher ranked state is *preferred* to a lower-ranked state in the sense that the individual is better off in the higher-ranked state. This essay reviews what I have learned - maybe I have it wrong - about these economic beliefs by scratching some surfaces in philosophy, ethics, psychology, neuroscience and evolutionary biology. What are the implications for the way we, as economists, determine whether an action is good or bad?

Acknowledgement 1 *I want to thank Katherine Bray and Phil Graves for comments on a previous draft, and Nick Flores for inviting me to talk at the University of Colorado Environment and Resource Economics Workshop in Vail Colorado, September 2009. In Nick's defense, he only knew my general topic. Thanks to Bill Breffle, Jennifer Thacher, and Jack Knetch for comments on an earlier conception.*

Contents

1 My intent:

4

2	Why this title?	4
2.1	Other titles considered:	5
2.1.1	Homo economicus: created by our rational God in his own image?	5
2.1.2	It is kind of sad: normal people have desires, passions, lust, and rages, while modern economists have only ordinal preferences	5
2.1.3	The pursuit of happiness: the moral philosophy of economics?	5
2.1.4	Midway upon the journey of life I found myself in a dark forest, For the straightforward pathway had been lost - Dante, The Inferno, Canto 1	5
2.1.5	Some old economists should spend more time riding their bikes and less time having goofy thoughts	6
3	So what is moral philosophy, and why should I care?	6
3.1	Moral philosophy in 30 seconds	6
3.1.1	Starting judgement at the level of the individual	7
3.1.2	The group, but not the individual	9
4	Homo economicus, as I understand him, or her	10
4.1	With our axioms, welfare economics is very simple on the level of the individual	11
5	So what is happiness, and are welfare economists happiness doctors?	12
5.1	Happiness	12
5.2	Is a welfare economist, with a Ph.D., a happiness doctor?	14
6	Is an individual better off, happier, after his choice set enlarges? Is he better off if he consumes more stuff?	14
6.1	The evidence from economists	15
6.2	Other evidence suggesting more stuff does not increase happiness, much	19
6.2.1	Maybe one's happiness is determined by one's relative position in society rather than one's absolute level of consumption.	19
6.2.2	Maybe one's happiness level has a fixed point from which it is, longrun, difficult to deviate	20
7	If homo economicus is the product of evolution rather than the creation of God	22
7.1	Evolution is based only on the survival of traits/genes. It does not "care" if the gene-container is happy; evolution is "carefree"	22
7.2	Evolution, since it is often incremental, is more likely to move toward a local maximum than a global maximum.	23

8	Do individuals order states of the world?	23
8.1	Multiple orderings?	24
8.2	Is your current ordering a function of your current and past bundles?	25
8.3	Conscious and subconscious mental processes. Whose ordering is it?	25
8.3.1	Perceptions	27
8.3.2	If I have an ordering, am I aware of it?	28
9	Does obtaining a higher-ranked state make the individual better off?	30
9.1	We often miswant	30
9.1.1	Do we miswant environmental improvements?	31
9.1.2	So, why do we miswant (systematically over-predict the impact of good and bad stuff)?	31
9.1.3	Modeling miswanting	32
9.1.4	What are the implications of miswanting?	33
9.2	The empathy gap	33
9.2.1	Modeling choice with longrun implications when there are empathy gaps	34
A	Afterword	39

Two observations:

My retired neighbor, who lives in a big house with a generator and safe room, and went to M.I.T., is stockpiling enough food, water, and guns to hunker down for three years during the upcoming flu pandemic - fair enough. That said, he recently had triple-bypass surgery, eats bacon, eggs and sausage for breakfast - every morning - and his exercise is limited to trips to get more bourbon; trips start around 11 - a.m. not p.m. - and continue until bed.

A close relative, whose weight is pushing towards three-hundred pounds, drinks soda rather than diet soda because "diet soda is bad for you."

Go figure.

It has been said that man is a rational animal. All of my life I have been searching for evidence to support this. - Bertrand Russell

This is a rough, tough and incomplete draft. There is far to go. Please send me comments, but please do not quote or cite. Thanks.

1 My intent:

To have fun writing and thinking about the assumptions economists make about the economic human and about social welfare, thinking about the implications for welfare economics, in general, and environmental valuation in particular, to make you think about weird stuff, to try to amuse, and to suggest some stuff you might want to read or research. The serious questions are about the moral philosophy subscribed to by economists and whether our philosophy stands up to the evidence about how people think and choose.

This essay reviews what I have learned - maybe in error - about these economic beliefs by scratching some surfaces in philosophy, ethics, psychology, neuroscience and evolutionary biology. My intent is not to suggest that I have read and will discuss all of the relevant literature - I have not, and will not - rather it is to bring to your attention some of what I have found interesting, not to rehash stuff you all know, like how and why Kahneman won the Nobel prize. I will also not be presenting a new moral philosophy for environmental economists.

2 Why this title?

I started my career thinking that use values estimated from a travel-cost model could determine whether the road up Mt. Lemon should be closed or not, and have progressed, or digressed, to teaching, to the befuddlement of seniors in Economics, a **course** in moral philosophy and critical thinking.

My first graduate school was the University of Arizona, in Tucson Arizona, a very hot place, but, as a compensating variation for the hotness, it is dry and near to mountains, one mountain being **Mt. Lemon**, elevation 9,147 with an annual snowfall of 180 inches. The road up Mt. Lemon, the **Catalina Highway**, is 28 miles long and climbs 6,100 vertical ft.: the summit is a place to cool off and experience an alpine rather than a desert environment; there is even a ski area.

The rest of the story motivating the title is a recollection, recollected many times. I mention it is a recollection because *homo economicus* has a good memory - he always remembers his *preference ordering*. Unfortunately for *homo economicus*, studies indicate that every time a memory is extracted from memory, it is removed from memory, and replaced by the recollection of the last recollection ([50] and **Radio Lab podcast on memory and forgetting**), so recollections change over time, sometimes bearing no resemblance to the truth. My recollection: The Sierra Club thought the mountain was being trashed by users who accessed the mountain by car, and the Sierra Club wanted the road closed to "save the mountain," making it accessible to only backpackers, a group I considered to be affluent and elitist. I thought, "Is this the thing to do? Lots of the poor and the middle class use the mountain to picnic and hang out: people who litter and are unlikely to replace their car picnic with a family backpacking trip." I wanted to estimate the use value of the road access. I never considered the existence of non-use values. I understood the value of preserving for the

future, but only for future use. Then I went to U.B.C. and spent years learning the properties of indirect utility functions.

2.1 Other titles considered:

2.1.1 Homo economicus: created by our rational God in his own image?

This title would emphasize that the creators of the *economic human* did so in a European religious tradition where God created man, the creators of the economic human were creationists, rejecting the post-Darwin view that why and how we think and choose is the result of evolutionary biology. Evolutionary biology would likely produce something other than a being in God's image.

2.1.2 It is kind of sad: normal people have desires, passions, lust, and rages, while modern economists have only ordinal preferences

As she melted small and wonderful in his arms, she became infinitely desirable to him, all his blood vessels seemed to scald with intense yet tender desire, for her; for her softness, for the penetrating beauty of her in his arms, passing into his blood. And softly, with that marvelous swoon-like caress of his hand in pure soft desire, softly he stroked the silky slope of her loins And she felt him like a flame of desire, ... D.H. Lawrence

I left out the good parts. Economists don't talk like D.H. Lawrence. A lusty title would emphasize the role of emotions in choice and betterment, and that emotions have been purged from neoclassical consumer theory. Paper of this paper talks about visceral and emotional states: depending on your literary tastes, this quote might have changed your visceral state, [57], p.19.

2.1.3 The pursuit of happiness: the moral philosophy of economics?

Is it? Should it be?

2.1.4 Midway upon the journey of life I found myself in a dark forest, For the straightforward pathway had been lost - Dante, The Inferno, Canto 1

I like this title, except "midway" suggests that I will live longer than most other people. Some of you, and sometimes me as well, will take this essay as proof that I have lost my way.

2.1.5 Some old economists should spend more time riding their bikes and less time having goofy thoughts

This title emphasizes that old guys get contrary, and have the liberty to think about weird stuff, or at least stuff that would not get one tenure. The questions considered in the essay are questions I did not allow to enter my mind when I was thirty. Back then, I wrote a paper, "An Introduction to Checking, Testing and Imposing Curvature Properties: The True Function and the Estimated Function" [48]. If the estimated utility function is not at least *strongly quasiconcave*, impose it. I was not asking whether people had utility functions.

Another issue is whether questioning what one knows makes one better off. Consider what Dr. Victor Frankenstein (Shelley [58]) had to say, lamenting his creation, the monster

You seek for knowledge and wisdom, as I once did; and I ardently hope that the gratification of your wishes may not be serpent to sting you, as mine has been.

And

Learn from me, if not by my precepts, at least by my example, how dangerous is the acquirement of knowledge and how much happier that man is who believes his native town to be the world, than he who aspires to become greater than his nature will allow.

Do we know what will make us happy, and, if so, will we take pursue that path? Dr. Frankenstein did not, and did not.

3 So what is moral philosophy, and why should I care?

Moral Philosophy, aka theories of ethics, studies, and builds theories about good and bad. Is an action good or bad? All moral philosophers agree that it would be preferable to have more good and less bad, but often disagree on whether a particular action is good or bad, and disagree on the process one would use to determine a goodness index.

3.1 Moral philosophy in 30 seconds

Moralists sometime proceed by making lists of good and bads (.e.g. The Ten Commandments) but this approach is flawed: the lists get too long, and the question arises, "Why is that on your bad list?", leaving one embarrassed to answer, "Just because." So most moral philosophers start, not with a list of goods and bads, but with a list of assumptions, and then derive, through logical deduction, whether an action is good or bad, given the assumptions.

3.1.1 Starting judgement at the level of the individual

Economists have a moral philosophy - one that many disagree with - and it is the foundation of welfare economics and our policy recommendations. Putting it simply, on the individual level, an action is good if it makes the individual better off and bad if it makes him worse off, and the individual knows whether the action will make him better or worse off, and the individual, given the option, will do the good thing, from his perspective. Note that moral judgement is being made on the level of the individual; many moral philosophies would reject judging at this level.

Judging good from bad is more complicated when the group consists of more than one individual. Economists simply say an action/policy is good if it makes society (the group) better off.¹ Economists put two criteria on the table (efficiency and equity) for judging, sometimes three (adding sustainability). But we can't say much about good and bad. I suspect our ability, as economists, to distinguish good from bad comes down to the following: if we can agree on who is, and who is not a member of society, Pareto improvements are good.² Other than that, we have nothing to say.

In spite of this, many in this room, myself included, have spent hundreds, or thousands, of hours estimating dollar measures of utility changes so we could add them up and present them in a journal or to a policy maker; such behavior suggests our estimates could be used to determine whether a policy will make society better off.

Many argue the moral philosophy of economists evolved from the Utilitarianism of Jeremy Bentham [4] and John Stuart Mill [45]: people get pleasure and pain from life, magnitudes of pleasure and pain can be measured and compared across individuals (*felicity calculus*), and an action is good if it increases net pleasure/utility.³ Modern economists have a bit of trouble with the felicity calculus stuff. Peter Singer is the most famous living Utilitarian philosopher [60]

Both economics and Utilitarianism assume judgement should start at the level of the individual and both philosophies are **consequential**: actions are judged on the basis of the outcome rather than on the basis of the process that determines the outcome. **David Hume** (1711-1776) was an early consequentialist. In contrast, *processists* deem an action good or bad based on whether the process used to choose the action was a good or bad process, independent of the result. One common criteria for judging whether the process is good one is whether the group agreed to it. I view John Rawls' veil, behind which decisions are made, ([55] as judgement on the basis of process, [63]. A consequentialist. and

¹I apologize for glossing over the fact that all economists do not agree.

²That said, we can typically make a state efficient or inefficient by adding or subtracting group members.

³J.S. Mill was rigorously educated by his father, John, and Jeremy Bentham to become the torch bearer for Utilitarianism - the process lead him to a nervous breakdown. My reading is that the difference between the Utilitarianism of Bentham and Mill is that Bentham considered all pleasures basically equal, but Mill found some pleasures greater than other. For example, Mill said something like a frustrated human is happier than a contented pig.

a processist would view the following outcome quite differently. **Insert lifeboat cartoon where the lifeboat survivors, including a dog, draw straws to see who eats whom.**

Most economists only includes humans in the group, we could assume otherwise but don't; many Utilitarians consider other animals.

The day may come when the rest of the animal creation may acquire those rights which never could have been withholden from them but by the hand of tyranny. The French have already discovered that the blackness of the skin is no reason a human being should be abandoned without redress to the caprice of a tormentor. It may one day come to be recognized that the number of the legs, the villosity of the skin, or the termination of the os sacrum (whether one has a tail) are reasons equally insufficient for abandoning a sensitive being to the same fate. What else is it that should trace the insuperable line? Is it the faculty of reason or perhaps the faculty of discourse? But a full-grown horse or dog, is beyond comparison a more rational, as well as a more conversable animal, than an infant of a day or a week or even a month, old. But suppose the case were otherwise, what would it avail? the question is not, Can they reason?, nor Can they talk? but, Can they suffer? - Jeremy Bentham [4]

The Utilitarian Peter Singer ([59]and [60]), argues for the inclusion of everyone, and anything, who can feel pleasure or pain - some consider him the founder of the animal-rights movement. Many environmental ethicists include animals.

Some philosophers start judgement at the level of the individual, as do economists, but judge an action good for the individual if it gives the individual more freedom, and bad if it restricts freedom. See, for example, John Stuart Mill's *On Liberty* [47]. From their license plates, we know that New Hamshirers want to

Live free or die

This school of thought differs from economics in that liberty is good, even if the individual uses it to make himself worse off. I view the liberty school of moral philosophy as based on process rather than consequence.

Rights theorists, also start judgement on the level of the individual, assuming every individual has certain rights: an action is good if one has the right to take the action, wrong if the right is lacking, or wrong if the action violates the rights of another. A action is good if the agent who takes the action has the right, even if the action makes everyone miserable. There are many rights: *human rights, women's rights, right to life, abortion rights, civil rights,...*, even *property rights*. "Rights" often conflict.

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. - Declaration of Independence - Thomas Jefferson

Two justifications are provided: God and "Just because." Identifying and determining a right is a process.

3.1.2 The group, but not the individual

Whoever curses his father or his mother shall be put to death; Exodus
21:17

Many reject starting judgement at the level of the individual, and argue instead that good and bad is determined by God, or the supreme leader, or by what is natural, not by what makes individuals happy or sad. For example it is good if it follows the *natural order* - you having sex with your dog is bad, even if you both enjoy it; it is not natural.⁴ Your neighbor likely judges good from bad on one or more of these group criteria. So do many serious thinkers. I was taught that God said, he never told me this directly, "Sex before marriage, or simply for fun, is bad." Other believe GMOs are bad because they are "unnatural," so was Frankenstein's monster. Many environmentalists believe that saving nature is good simply because nature is natural. Other moral philosophers want to judge at the level of the group, what is best for the group, but reject the assumption that the welfare of the group is built up from the welfare of the group members. Such moral philosophers are not "wrong"; they simply make different assumptions than do economists.

There is even a theory of morality based on evolutionary biology: genes for being good (see, for example, [9] and [54]) have evolved because gene containers that get along are more likely to pass their genes to the next generation. Hausman and McPherson have an excellent J.E.L. survey article ([26]) on why economists should care about moral philosophy For more of my take on moral philosophies, go to the web page for my course, [Economics, Ethics and the Environment](#).

Some noted economists have tried to build on the skimpy moral philosophy of economics. Their theories are typically studied more by non-economists than by economists. Examples include John Rawls' *Theory of Justice*, [55], *On Ethics and Economics* by Amartya Sen [61], and Partha Dasgupta's *Human Well-Being and the Natural Environment* [8]. Ken Binmore's *Natural Justice* [5] proposes game theory to explain the cultural evolution of what we deem good and bad.

I think I am a pain and pleasure guy. My view is that since pain and pleasure is felt by the individual, and only by individuals, it is appropriate to start moral judgement by asking whether an action betters or worsens the individual,

⁴Consider the following story devised by the psychologist Jonathan Haidt, [28]: "Julie and Mark are brother and sister. They are traveling together in France on summer vacation from college. One night they are staying alone in a cabin near the beach. They decide that it would be interesting and fun if they tried making love. At very least it would be a new experience for each of them. Julie was already taking birth control pills, but Mark uses a condom too, just to be safe. They both enjoy making love, but they decide not to do it again. They keep that night as a special secret, which makes them feel even closer to each other. What do you think about that, was it OK for them to make love?" Most people think not, but most of the reasons conjured up for why it was not ok are assumed away by the story. In the end, many people simply say it is bad but cannot articulate why, [54].

and I conclude that if an action betters the individual, the action is *good* for that individual. In addition, I am inclined, like the early Utilitarians, but not your typical economist, to let society consist of individuals from more than one species, but suspect that humans, since we are capable of worry and frustration, have the highest capacity for pain.⁵ Conventional economics assumes we can determine whether an action makes an individual better off; I am less sure.

4 Homo economicus, as I understand him, or her

Definition 2 *State j is defined in terms of what is exogenous from the individual's perspective: the prices of market commodities (including wage rates), \mathbf{p}^j , non-wage income or wealth, y^j , and the vector of non-market commodities experienced by individual i , \mathbf{n}^j . The i subscript is not needed, so suppressed. Let $\mathbf{s}^j \equiv (\mathbf{p}^j, \mathbf{n}^j, y^j)$ denote state j .*

Axiom 3 *He or she orders states of the world. The individual has an ordering if $\forall j$ and k either $\mathbf{s}^j \succ \mathbf{s}^k$, $\mathbf{s}^j \prec \mathbf{s}^k$, or $\mathbf{s}^j \sim \mathbf{s}^k$ where \succ denotes ordered higher, and \succeq denotes ordered at least as high. Note that $(\mathbf{s}^j \succeq \mathbf{s}^k \text{ and } \mathbf{s}^j \preceq \mathbf{s}^k) \Leftrightarrow \mathbf{s}^j \sim \mathbf{s}^k$ which means at the same rank.*

Axiom 4 $\mathbf{x}^m \succeq \mathbf{x}^m \forall m$ and $\mathbf{x}^k \succeq \mathbf{x}^h \succeq \mathbf{x}^t \Rightarrow \mathbf{x}^k \succeq \mathbf{x}^t$

Axiom 5 *The individual is aware of his ordering.*

Axiom 6 *The ordering is not changing in the period of interest*

Note that, up to here, no restriction has been placed on the criteria the individual uses to order states, or even that all individuals order using the same criteria.

Axiom 7 *If $\mathbf{s}^j \succ \mathbf{s}^k$ and both states are in the individual's selection set, the individual will live in \mathbf{s}^j*

If one only wants to explain choice, this is all that is needed; the criteria on which the ordering is built is immaterial, and whether everyone uses the same criteria is immaterial. However, economists typically want to say that living in a higher-ranked state is somehow better for the individual than living in a lower-ranked state, so we add

Axiom 8 *Living in a higher-ranked state is better for the individual than living in a lower ranked state.*

and

⁵Most non-human animals have little money so not willingness-to-pay in terms of money. That said, my dog would quickly give up sleep for a run.

Axiom 9 *The individual is the best judge of what is better for him, unless they are not.*

Note that I, intentionally, did not use the words *preference* or *choice*.

Now consider different ways of expressing these axioms and a few of the implications of these axioms.

- Axiom 3 and 6, together imply that an individual has one and only one ordering, the ordering cannot be context specific, cannot depend on one's emotional state, and different parts of the brain cannot be battling over the ordering.
- Axiom 4, requires that an ordering is based on a criteria with reflective and transitive properties. It does not require that the criteria has anything to do with preference.
- Axiom 8 implies that the criteria we all use to order states is *betterment*.
- Without axioms 7 and 8 and 9 welfare economics would be very different: Adam Smith's invisible hand would be his stumbling foot.
- With our axioms, we, as economists, do not have to worry about how much time there is to make the decision, because all decisions were effectively made in the past.⁶

4.1 With our axioms, welfare economics is very simple on the level of the individual

- If the individual selects state j over state k , the individual is better off in state j , and the individual knows this
- The individual does what makes him best off, given his selection set.⁷
- Increasing an individuals choice set typically makes the individual better off, and cannot make him worse off.

Definition 10 *The compensating variation, cv , associated with a change from state j to state k , $cv(s^j, s^k)$ is the amount of money that must be subtracted from the individuals non-wage income in state k , to make him indifferent between state j and state k , with this subtraction.*

- If $\mathbf{s}^k \succ \mathbf{s}^j$, $cv(s^j, s^k) > 0$. If $\mathbf{s}^j \succ \mathbf{s}^k$, $cv(s^j, s^k) < 0$

⁶My friend Rufus was on a date in a state of lust. His date presented him with the following forced-choice question, "If you want to go out again, take me home, or, we can have sex, but, post-sex, we are over." The above axioms imply that Rufus would not angst over the decision: his ordering of states, including the influence of this "relationship" on the ordering, is already determined and known to him, so he simply says, with no stress, "sex," or "get in the car."

⁷Not that this does not imply the individual will choose the alternative ranked highest if the choice is hypothetical. It also does not imply he won't.

5 So what is happiness, and are welfare economists happiness doctors?

5.1 Happiness

The modern view is that happiness is a brain state,^[52] , literally a chemical state of mind - a feeling, or a class of feelings, all pleasant.⁸⁹

Some things make our brains feel good; some things make us feel bad. For example, being cold or having a cold is unpleasant, and eating toast feels good. - Frank [19]

Happiness is often used to describe an emotional or affective state in which we feel good or pleasure. Overlapping states or experiences associated with this idea of "happiness" include joy, exultation, delight, bliss, and love. Antonyms include suffering, sadness, grief, and pain. The original meaning of the idea of happiness referred to a success in life, or flourishing, rather than simply the pleasurable emotion associated with the term in popular usage – the famous Dr. Wiki

Dr. Wiki goes on to say

While a person's overall happiness is not objectively measurable, this does not mean it does not have a real physiological component. The neurotransmitter dopamine, perhaps especially in the mesolimbic pathway projecting from the midbrain to structures such as the nucleus accumbens, is involved in desire and seems often related to pleasure. Pleasure can be induced artificially with drugs, perhaps most directly with opiates such as morphine, with activity on mu-opioid receptors. ...

⁸The modern take on happiness is quite different from the ancients take on happiness, an activity, way of life, rather than a feeling - one was a happy camper if one died having lived a meaningful and virtuous life (Aristotle [62], Thomas Aquinas [30], [2]). Happiness in this sense requires rationality and purposefulness, so happiness is not an option for animals, except for humans. While economists have adopted much from Utilitarianism, most economists implicitly reject the Utilitarian notion of inclusion simply on the basis of the ability to feel pain or pleasure, and make rationality a necessary condition for inclusion in society. I suspect that most economists would exclude being that are rational and sentient, but unable to feel pleasure or pain.

⁹Madonna is a **material girl**, so are people, like me, who believe happiness is only a chemical mix in the brain. *Materialists*, also called *physicalists*, believe that the mind and brain are one and same - all has a physical explanation, including our thoughts and feelings. This is in contrast to *dualists* who draw a strong distinction between the brain, a physical thing, and the mind, an immaterial spirit. Dualists believe that while much is explained by chemistry, electricity and gravity, some things, like the mind are above all that. Descartes went to great lengths to defend dualism, largely because of his belief in God. While few neuroscientists are dualists, most guys on the street have a hard time abandoning dualism: while we accept that there are physical explanations for many things, we hesitate to believe that who we are and what we feel are simply a chemical/electrical mix. The religious are, by necessity, dualists, except for the religious who believe everything is spiritually determined.

Quoting from the ISCID Encyclopedia of Science and Philosophy [29]

Dopamine (chemical formula $C_6H_3(OH)_2-CH_2-CH_2-NH_2$) is one of the best-known neural chemicals, and though it's often thought of primarily as a manufactured substance it's actually produced naturally in the body. Dopamine is a neurotransmitter activating dopamine receptors.

...

Dopamine's role in pleasure and motivation is critical. It is heavily associated with the pleasure system in the brain, and its continued release provides feelings of enjoyment and reinforces the activities that provide those feelings. Food, sex, and other naturally-rewarding experiences release dopamine; in addition, neutral stimuli associated with pleasure (for instance, sexual fetishes) and certain drugs also release dopamine. Cocaine and amphetamines in particular seem directly related to dopamine release, and in theories of addiction have been given the reputation of pathologically altering dopamine pathways in addicted people.

Dopamine is not, however simply the "reward chemical" in the brain; this is far too simplistic an explanation. Dopamine is also released when negative stimuli are encountered, leading one to wonder just how close pleasure and pain truly are. It also works in previously-unpredicted ways toward pleasure; for instance, when a reward is greater than anticipated, the dopaminergic neurons associated fire more often, with a commensurately lower than anticipated reward, they fire less. For this reason, some researchers think it may be related to desire rather than pleasure. Drugs like antipsychotics that inhibit dopamine activity reduce people's desire for pleasure, but don't make that pleasure less intense.

Because of these new insights and studies, new theories suggest that dopamine is actually involved in predicting pleasurable activity, and thus can be critical in decision-making processes. When a dopamine path has been damaged by addiction, it would make this decision-making dysfunctional by overemphasizing the priority of the drug in relation to other variables.

For some, happiness can only result from the removal of an unpleasant feeling.

Happiness is the sublime moment when you get out of your corset at night - Joyce Grenfell – actress, long dead

What we call happiness in the strictest sense of the word comes from the (preferably sudden) satisfaction of needs which have been dammed up to a high degree - Sigmund Freud.

Interestingly, research suggests (**add references**) dopamine is not released by the action itself (biting into and tasting the great burger, orgasming with Wanda Sue) but prior when one knows it will happen: it is released when one realizes a desire/want will be fulfilled, not when it is fulfilled. It makes sense to view happiness as the removal of a negative if wants, desires, and lust are viewed as negative feelings, and dopamine is released when one knows the feeling will be squashed.

5.2 Is a welfare economist, with a Ph.D., a happiness doctor?

She should be if she is evaluating an environmental program in a developed country. Most people don't think of economists in this way, including economists.

Whereas psychiatrists and clinical psychologists try to develop happiness programs that effect only one individual at a time (therapy and other treatments), economists try to develop happiness programs that simultaneously affect many people.

As an undergraduate in college, I switched my major from psychology to economics: my course grades in psychology were abysmal – all having been earned during a two-year stint when I never went to class. My moral justification for a change of major – what I told my parents - was that "As a clinical psychologist I could help only one individual at a time, but as an economist I could simultaneously help thousands, if not millions." Somehow I ended up as an environmental economist, but the social objectives of the two professions are the same, to improve the lot of their patients. Of course not all psychologists and economics care about their patients; many simply study models of personal and economic behavior for the sake of the models, not the patients.

Summing up, the job of the economist doing environmental valuation is to determine whether the policy will lead to the release of more dopamine - maybe it is a more complex chemical stew - thus we want to recommend policies that affect brain chemistry in ways that individuals find pleasant. Put simply, the economic goal of environmental policy (actually all policy) is to make members of society happier (better off), not to improve the environment.¹⁰

6 Is an individual better off, happier, after his choice set enlarges? Is he better off if he consumes more stuff?

Money is better than poverty, if only for financial reasons - Woody Allen

¹⁰Of course, many environmental ethicists propose other motivations for policy.

Once basic needs are met, the guy on the street would probably say he wants happiness, contentment, and strong social relationships (love, friends, etc.). Teen-age boys would mention sex. So, it would seem that making people better off in rich societies, such as ours, means making them happier. Is this accomplished by enlarging their choice set? Is it achieved by increasing consumption?

Here, I think it important to distinguishing between enlarging the choice set and consuming more stuff: a larger choice set does not always lead to the consumption of more stuff, but getting more stuff most often requires a larger choice set. My read of the evidence is the individual is better off if the enlargement takes the individual from a state where not all of his basic needs can be met to a state where more of them can be met. However, once basic needs can be met, there is scant evidence that enlarging the choice set beyond that point increases happiness. Giving the starving access to food makes them better off, giving those without shelter access to shelter makes them better off, giving those without security a safe place to go makes them better off, and providing the sick access to health care makes them better off. Giving my twelve-year-old daughter a new cell phone, something she desperately wants, will not make her happier, at least not for long. Will saving the polar bear from extinction make me happier and, if so, for how long?

6.1 The evidence from economists

Let's review some of the evidence on whether people with more stuff are happier. Quoting Richard Oswald [51] on Richard Easterlin ([14] and [15])

Richard Easterlin (1974, 1995) was one of the first economists to study statistics over time on the reported level of happiness. His data came from the United States. Easterlin's 1974 paper results were, first, to suggest that individual happiness appears to be the same across poor countries and rich countries, and, second, to argue that economic growth does not raise well being.

Easterlin's conclusions are now considered too strong. Data is a problem: there are a lot of issues with respect to tracking happiness, see, for example, [12]. Most of the conclusions are based on surveys that ask the individual to self report their level of happiness, one collects cross-sectional data (different places/countries at the same time), or time series data (the same place at different points in time), or both. One problem with cross-sectional data is comparing responses across countries with different languages, customs, cultures and institutions. How happy you are might be a function to how happy you think you have the a right to be, and this can vary across countries. Italians respond that they are less happy than Germans, but are they really less happy? Or, is the difference caused by how attitudes are expressed in the two countries? My experience is that Italians are hesitant to say yes or no to anything – they like to be vague, or so it seems to me.

Time-series data has problems in determining the influence of consumption on happiness. Lots of things change over time besides income levels, so it is difficult to isolate the influence of income. For example, age-composition is changing over time – average age is increasing – this might completely explain any change in happiness levels. There is evidence that happiness levels are U-shaped as a function of age [51]– happiness for *twenty-somethings*, like most of you, is on the decline, but increasing for old farts, like me.

Another issue is whether self-reported happiness levels truly reflect one’s level of happiness. Are people a good judge of their own happiness level? Maybe your friends and family are a better judge than you. Homo Economicus knows when he is better off, or worse off, but does he know whether or not he is happy?

And, might respondents have an incentive to give biased answers to happiness questions? Who wants to say they are miserable?

That said, self-reported happiness levels correlate pretty well with how happy your friends and relatives think you are. For measurement of happiness issues see [12].

Some data, and summaries of the data, courtesy of Oswald:

Table x from Oswald 1997			
Happiness in the United States 1940-1950s			
Date	% Very happy	% Not very happy	N
1946	39	10	3,151
1947	42	10	1,433
1948	43	11	1,596
1952	47	9	3,003
1956	53	5	1,979
1956	53	3	1,627

Source: Table 8 of Easterlin (1974) using AIPO poll data.

The raw data are consistent with the view that the category ‘pretty happy’ is expanding while ‘not too happy’ is shrinking. Nevertheless, the effect is not dramatic, and these are only raw data that may be being moulded predominantly by a population that is changing its composition. Blanchflower et al. (1993) explore the matter more systematically. They examine whether there is an upward trend in well-being after controlling for demographic and other compositional changes in the American economy. Their conclusion is that there is a positive time trend, but that it is very slight. Intriguingly, there seems to be evidence of a cycle in happiness (especially for men). Blanchflower et al. show that the rise in happiness has not been spread evenly. It seems that American men have got happier while American women have experienced little growth in subjective well-being. Blanchflower and Oswald (1996) find some evidence that the young are growing relatively happier - Oswald

Finding 1: Happiness with life appears to be increasing in the United States. The rise is so small, however that it seems extra income is not contributing dramatically to the quality of people’s lives.

Turning to the Europeans:

Table 2 from Oswald 1997			
Life Satisfaction in nine European Countries from One Decade to the Next			
Country	Ave. % 1973-81	Ave. % 1982-90	Well-being increased?
Proportion of the sample who reported themselves as "very satisfied" with their lives			
Belgium	39.5	24.7	No
Denmark	51.7	62.8	Yes
France	12.4	13.7	Yes
West Germany	18.8	23.4	Yes
Ireland	38.8	31.1	No
Italy	9.0	13.2	Yes
Luxembourg	34.6	39.1	Yes
Netherlands	41.3	41.8	Yes
UK	31.7	30.9	No
Source: own calculations using the Eurobarometer survey numbers provided			
Englehard of the U. of Mich. Sample size is approx, 1,000 per yr. per country			

So, should we conclude from this table that Italians do not lead the dolce vita? Based on this table and other statistics, Oswald concludes

Finding 2: Since the early 1970s, reported levels of satisfaction with life in the European Countries have, on average, risen very slightly.

One thing to note about these statistics is that they are the percentages in different groups (“very happy”, “pretty happy”, “not too happy”). The measures would not change if the “very happy” or “very satisfied” became even more so, or the “not too happy” became even less happy.

Another way of measuring happiness is by measuring distress levels, Quoting, again, from Oswald

There is another way to measure well-being, and that is to study psychiatric measures of mental distress. The new British Household Panel Study gives mental well-being scores from a form of psychiatric evaluation known as the General Health Questionnaire. One way to assess these people’s feelings of subjective well-being is to use their scores from the General Health Questionnaire (GHQ) section of the survey. In its simplest form, this assessment weights the answers to the following set of questions.

Have you recently:

- *1. Been able to concentrate on whatever you are doing?
- 2. Lost much sleep over worry?
- *3. Felt that you are playing a useful part in things?
- *4. Felt capable of making decisions about things?
- 5. Felt constantly under strain?

- 6. Felt you couldn't overcome your difficulties?
- *7. Been able to enjoy your normal day-to-day activities?
- *8. Been able to face up to your problems?
- 9. Been feeling unhappy and depressed?
- 10. Been losing confidence in yourself?
- 11. Been thinking of yourself as a worthless person?
- *12. Been feeling reasonably happy all things considered?

People's answers to these questions are coded on a four-point scale running from 'disagree strongly' to 'agree strongly'. Starred items are coded in reverse.

There are lots of ways to score. One way is to give a 1 on a question answered "agree strongly" and a zero otherwise. Using this method, the higher your score, the more you are distressed. Summarizing, the unemployed have much higher distress levels (are less happy than the employed). Education does not seem to be a determinant of distress level. The exception to this is when one is unemployed. Those with low levels of education are less distressed by unemployment than those with high levels of education - maybe the uneducated expect to be unemployed, but not the educated.

Why are the unemployed distressed? Isn't having more free time a good thing? One might be tempted to argue that the unemployed of Britain are distressed because they have no money to take care of their families, but not all of the evidence points in that direction. Oswald says the largest distress is not caused by the loss of income but rather non-pecuniary losses. He does not elaborate. He might be thinking along the following lines: Britain has a substantial social welfare net, so one's family will likely have food to eat and a home. Non-pecuniary losses would include stuff like loss of self-esteem, a sense of failure, embarrassment, etc.

Continuing to cut and paste from Oswald:

Table 5 from Oswald 1997		
The Microeconomics of Happiness in Europe: 1975-86		
	All	Unemployed
Very Happy (%)	23.4	15.9
Pretty happy (%)	57.9	51.1
Not too happy (%)	18.6	33.0
	Lowest-income quartile	Highest-income quartile
Very Happy (%)	18.8	28.4
Pretty happy (%)	54.5	58.5
Not too happy (%)	26.7	13.1
source: Di Tella et al. (1996) using Eurobarometer data.		
Total sample, 108,802		

Note that the second half of this table does not imply that raising average income will increase happiness: one might be unhappy because one's income is low relative to other, not because it is low.

... More generally, it is now well known that there are systematic patterns in micro data on people's subjective well-being. In other words, if one takes a random sample of people, and estimates a well-being regression equation of form "reported well-being = f(personal characteristics)", the results tend to be the same across different periods, different countries, and even different measures of well-being. Summarizing:

Finding 4: Reported happiness is high among those who are married, on high income, women, whites, the well-educated, the self-employed, the retired, and those working in the home. Happiness is apparently U-shaped in age (hitting bottom in the 30s)

Some of Oswald's other conclusions are

Finding 5: Consistent with the patterns in happiness data, suicidal behaviour is more prevalent among men, the unemployed, and those with marital problems. Over the long run, as Britain has got richer, the suicide rate has declined (though this is not true for men since the 1970s). Rich countries apparently have more suicides.

Finding 6: High unemployment may swell the number of people taking their own lives. Suicide data suggest that joblessness is a major source of distress.

Finding 7: In Britain and America the level of job satisfaction is not rising over time.

There has recently been a lot in the popular press, citing research, to the effect that money does not buy happiness ([27], [6]).

6.2 Other evidence suggesting more stuff does not increase happiness, much

6.2.1 Maybe one's happiness is determined by one's relative position in society rather than one's absolute level of consumption.

We all have strength enough to endure the misfortunes of others. -
Francois de La Rochefoucauld

What every one most aims at in ordinary contact with his fellows is to prove them inferior to himself - Schopenhauer

Put simply, this school of thought thinks that one is happier the more stuff one has relative to one's neighbors and peers. Which would I prefer? That the average salary for full professors in my department is \$120K and I make \$140K, or that the average salary in my department is \$180K and I make \$160K. Many in my department, including myself, look with foreboding on spring and the determination of salary increases. This year, I was calm, I expect others were as well, since no one got a raise.

The data reported in Oswald [51] suggests a link between happiness and one's relative income. Table 5, from Oswald, shown above, strongly suggests the those in England in the lowest income quartile are less happy than those in the top quartile.

The difference in happiness levels by income levels in the same society could be the result of expectations: one is unhappy with one's current state if one hopes that it will improve; seeing others with more fuels those expectations. Some argue that this is why the Danes appear happier (see Oswald's Table 2, shown above) than many other Europeans; they have, income equality, and low expectations, so are content. **Need to add references.**

If all we are concerned with is relative income, this does not bode well for making society better off by increasing average income. Everyone can't be above average. In fact, half of us have to have below-average incomes (except in Lake Woebegone, where "all the kids are above average", or if we all have the same income). If relative position is what matters, then there is a negative external effect when I make myself better off: my making myself better off makes the rest of you worse off, so, if unconstrained in my pursuit of a higher income, I will strive too much to get ahead – inefficiently work too much, so will you [19]. What policies should be pursued. Taxes discouraging each of us from working too much from society's perspective: six weeks mandatory vacation, A 35 hour work week? Maybe the French know what they are doing ([31] and [1]). Will increasing the level of public goods, including environmental public goods, increase welfare more than increasing average income? Even asking this question sounds un-American to me.

6.2.2 Maybe one's happiness level has a fixed point from which it is, longrun, difficult to deviate

Adam Smith, the Chair of Moral Philosophy at Glasgow University, thought so

The mind of every man, in a longer or shorter time, returns to its natural and usual state of tranquility. In prosperity, after a certain time, it falls back to that state; in adversity, after a certain time, it rises up to it. - Smith (The Theory of Moral Sentiments (1759/1853, p.149))

If we each have our own fixed level of happiness, our *fixed-point*, can market outcomes or government policies make us better off? My interpretation of the research is that the early research suggested that we have a life-time fixed point and can only temporally deviate from that fixed point - the point being determined by genetics and early events - but more recent research, sometimes by the same researchers, suggests that while there is a fixed point, it is quasi-fixed rather than hard fixed: something that can, with hard work, but not necessarily more stuff, be modified.

Quoting from a class paper by Kelly Graham [25], a former student:

Research has also found that happiness is strongly affected by genetics. Dr. Lykken and Dr. Tellegen of the University of Minnesota explored this

theory by giving multidimensional personality questionnaires to identical twins ([64] and [42]). These twins were reared apart and were middle aged. Theoretically, this test will give some evidence as to the relative impacts of environment verses genetics on emotional well-being. The twins rated themselves almost identically in happiness, well-being and life satisfaction levels. Dr. Lykken and Dr. Tellegen were so convinced by the findings that they stated, “trying to be happier is as futile as trying to be taller” [64].¹¹ This conclusion supports a baseline level of happiness, which is genetically controlled and cannot be permanently affected by environment, given that basic needs are met.

.....
Years after his initial study, Dr. Lykken changed his opinion on the strength of the “baseline level.” In the year 2000, after over 40 years of researching the subject, he stated that happiness may be partially determined by genes, but he felt the individual and the environment also affect it. He believed changing you’re attitude through a conscious effort and having strong social relationships could permanently increase happiness [43].

Interestingly, another study found that life satisfaction levels change over time. Dr. Fujita, a psychology professor at Indiana University South Bend and Dr. Diener of University of Illinois at Urbana, conducted a study [20] to determine if there is a predetermined level of life satisfaction. This study followed 2,336 men and 2,873 women over 17 years. The conclusion reached in this study was that there is a “soft baseline” for life satisfaction. However, it found that “some individuals do change significantly” overtime and commonly they saw small fluctuations, which could last for years. These Dr.’s addressed the Lykken study, stating that the variations in the two studies may be due to the wording of the questionnaires. The Lykken study primarily concentrated on stronger emotional states, such as happiness, where the Fujita study’s questionnaires asked about satisfaction.¹²

Fujita and Diener review the research on this topic. See also [49]. The notion of a set point is supported by the finding that we adapt, to both the good stuff and the bad stuff, more on this in **section xx**. For example, a recent study, discussed below, found patients on dialysis no less happy than a control group.

What are the implications of a quasi-fixed level for the question at hand, whether consuming more stuff really makes us better off? I am not sure: need to research this more and think about it more. That said, it seems that while one can tell a story consistent with more stuff means more happiness, at least in

¹¹A similar study, [33], was conducted on 2,928 twins by Dr. Romeis who stated that attitudes are “not only their psychology but their biology.”

¹²Kelly’s footnote: Personally I believe satisfaction and happiness to be very different things. However, most of my research shows that the terms happiness, well-being, life satisfaction, etc. are used repeatedly in most questionnaires’ that study happiness.”

the shortrun, the existence of a quasi fixed level of happiness is not consistent with the notion of Homo Economicus and the idea that increasing one's level of consumption will permanently make one better off/happier. I wonder what Adam would say if presented with the modern research.

7 If homo economicus is the product of evolution rather than the creation of God

Would we expect evolution to produce a homo economicus that seamlessly maximizes his happiness? I think not.

7.1 Evolution is based only on the survival of traits/genes. It does not "care" if the gene-container is happy; evolution is "carefree"

Put simply, too simply, evolution has two components: (1) genes generate traits in their containers (us and other living things) that increase or decrease the probability the container will reproduce and pass the genes along to the next generation, causing the stock of the gene(s) for certain traits to increase and the stock of others to decrease, and (2) the process generates mistakes/mutations that modify genes, often disastrous, but sometimes fortuitous. This is a gene-centric view of evolution: evolution takes place on the level of genes rather than on the level of the organism. This view of evolution was made famous by the book, *The Selfish Gene* [9], by the eminent evolutionary biologist, Richard Dawkins. Quoting from the book,

They are in you and me; they created us, body and mind; and their preservation is the ultimate rationale for our existence. They have come a long way, those replicators. Now they go by the name of genes, and we are their survival machines.

The thirtieth anniversary of the book was celebrated in 2006 with a **conference at the LSE**, and with the book, *Richard Dawkins: How A Scientist Changed the Way We Think* [24]. Evolution is consistent with betterment in the survival sense but does not imply that we will be happy or that evolution increases happiness. Consider lust, the great contributor to sexual angst in teenage boys; this trait increases reproduction but rather than being happy, the sperm container is in the words of Elvis, "**All shook up.**" My point is simple, evolution as a process, was not "designed" so that we would be designed to maximize our feeling of well being: its goal is not to produce the economic human. Of course, animals that are suffering or die because they lack the appropriate survival skills, are less likely to reproduce and nurture their children, causing there to be a positive link between passing along genes and the comfort level of the container, but the comfort level does not have to be huge. If you are too comfortable pre-kids, you

might choose to forego them, which would not serve the interests of your genes - tranquil Buddhist monks typically do not have lots of kids.¹³

7.2 Evolution, since it is often incremental, is more likely to move toward a local maximum than a global maximum.

It is unlikely that evolution would produce perfection. It must proceed from its current state and often takes only small steps, so is likely to gravitate towards local rather than global optimums in terms of gene transmission.¹⁴ This applies to the evolution of our brain. N.Y.U. psychology professor, Gary Marcus, describes our brain as a kluge: n. *Slang*, A clumsy or inelegant solution to a problem, in his amusing and informative book, *Kluge: The Haphazard evolution of the human mind*. Marcus argues for and presents evidence for the title of this subsection, arguing that our brain, while it serves us well in many ways, is not a first-best mechanism. He argues that evolution is not about perfection, but about what our economics Nobel laureate Herbert Simon called *satisficing*, doing "good enough."

One example from Marcus: people often get logic and inference mixed up with beliefs. I tell my students, "All living things need water, roses need water, so roses are living things." And few object to my logic. Alternatively, if I say, "Fish need water, rats need water, so rats are fish" many object. Marcus argues the result is different because the first statement, while illogical, conforms with our belief, in this case, that roses are alive, noting that logical reasoning was likely a recent evolutionary addition to a brain that was first built to decide based on belief. My students get low grades in logic because they suffer from inelegant evolution. Markus goes so far as to argue that, maybe, logic is not the result of evolution *per se*, but something we learn in school, and sometimes find it useful. In explanation, logic is not observed in nonliterate societies, or so some argue,^[41]. However, economists assume that humans behave logically; probably people do, sometimes.

8 Do individuals order states of the world?

Psychology literature and other brain-science literature that I have studied and hopefully understand is often consistent with the individual ordering things, but multiple orderings rather than a single ordering; this conflicts with the economic view of a single, stable ordering of states of the world.¹⁵ Summarizing, in my words, not theirs, the ordering used depends on context and emotional state of mind: assuming S situations (combinations of context and state of mind), in situation s the individual uses the ordering "coughed up" for situation s .

¹³There is a Boulder exception. A monk who had sex with many members of his flock.

¹⁴The receipt of drastically mutated genes typically does not survive.

¹⁵Note the word "consistent." The emphasis in other literatures is on explaining *choice*, not assuming an ordering in the economic sense of the word.

Further, he incorrectly assumes he would use this ordering in all other situations. These orderings determine choice in the sense that in situation s the individual will choose the highest-ranked available state in the ordering appropriate for situation s . A simple, obvious, and extreme example: when sexually aroused and drunk, the state of unprotected sex with the stranger, now on the next bar stool, is ordered differently than when unaroused and sober. In the aroused and drunk situation, one might choose the unprotected-stranger sex, even though one cannot imagine, before becoming drunk and aroused, making this choice, and the next morning be certain that it won't happen again, even though it likely will if the situation is right.¹⁶

A separate issue is whether choosing a situation- s higher-ranked alternative makes the individual better off/happier. And, if so, happier in all situations or simply in situations of type s : the next morning one might be miserable about one's actions of the previous night, or maybe delighted, even though one is now in another state.

8.1 Multiple orderings?

The brain may devise laws for the blood, but a hot temper leaps o'er a cold decree. - The Merchant of Venice, act 1, scene 2

If I have multiple orderings, is there a unique me, or do I consist of many selves? **George Loewenstein**, the Herbert A. Simon Professor of Economics and Psychology, at Carnegie Mellon University, posits([34] and [36]) that choice is often based on visceral states, visceral as in "from the gut." Interpreted in the context of a preference ordering, one has emotional-state dependent preferences. Visceral states include *drive states* (hunger, thirst, and sexual desire), craving for drugs, moods and emotions, and physical pain.¹⁷ To his mix of visceral states I would add the state, *none of the above* and simply call them all emotional states. Loewenstein uses the terms *cool* and *dispassionate* to refer to the absence of a visceral state. As I interpret Loewenstein, he suggest that the ordering in the *none of the above* state is more correct in terms of betterment, than the orderings in the visceral states - he might disagree with this assessment of his views. I posit that I, and many others, are more often in a visceral state than the dispassionate state. What state is one in if one's emotions have been modified by a SSRI (anti-depressant)? What is the normal state? And, what is wrong with being passionate/emotional?

Whether one makes choice errors when in a visceral state is discussed below in the section on the *empathy gap*. Loewenstein has some great examples of how

¹⁶For example, male college students who were sexually aroused by photographs of nude women reported a substantially higher likelihood that they would behave aggressively on a date than did the unaroused control group, [38]

¹⁷For a neurological discussion of the effects of emotions on choice, see the neurologist and physician Antonio Damasio,[10]. [36] relates the history of emotions in the construct of utility: it was big with Bentham, but neoclassical economists purged emotions from economics. See also the J.E.L article by Elster, [18].

choice differs across emotional states: the turn-back time for a mountain ascent chosen in the planning phase is often ignored during the stress and exhaustion of the climb, [35], male college students who were sexually aroused from viewing photographs of nude women reported a substantially higher likelihood that they would behave aggressively on a date than non-aroused control subjects, [38], and research,[39], shows that people under predict the influence of curiosity on their behavior. For more examples see [40].

A latent-class model might be used to model choice by one's many selves: classes would correspond to emotional states, one would estimate separate "preference" parameters for each state, and the probability that the individual is in state s at time t as a function of constant characteristics of the individual's personality and temporal circumstances such as how fast the decision must be made, whether the drinks were served, where the decision is being made, and other circumstances that might determine one's current emotional state.¹⁸

We might consider CVM studies and choice experiments where different groups are induced into different emotional states. If nothing else it would be fun to design and conduct such experiments. I am trying now to set one up.

8.2 Is your current ordering a function of your current and past bundles?

I am thinking of *loss aversion* as posited and studied by Tversky and Kahneman, [65], the tendency to weigh losses more heavily than gains of equal absolute

value. Behavior in a world of loss aversion can potentially be predicted, but not within the confines of a stable and unique ordering: the ordering is influenced by one's past choices. Enough said about Kahneman and Tversky.

8.3 Conscious and subconscious mental processes. Whose ordering is it?

Seeing that you are in the oncoming path of a bus, you jump back rather than staying put, making a "choice" even before the situation registers as electrical activity in the parts of your brain thought to embed conscious thought. Alternatively, sometimes you cogitate for hours, days, or weeks on whether you should choose option A or B ?

Economists do not distinguish between conscious and unconscious thought.¹⁹

¹⁸For example, one might posit that one has a different ordering when one is depressed, then estimated a two-class latent-class model (depressed,not depressed) of choice, making the probability that one is depressed at time t a function of covariates such as whether one is on an antidepressant, and whether one was depressed in the previous time period.

¹⁹Synonyms for *subconscious* include *unconscious*, *aconscious* and *nonconscious*. Psychologists tend **not** to use term subconscious. I am going to sometimes use subconscious because everytime I talk about this topic with my friend Bill, he assumes unconscious means "passed out."

Some psychologists find the distinction central to explaining choices, perceptions, and how we manage to make our ways through the world.²⁰

In psychology and neurobiology, the unconscious, once limited to harboring our infantile Freudian traumas, now plays many roles. Recent research in psychology and neurobiology suggests that our brain consists of many separate processing centers: one for conscious thought (asking myself, “should I or shouldn’t I buy the Lexus and marry Shirley”) and others for decisions made subconsciously. Subconscious activities were once thought limited to the mundane activities such as processing language, not falling over, and seeing what we see when we open our eyes – the stuff the conscious mind did not need to be bothered with. Now it is thought that our subconscious also plays a major role in many of the choices we make – including my perception that a Lexus is better than a Ford, and my decision to drop Lois and get the new Lexus.²¹²²²³

Summarizing the research, contents of our unconscious seem to be determined by some combination of genetics, culture, and experience.²⁴ Perceptions formed and decisions made by the unconscious, relatively speaking, are more instinctive/programmed/quick than those made consciously: “a hallmark of the adaptive unconscious is automaticity, whereby information is processed in rapid, unconscious, involuntary ways” ([68] p. 89) When in the street with the truck approaching, or drunk with a sexually-attractive person, quick action is required, and the action taken is likely to be substantively determined by one of our unconscious processors: it would take too long to cogitate. Alternatively, when there is leisure to cogitate, our conscious thoughts often play, but not

²⁰Here, I am defining *perceptions* as one’s beliefs about the world: what things are like, how things work, and the results of different actions. Perceptions can influence one’s ordering of states but are not the ordering: some perceive that our President is not a U.S. citizen (perceptions might or might not be correct); whether that perception causes a state with a foreign U.S. President to be ordered higher or lower than a state with a citizen President is another issue.

²¹For a persuasive and accessible presentation of these views see *Strangers to Ourselves: Discovering the Adaptive Unconscious* by Timothy Wilson, [68]. Timothy Wilson is a prominent social psychologist at the University of Virginia.

²²Note that because we consciously think about a decision before it is made does not prove the decision was made consciously. I thought hard and long about buying a second home before doing so, but maybe both the thinking and the doing were caused by my subconscious reaction to some “unrelated” event (B precedes C , but B does not necessarily cause C , rather, both are possibly caused by A). Dutton and Aron, [13], had an attractive female approach males in a Vancouver park and ask them to fill out a short survey about the park. At the end of the survey, she provided the respondents with her phone number in case they had further comments or questions about the survey topic. Half the males were approached on a foot-path suspension bridge over a deep canyon, half after they had crossed the bridge. She got significantly more calls for a date from those interviewed on the bridge. Their propensity to call was greater because they mistook the fear and excitement of being on the bridge for attraction to the interviewer. Even though many likely consciously debated whether to call, it is unlikely that many consciously considered the bridge fear factor in their choice calculus. (When we were first dating, my wife shared a house with the interviewer, after the interviewer’s divorce from Don Dutton.)

²³An extreme point of view, called *conscious inessentialism*, argues that our conscious mind has no influence on our choices, it just thinks it does. If so, one does not have conscious preferences, one just thinks one does. See [17] for a review of this viewpoint.

²⁴For an example of research on how unconscious motives are formed, see [46].

always, a bigger role in what we will do. The context in which a choice is made likely plays a large role in whether that choice is made by our conscious or unconscious minds. Time to decide is just one of the relevant contexts; others are emotional state, one's current self image, or whether a pretty girl asked you to do it. Keep in mind that some decisions that we think were made after conscious deliberation might have been made quickly by the subconscious after which the conscious brain took its time to come up with a good story. Survey questions are typically answered quickly, suggesting that the unconscious might play a larger role than the conscious in determining whether one circles option *A* or option *B*, or whether one circles "mostly agrees" or "somewhat agrees". The time-line for consumer purchases is more varied: sometimes we agonize over a purchase for weeks or months; sometimes we go to Costco for groceries and come home with a flat-screen television.

And, the different processing centers don't always agree on the course of action.²⁵ We are *not of one mind*. Many questions arise. Who is in charge? It depends on what is being determined and the context in which it is being determined - contextual orderings. Are we conscious that a decision was made? Not always. Are we aware/conscious of why we do what we do? Probably not, but often our conscious brain makes up a good story to explain what was determined by our unconscious, or so say some psychologists. And, what happens when our conscious and unconscious disagree?

Economists typically imagine the brain as a single, black box that prints out one set of stable preferences. Many of us refuse to think about how or why preferences arise; we argue that the mechanics of preferences creation are unimportant since our sole goal is to predict choices.²⁶ But our welfare goal is not simply to predict what is chosen but to predict whether the choice or the policy will better the individual.

8.3.1 Perceptions

While unstated, most economists, I imagine, would like to think that perceptions are created by the conscious mind's assessment of the evidence: I decide, by consciously weighing the evidence, that illegal immigrants do, or don't, take jobs from the less-skilled in our society. Or, at least, this is how I might explain to my students the process of perception formation. However, research shows that perceptions are often formed quickly by the subconscious, and subconscious perceptions often disagree with conscious perceptions.²⁷ Recollect my fattening

²⁵Quoting Wilson ([68] p. 91), "There is little research on the consequences of having disparate conscious and nonconscious 'selves' that are out of synch. An exception is the work of Joachim Brunstein and Oliver Schultheiss... they found little correspondence, on average, between people's nonconscious and conscious motives." See [7].

²⁶There is a camp in psychology called behaviorists; they ruled the psych. journals for much of the first half of the 20th Century. Quoting Wilson ([68], p. 4), "the behaviorist onslaught in psychology was fueled by a rejection of mentalism; behaviorists argued that there was no need to take into account what occurred inside people's heads, consciously or unconsciously." Psychology has largely rejected behaviorism, economics has not.

²⁷One can have dual perceptions, for example, consciously not prejudiced, unconsciously prejudiced. To check out how your conscious and unconscious prejudices might differ go to

relative who thinks diet soda will give her cancer - this is her strongly held perception. Where did it come from?²⁸

As someone who has done many surveys to estimate how much an impacted group was damaged by an environmental injury, I care greatly about the perceptions respondents hold when they are asked the question(s) whose response will be used to estimate willingness-to-pay for the absence of the injury. The respondent must, to a degree, understand the injury, and, to a degree, have the same understanding as others. A mechanism must be presented for removing the injury that respondents find feasible. The goal is respondents perceives a similar injury and mostly accept that the mechanism proposed will eliminate the injury. If perceptions vary to much, what is being valued will vary.

Economists who develop preference surveys devote great effort to how policies and outcomes are described and convincing the respondent that there is feasible mechanism for achieving the outcome (implementing the policy). Information/facts are presented to the respondent in the hope that accurate perceptions are created. If perceptions are formed unconsciously, and long lived once formed, these tasks are complicated - we all knew that.

8.3.2 If I have an ordering, am I aware of it?

Assuming I have a single and stable ordering, am I conscious of this ordering, and able to describe it, or are only parts of it revealed to me when I observe my choices? One could easily imagine having an ordering, but not having a conscious awareness of it. Sofie, my dog, prefers meat to milk, milk to bread, and meat to bread (yes, her preferences are transitive) but she is probably not consciously aware of this ordering. Maybe Sofie is not unique in my household; quoting Shakespeare, "I have much ado to know myself." Bertrand Russell agrees with Shakespeare

The discovery of our own motives can only be made by the same process by which we discover other people's, namely, the process of observing our actions and inferring the desire which could prompt them -
Bertrand Russell, *The Analysis of the Mind*

Harvard's [Project Implicit](#). Quoting from this web page, "It is well known that people don't always 'speak their minds', and it is suspected that people don't always 'know their minds'. Understanding such divergences is important to scientific psychology. The web site presents a method that demonstrates the conscious-unconscious divergences much more convincingly than has been possible with previous methods. This new method is called the Implicit Association Test, or IAT for short."

²⁸She says that she learned this from a friend who read it somewhere. This is her verbal explanation of how she believes this perception was created. That said, most of us have many friends who say many things, so what determines which few of these things become parts of our belief system? There is likely something in her unconscious that made her take to heart this particular piece of information/disinformation - maybe it is her observed proclivity for sugar. I could tell her in a choice-survey that there is no evidence artificial sweeteners cause cancer, but could I change her original perception?

Does it matter whether I am aware of my ordering? If the intent is to estimate an individual's ordering (all that preference estimation really is), if one is observing the individual's real-world choices, it does not matter whether the individual is, or is not, aware of his ordering. But, how does an individual answer a stated-preference question, does she prefer A or B , if she does not have conscious awareness of her ordering. The respondent either has to quickly extract the relevant part of her ordering from her subconscious, leave the question blank, or make something up.

The many economists who mistrust stated-preference data say that the responses do not reflect the respondent's ordering, explaining it in terms of lying or lack of introspection on the part of the respondent ("Ask a hypothetical question, get a hypothetical answer.").²⁹ But, maybe there is a deeper issue? Maybe I cannot extract my preferences from my unconscious no matter how hard I introspect? And, maybe my conscious mind will make something up so I appear to myself as a rational soul who makes rational decisions: research shows that we often rationalize our choice to maintain a positive, or at least consistent, self image ([21], [66] and [23]). Besides, I would be embarrassed to say, "I am clueless as to why I do what I do," so make something up and then believe it?³⁰

Maybe the only way to learn about your own preferences is to observe your own behavior or ask your friends what they think you like and dislike.³¹ Introspection might be a misguided tool for extracting preferences. Might I suggest a CVM study where the individual is asked not whether he or she would pay $\$x$ but whether their spouse or close friend would pay $\$x$.

²⁹See, for example, Diamond and Hausman's "Contingent valuation: Is some number better than no number?",[11]. Interestingly, most economists who dispare stated-preference data believe that we have a stable and unique ordering and that observed choices are manifestation of that ordering.

³⁰I have developed numerous choice-question surveys: "Do you prefer alternative A or alternative B ", both described in terms of the levels of some small number of attributes. After the choice questions, I often ask the importance the respondent placed on each attribute when making his or her choices. Are the answers to the importance questions indicative of the importance of the different attributes in determining which alternative was chosen, or something to respondent created to rationalize their choices? Maybe another person would be a better predictor of your choices,[69].

³¹Wilson, [68] suggests that one can learn about one's perceptions and preferences by reading the literature on psychological experiments: one learns how and why people behave the way they do, and then surmises that the findings probably apply to them as well. As an economist, should I suggest that you study estimated demand and utility parameters and then surmise those estimates are yours? This is not as goofy as it sounds. Maybe, how much others are willingness to pay for a flat-screen TV or an environmental cleanup is a good indication of what I would pay after accounting for age, gender, and income. In fact, such an inference is precisely what economists practice when we assume our sample estimates apply to the population. Maybe it is a better indication than what I would say I would pay.

Another way to proceed is to observe your own behavior and then assume you have the preferences that generated that behavior, [3]; you are a black box to yourself.

9 Does obtaining a higher-ranked state make the individual better off?

Often doubtful.

9.1 We often miswant

Things that people think will make them happy (new car, new wife, polar bears saved, etc.) don't make them happy for as long as think they will - sex with the new wife in the new car is little or no better, in the longrun, than sex with the old wife in the old car. That said, you, the new car, and the new husband will all be old in the longrun. And symmetrically, things one believes will make them unhappy for a long time (Broncos losing, not getting tenure, cancer) does not make one unhappy for as long as one thinks it will. The name for this is *miswanting* - as in, our wants have mistakes.

Miswanting leads to a ranking based on perceived longrun betterment, rather than actual longrun betterment - we systematically misjudge what will and won't make us better off. If people *miswant*, they rank incorrectly. So, obtaining the higher-ranked bundle does not always make one better off.

Thinking back to before I had tenure (all universities make mistakes), I thought that being denied tenure would ruin my life. I will never know, but surveys of people a year after their tenure decision was made show no significant difference in the average happiness levels between those that did and did not get tenure. The abstract to an article in the Journal of Personality and Social Psychology by Gilbert *et al.* [22] follows:

People are generally unaware of the operation of the system of cognitive mechanisms that ameliorate their experience of negative affect (the psychological immune system), and thus they tend to overestimate the duration of their affective reactions to negative events. This tendency was demonstrated in 6 studies in which participants overestimated the duration of their affective reactions to the dissolution of a romantic relationship, the failure to achieve tenure, an electoral defeat, negative personality feedback, an account of a child's death, and rejection by a prospective employer. Participants failed to distinguish between situations in which their psychological immune systems would and would not be likely to operate and mistakenly predicted overly and equally enduring affective reactions in both instances. The present experiments suggest that people neglect the psychological immune system when making affective forecasts.

I spent the better part of my youth working night and day to get tenure because I thought I would be devastated if I was denied tenure - maybe it was all a big mistake. One correctly predicts how one will feel immediately after they learn they did not get tenure, but incorrectly predicts how long this feeling will last. Most of us believe that if we get seriously sick our happiness level

will decrease, so try to avoid getting sick, but maybe our beliefs are incorrect. Quoting from a University of Michigan press release:

Study of dialysis patients yields surprising findings. Despite what able-bodied healthy people might think, people with severe illnesses and disabilities don't wallow in misery and self-pity all the time. In fact, a new study finds, such patients on the whole may be just as happy as those without major medical conditions. The finding adds to the growing body of evidence that ill and disabled people adapt to their condition and show a resilience of spirit that many healthy people can't imagine. It's published in the new issue of the Journal of Experimental Psychology, [56]

9.1.1 Do we miswant environmental improvements?

Many thought that the election of Obama would bring them great, and long-lasting, joy. Others expected great, and long-lasting, misery. Both groups were correct in the short run, but now that Obama has been in office for eight months, most are not as affected by the election as they had imagined - people are disappointed: it is not as good or bad as they had hoped. The implications of environmental policies typically take more than eight months to play out, often years or decades. When we answer whether we would be $\$x$ to reduce the rate of global warming, or to reintroduce wolves, do we correctly predict how much happier, in the long run, these events will make us. The research on miswanting would suggest we will over-predict the long run pleasure of a world with Obama and wolves, or a world with peace in the Middle East. That said, much of the research on miswanting has looked at private goods and bads, not public goods and bads, an exception is [37]. The miswanting literature suggests that miswanting applies equally to all long-term effects, but maybe we miswant more or less as a function of the type of good or bad.

9.1.2 So, why do we miswant (systematically over-predict the impact of good and bad stuff)?

Is there some advantage to miswanting? Timothy Wilson and others, [67], have proposed a number of reasons for mis-wanting.

1. *Focalism*: When something great happens, or the shit hits the fan, it captures all of our attention (both conscious and unconscious) - it is all we can think about - we focus - the happening has salience. When we think about how the happening will make us feel in the future we don't realize that this happening will no longer be the *be all and end all* (our center of attention), so overestimate the happening's long-term effects. This is good: we would get in big trouble if our attention was completely occupied by something that happened in the past. That we don't focus on things for long provides an evolutionary advantage: survival requires paying attention to the present. If the wolf is at the door and one is still happy and content because of something that happened last year, one

might not pay sufficient attention to the wolf. Or if Shirley is at the door and all you can think about is your time last year with Esther, you and Shirley will probably not have lots of kids.

2. We fail to adequately foresee how we will adjust. This argument should have great appeal to economists, particularly if the happening a bad. Economists teach that when a bad happens, people will make adjustments to minimize the impact of the injury. These adjustments can be actions (going to the doctor when sick) or changes in mental outlook (“the death brought the rest of the family closer together”). Now, we don’t take into account that we will later adjust.
3. There is the above-mentioned quasi-fixed level of happiness that we forget we have.
4. *Misconstrual* (the process of misconstruing): (a) We don’t know how we will react or adjust to new things because we can’t accurately predict how the new thing will play itself out – we have no experience with such things, so how it will play out might be very different from what one imagines. (b) Even if it is not a new thing, we still have trouble predicting how it will affect us. Our memories of past emotions, distress, and pain are often flawed. We forget how much childbirth really hurt or how we felt at the eighteen mile point of the marathon.
5. Overestimating how long the happiness will last increases the current level of happiness and contentment. Overestimating the duration of unhappiness, makes one feel they are better prepared for the bad’s persistence. Gilbert calls this causal factor *motivated distortion*: thinking the pain in your stomach is stomach cancer because preparing yourself for bad news makes you think, now, that you will better to handle the diagnosis when it comes.
6. *Spin*: Failure to realize how adept our minds are at spinning things to our emotional advantage. We spin/distort things to uncover the silver lining: when bad stuff happens we figure out a way to spin it so it does not seem as bad. Miswanting occurs, in part, because we fail to predict that this is what we will do. Gilbert calls this ability to spin the *psychological immune system*. We have great ability to distort to our own advantage, but don’t adequately account for this when we imagine the future. We spin bad things so they seem less bad.

9.1.3 Modeling miswanting

If miswanting is uniform and predictable, modeling choice in a world of miswanting is no different from modeling choice in a world with no miswanting: in both cases choices with long-term implications are made on the basis of perceptions about the longrun effects, but with miswanting the perceptions are

systematically biased. One can predict the individual's choices but the individual is making systematic mistakes: assuming the effects of the choice will affect him more than they will. Miswanting says we should pay more attention to the present.

It is important to distinguish between miswanting and discounting: discounting has to do with placing less weight today on benefits and costs that will occur in the future. Miswanting is systematically over estimating the future benefits and costs. Miswanting could be modeled using a discount factor, but a different discount factor than the one assumed to reflect time preference. Having an ordering that discounts future benefits and costs does not imply choice errors, miswanting does.

9.1.4 What are the implications of miswanting?

You should learn in school that you, and others, suffer from projection bias, and will miswant? Is miswanting something that used to provide an survival advantage, but now, like stress, something that is often counterproductive.³²

9.2 The empathy gap

Related to miswanting is what George Loewenstein calls the *empathy gap*. Imagine, as discussed above, that people have emotional-state-dependent preferences. That is, my ranking of bundles and how I "feel" about bundles (how much utility they produce) depends on my emotional/chemical state. The empathy gap is that we are very bad at predicting what we will do in another emotional state: we are unable to empathize with our other selves.

For example, many individuals cannot imagine having unprotected sex with a stranger, but then get sexually aroused, and they do what was previously unimaginable. When un-aroused they would predict that they would never do it, even if they have done it many times in the past, and will do it again in the future. The empathy gap is thought to play a large role in the spreading of AIDS among gay males. Educating gay males about the implications of unprotected sex – the education occurring when they are not aroused - has had little effect on their behaviors when aroused. Unprotected sex is not limited to gay men.

American soldiers are trained to only harm enemy combatants, but this training mostly occurs when the soldiers are not in a visceral state. Speculating, one can imagine soldiers making different choices when they are scared shitless and angry – it happens. Might, or does, the military train them in how to deal with civilians when they are in a visceral state?

If parents of college students understood the empathy gap, they would be even more concerned when their offspring goes to the beach for "Spring Break."

For an individual to make those longrun choices consistent with betterment, the individual must understand his inability to empathize with his other selves, and predict what emotional states he will be in at different point in

³²See Sapolsky,[57] , for a discussion of stress from both an evolutionary perspective and its negative effects on modern man.

the future - a tall task. If the individual, is unaware of his inability to emphasize, he will make choice errors. Even if aware of his ability to emphasize, he will likely make choice errors due to his inability to predict his future emotional states. Maybe welfare would increase, if we all learned, in school, about the empathy gap.

9.2.1 Modeling choice with longrun implications when there are empathy gaps

If the individual is unaware of his empathy gap, his choices at the moment, are modeled in the conventional manner, but using the ordering based on his current emotional state - to predict choice one has to observe or estimate the current emotional state. Modeling choice is more complicated if the individual is aware that he has an empathy gap.

If you modify this document and export it as “Standard LaTeX Article (hyperref).shl” in the `Shells\Articles\SW` directory, it will become your new Standard LaTeX Article (hyperref) shell.

References

- [1] Alesina, A., Glaeser, E. and Sacerdote, B., "Work and leisure in the U.S. and Europe: Why so different, Discussion paper 2067, Harvard Institute of Economic Research, April 2005.
- [2] Aquinas, T, The Summa Theologica, translated by Fathers of the English Dominican Province, Benziger Bros. Edition, 194. <http://www.ccel.org/a/aquinas/summa/FS.html>
- [3] Bem, D.J., "Self-perception theory." In L. Berkowitz, ed.,. *Advances in experimental social psychology*. Vol. 6 pp. 1-62, New York, Academic Press. 1972.
- [4] Bentham, J., Introduction to the Principles of Morals and Legislation, first published 1789, Chapter 17; this edition Burns, J.H. and Hart H.L.A. (eds.) The Collected Works of Jeremy Bentham, Oxford University Press, 1996, available at Google Books.
- [5] Binmore, K., *Natural Justice*, New York, Oxford University Press, 2005.
- [6] Britt, R.R., "When Money Does Buy Happiness." *Live Science* 06 Apr. 2005. accessed 20 Apr. 2007 at http://www.livescience.com/othernews/050406_money_happy.html
- [7] Brunstein, J.C., Schultheiss O.C. and Grassman, R., "Personal goals and emotional wellbeing: the moderating role of motive dispositions," *Journal of Personality and Social Psychology Review*, I, 3-25, 1998.

- [8] Dasgupta, P., *Human Well-Being and the Natural Environment*, Oxford, Oxford University Press, 2001.
- [9] Dawkins, R., *The Selfish Gene*, New York, New York: Oxford University Press, 1976.
- [10] Damasio, A.R., *Descartes' error: emotion, reason and the human brain*, New York, Putnman, 1994.
- [11] Diamond, P.A. and Hausman, J.A., "Contingent valuation: Is some number better than no number?" *Journal of Economic Perspectives* 8(4):45-64, 1994.
- [12] Diener, "Subjective Well-being: The science of happiness and a proposal for a national index," *American Psychologist*, 55: 34-43, 2000.
- [13] Dutton, D.G. and Aron, A.P., "Some evidence for heightened sexual attraction under conditions of high anxiety," *Journal of Personality and Social Psychology*, 30: 510-17, 1974.
- [14] Easterlin, R. (1974). "Does economic growth improve the human lot ? Some empirical evidence." In *Nations and Households in Economic Growth : Essays in Honour of Moses Abramowitz* (ed. P. A. David and M. W. Reder). New York and London: Academic Press, 1974.
- [15] Easterlin, R. (1995). "Will raising the incomes of all increase the happiness of all ?" *Journal of Economic Behavior and Organization*, vol. 27, pp. 35-48, 1995.
- [16] Edge The Third Culture, Darwin at LSE: The Selfish Gene: Thirty Years On, March 16, 2006, http://www.edge.org/3rd_culture/selfish06/selfish06_index.html
- [17] Flanagan, O., *Consciousness reconsidered*, Cambridge Massachusetts, MIT Press, 1992.
- [18] Elster, J., "Emotions and economic theory," *Journal of Economic Literature*, 36(1), 47-74, 1998.
- [19] Frank, R.H., "The Frame of Reference as a Public Good," *The Economic Journal*, 1997.
- [20] Fujita, F. and Diener, E., "Life Satisfaction Set Point: Stability and Change." *Journal of Personality and Social Psychology*, Vol. 88, No. 1, 158-164, 2004.
- [21] Gazzaniga, M.S. and LeDoux, J.E., *The integrated mind*, New York, Plenum. 1978.

- [22] Gilbert, D.T., Pinel, E.C., Wilson, T.D. and Wheatley, T.P., "Immune Neglect: A Source of Durability Bias in Affective Forecasting," *Journal of Personality and Social Psychology*, Vol. 75, No. 3, 617-38, 1998.
- [23] Gilbert, D.T. and Wilson, T.D., "Miswanting," In J. Forgas, ed., *Thinking and feeling: the role of affect in social cognition*, Cambridge Massachusetts, Cambridge University Press. 2000.
- [24] Grafen, A. and Ridley, M., *Richard Dawkins: How A Scientist Changed the Way We Think*, New York, New York: Oxford University Press, 2006.
- [25] Graham, K., "Baseline Happiness and Economic Policy," paper for Ethics, Economics, and The Environment (Econ. 4999), University of Colorado, Boulder, Spring 2005.
- [26] Hausman, D.M. and McPherson, M.S. "Taking Ethics Seriously: Economics and Contemporary Moral Philosophy," *Journal of Economic Literature*, Vol. 31, No. 2 (Jun., 1993), pp. 671-731.
- [27] Herper, M., "Money Won't Buy You Happiness." *Forbes* 21 Sept. 2004. accessed 20 Apr. 2007 http://www.forbes.com/work/2004/09/21/cx_mh_0921happiness.html
- [28] Haidt, J., "The emotional dog and its rational tail: A social intuitionist approach to moral judgment," *Psychological Review*, 108, 814-834, 2001.
- [29] International Society for Complexity, Information and Design, *ISCID Encyclopedia of Science and Philosophy*, <http://www.iscid.org/encyclopedia/Dopamine>, April 7, 2007
- [30] Kreeft, P., *Summa of the Summa*. Ignatius Press, 1990.
- [31] Krugman, P., "French Family Values," *New York Times*, July 29, 2005.
- [32] Ledoux, J.E., *The emotional brain: the Mysterious underpinnings of emotional life*, New York, New York, Simon and Shuster, 1996.
- [33] LifeScienceStaff, "Health: How Do You Feel? Probably a Lot Like Your parents," *LifeScience*, accessed September 13, 2009 at http://www.livescience.com/health/051115_feel_genes.html
- [34] Loewenstein, G., "Out of Control: Visceral Influences on Behavior," *Organizational Behavior and Human Decision Process*, Vol. 65, No. 3, March, pp. 272-292, 1996.
- [35] Loewenstein, G., "Because it is there: the challenge of mountaineering ...for utility theory," *Kyklos* Vol. 52, No. 3, 315-44, 1999.
- [36] Loewenstein, G., "Emotions in economic theory and economic behavior," *The American Economic Review*, Vol. 90 (2), Papers and Proceeding of the One Hundred Twelfth Annual Meeting of the American Economic Association, 426-432, 2000.

- [37] Loewenstein, G. and Frederick, S., "Predicting Reactions to Environmental Change. In M. Bazerman, D. Messick, A. Tenbrunsel & K. Wade-Benzoni (Eds.), *Psychological Perspectives on the Environment*, Russell Sage Foundation Press, 1997.
- [38] Loewenstein, G.; Nagin, D. and Paternoster, R., "The Effect of Sexual Arousal on Predictions of Sexual Forcefulness." *Journal of Research in Crime and Delinquency*, No. 34(4), pp. 443-73, 1997.
- [39] Loewenstein, G., Prelec, D. and Shatto (1996). "Hot/cold intrapersonal empathy gaps and the prediction of curiosity." Working Paper, Carnegie Mellon University. 1996.
- [40] Loewenstein, G. and Schkade, D., "Wouldn't It Be Nice? Predicting Future Feelings," in Daniel Kahneman, Edward Diener, and Norbert Schwarz, eds., *Well-being: The foundations of hedonic psychology*. New York: Russell Sage Foundation Press, 1999, pp.85-105.
- [41] Luria, A.K., "Towards the problem of the historical nature of psychological processes," *International Journal of Psychology*, Vol. 6, No. 4, 1971, 259-72.
- [42] Lykken, D. and Tellegen, A.. "Happiness is a Stochastic Phenomenon." *Psychological Science*, 1996.
- [43] Lykken, D., *The Nature and Nurture of Joy and Contentment*, New York, St. Martin's Press, 2000.
- [44] Marcus, G., *Kluge: the haphazard evolution of the human mind*, New York, New York, Houghton Mifflin Harcourt Publishing Company, 2008.
- [45] Mill, J.S., *Utilitarianism*, third edition, London, Longmans, Green, Reader, and Dyer, 1867.
- [46] McClelland, D.C., Koestner, R. and Weinberger, J., "How do self-attributed and implicit motives differ?" In C.P. Smith, ed., *Motivation and personality handbook of thematic context analysis*, Cambridge, Cambridge University Press, 1992.
- [47] Mill, J.S., *On Liberty*, first published 1859. Here from eBooks@Adelaide 2009 at http://ebooks.adelaide.edu.au/m/mill/john_stuart/m645o/ with the text from Harvard Classics, Vol. 25, P.F. Collier and Son, 1909
- [48] Morey, E.R., "An Introduction to Checking, Testing and Imposing Curvature Properties: The True Function and the Estimated Function," *Canadian Journal of Economics*, Vol. 19, No. 2, May 1986, 207-235.
- [49] Miriam A. Mosing, M.A., Brendan, A.E., Zietsch, P., Sri, A.E., Shekar, N. Wright M.J. and Martin, N.G., "Genetic and Environmental Influences on Optimism and its Relationship to Mental and Self-Rated Health: A Study of Aging Twins," *Behavior Genetics*, 2009.

- [50] Nader K, Schafe G.E. and LeDoux J.E., "Fear memories require protein synthesis in the amygdala for reconsolidation after retrieval," *Nature* 406:722-726, 2000.
- [51] Oswald, A.J., "Happiness and Economic Performance," *The Economic Journal*, 107(Nov.), pp. 1815-31, 1997.
- [52] Panksepp J., *Affective Neuroscience: The Foundations of Human and Animal Emotions* (Series in Affective Science). Oxford University Press, New York, New York, 1998.
- [53] Philosophy Bites (a podcast): Brad Hooker on Consequentialism, <http://www.colorado.edu/economics/morey/4999Ethics/ethicsandmoralphilosphy/Brad%20Hooker%20on>
- [54] Pinker, S., "The Moral Instinct," *The New York Times*, January 13, 2008.
- [55] Rawls, J., *A Theory of Justice*, revised edition, Harvard University Press, 1999.
- [56] Riis, J., Loewenstein, G., Baron, J. and Jepson, C., "Ignorance of Hedonic Adaptation to Hemodialysis: A Study Using Ecological Momentary Assessment," *Journal of Experimental Psychology-General*, Vol. 134, No. 1, 3-9, 2005.
- [57] Sapolsky, R.M., *Why Zebras Don't Get Ulcers*, New York, New York, Henry Holt and Company LLC, 1994.
- [58] Shelley, M., *Frankenstein, or the Modern Prometheus*, London 1818.
- [59] Singer, P., *Animal Liberation: A New Ethics for our Treatment of Animals*, New York, Random House, 1975.
- [60] Singer, P., *Practical Ethics*, second edition, Cambridge, Cambridge University Press, 1993.
- [61] Sen, A., *On Ethics and Economics*, Blackwell Publishing, 1987.
- [62] Stanford Encyclopedia of Philosophy, Aristotle's Ethics, first published Tue. May 1, 2001; substantive revision Tue. Jul. 17, 2007 <http://plato.stanford.edu/entries/aristotle-ethics/>
- [63] Stanford Encyclopedia of Philosophy, John Rawls, first published Tue. March 25, 2008 <http://plato.stanford.edu/entries/rawls/>
- [64] Tellegen, A., Lykken, D. T., Bouchard, T. J., Wilcox, K. J., Segal, N. L., and Rich, S., "Personality similarity in twins reared apart and together," *Journal of Personality and Social Psychology*, 54, 1031-1039, 1988.
- [65] Tversky, A., and Kahneman, D., "Loss aversion in riskless choice: a reference-dependent model," *Quarterly Journal of Economics*, Vol. 106. 1039-61. 1991.

- [66] Wegner D.M. and Wheatley, T. "Apparent Mental Causation: Sources of the Experience of Will." *American Psychologist*, 54(7), pp. 480-92. 1999.
- [67] Wilson, T.D., Wheatly, T.P., Meyers, J.M., Gilbert, D.T., and Axsom, "Focalism: A source of durability bias in affective forecasting," *Journal of Personality and Social Psychology*, Vol. 78, 821-36, 2000.
- [68] Wilson, T.D., *Strangers to ourselves: discovering the adaptive unconscious*, Cambridge Massachusetts, The Belknap Press of Harvard University Press, 2002.
- [69] Wilson, T.D. and Stone, J.I., "Limitations of self-knowledge: more on telling more than we know," In .Shaver, ed., *Review of personality and social psychology*, Vol. 6, Beverly Hills, Sage, 1985.

A Afterword

That's all doc.