Here is an important question: how do we figure out how good something is, when that thing has no obvious "price tag" or other marker of goodness? If decision A gives me a higher chance of making good friends than decision B, but decision B gives me a better chance of feeling self actualized, how can I rationally choose between A and B without some means of comparing the good of friends versus the good of self actualization? Choices become even more complicated when neither outcome is certain; Duke Fightmaster's decision to pursue his dreams had some chance of making him feel good about himself, some chance of giving him a dream job, and some chance of ruining his wife's life. Evaluating this choice might be easy if it would definitely ruin his wife's life and definitely make him feel good about himself, but how do we evaluate it when there is just some probability of each? We would need to know just how good pursuing your dreams is compared to just how bad ruining your wife's life is.

How do we figure out how valuable anything ever is? How valuable is a candy bar to you? Well, if you've ever bought a candy bar, then you know it's worth at least the amount you paid for it. So, this gives us an idea: to figure out valuable something is, you see what you'd be willing to trade it for; the thing will be at least as valuable as the thing you'd trade it for. If you know how valuable the second thing is, then you now know something about how valuable the first is.

So, to figure out the utility of any X, we say "How much Y would we trade X for?" where Y is something the utility of which we know. To do this, we start by asking, "Would I trade X for this much Y?" If the answer is no, then increase the amount of Y until you get a "Yes" answer. If the answer is "Yes," then decrease the amount of "Yes" until you get a "No" answer. The place where you switch from "Yes" to "No" tells you how much Y is worth one X.

So, for example, let's say I want to know the utility of a sandwich from my favorite sandwich place (Bay Cities Deli in Santa Monica, by the way). I'll assume that I know the utility of money. I say, "Would I trade $8 for a sandwich?" Yes, I would. "Would I trade $10 for a sandwich?" Yes I would, although of course I'd rather spend less if I could. Would I trade $12 for a sandwich? Yes, but I wouldn't be quite as happy. I wouldn't trade $15 for a sandwich, though, and I'm not certain if I'd trade $13 or $14 for a sandwich, either. So I know that a sandwich from Bay Cities Deli is worth $13-14 to me.

Note: I can't simply look at the lowest amount I'd be willing to pay for this sandwich. Obviously I'd be willing to take an incredible sandwich for free, but that doesn't mean that the sandwich is worthless. Rather, we're looking for the *most* I'd pay for the sandwich. Conversely, if I already had a sandwich, we'd ask, "What is the least someone would have to pay me to get the sandwich from me."

To put this mathematically, what we are looking for is a case where the expected utility of one decision is equal to the expected utility of another decision. If we know the expected utility of either decision, then we know the expected utility of the other. Once we know the expected utility of the decisions, we can calculate the utility of the outcomes

(given knowledge of the probabilities involved). If expected utility of X = expected utility of Y, then you know that (probability of X * utility of X = probability of Y * utility of Y). You plug in for everything you know, and solve for the utility you are interested in.

Now, that's not that hard, but there is one more thing to think about. Sometimes you want to know the utility of a good thing – a tasty sandwich – and sometimes you want to know the utility of a bad thing – making your spouse miserable. It doesn't make any sense to ask "What would I pay to make my spouse miserable?" so we have to adjust our methodology when dealing with bad things. When trying to figure out the utility of a bad thing, you ask "What would I give up to avoid this bad thing?" Sometimes, though, you already have the bad thing; in that case, you ask "What would I give up to get rid of this bad thing?" [For good things, you ask "What would I give up to get this good thing?" or "What would I have to be given to give up this good thing (if it's something you already have)?"]

To recap:

- Figure out what it is whose utility you are trying to calculate. I'll call it U for "unknown."
- Pick some thing of known value that you will compare U to. I'll call it K for "known."
- If U is a good thing, ask "How much K would I give up to get U?" or "How much K would I have to be given to willingly give up U?" For the first question, find the *largest* amount of K that you'd pay for U. For the second question, find the *smallest* amount of K that you'd have to be paid for U.
- If U is a bad thing, ask "How much K would I give up to avoid U?" or "How much K would I have to be given to willingly have U?" For the first question, find the *largest* amount of K you'd pay to avoid U. For the second question, find the *smallest* amount of K you'd need to be paid to get U.
- Use the answers from above to calculate the value of U, given the value of K and the relevant probabilities.