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To : Special topics in Constitutional Law Class
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Re : Maximization of individual utilities : utility and value

(D The branch of decision theory concerned with measurement and

representation of preferences. Utility theories focus on accounts of preferences in *'rational decision making',* where an individual's preferences cohere with associated beliefs and actions. Utility refers to the scale on which preference is measured.

(2) Identification of measurement as an issue is usually credited to Bernoulli, who exhibited a prospect (probability distribution over outcomes) that had

infinite expected monetary value, but apparently not infinite utility. Bernoulli resolved the "St. Petersburg paradox" by suggesting that utility be logarithmic in monetary amounts, which in this case would yield a finite expected utility. (3) That utility could apply to all sorts of outcomes, not merely monetary rewards, was first argued forcefully by Bentham, who proposed a system for tabulating "Pleasures" and "Pains" (positive and negative utility factors), which he called the "hedonic calculus". @ Although modern economists are quite reluctant to aggregate preferences across individuals. the concept of individual utility

plays a foundational role 'in the standard neoclassical theory. Recognition of this role was the result of the so-called "marginal utility revolution" of the 1870s, in which Menger, jevons, Edgeworth, and other leading "marginalists" demonstrated that values/prices could be found on utility.

1. Total Utility, Marginal Utility and

Paradox of Value

1) "Total Utility" means the value of whose unit of some conunodity to the consumer. It usually increases as the consumption quantity of the commodity increase but it begins dinu'she when it veaches the saturation point.
2) "Marginal Utility" means the value of an additional unit of some conunodity to the consumer. It decides the price of the commodity.

MU **of X** = MU. Increment **of** Total **Utili@,**

Increment of To@ Consumption

3) Paradox of Value

The classical economists argued that utility could not explain the relative price of fine jade and bread, because the latter was for many consumers essential to life, and hence its utility must surely be greater than that of jade. Yet the price of bread is far lower than that of jade. The theory of marginal utility supplied the key to the paradox and

provided the basis ,or today's analysis of demand. Marginal utility was defined as the value to the consumer of an additional unit of some conunodity.
Paradox of value is antinomn, between the trade value and utility value.(trade value

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means the price(cost) that you have to pay first. utility value means total value) Ex) Water(-Bread) and Diamond(-Jade)

marginal utility

mu@---

B

MUD

Water

0 QD Qwquantity of consumpfion

MUW < MUD

=*Diamond's Marginal Utility is high because a piece of fine Diamond is scarce. Therefore, consumers are willing to pay

muw = **OAOQWW** / Qw **MUD=** **DBOQOD** / Qo

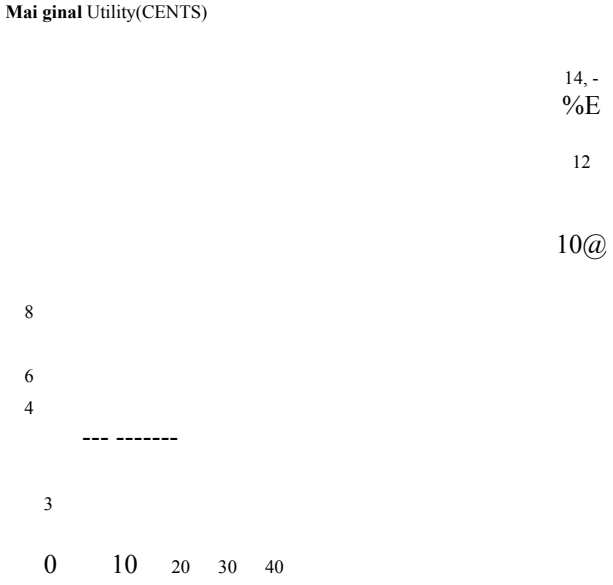
comparatively high price for it.

The Consumer will be motivated to adjust his purchases so that the price of each good will be approximately equal to its marginal utility(that is, to the amount of money he is willing to pay for an additional unit). If the price of an item is P dollars, for example, and the consumer is considering buying, say, 10 units, at which point the marginal utility of the good to him is M(which is greater than P), the consumer will be better off if he purchases 11 rather than 10 units, since the additional unit costs him P dollars. H e will keep revising his purchase plans upward until he reaches the point where the marginal utility of the item falls to P

dollars. In sum, the consumer's

self-interest will lead him(without conscious calculation)to purchase an amount such that the marginal utility is as close as possible to market price. So long as the consumer selects a bundle of purchases that gives him the most benefit(pleasure, utility) for his money, he must end up with quantities such that the marginal utility of each commodity in the bundle is approximately equal to its price. The relationship between price and marginal utility is important not because it explains issues like the water-diamond paradox but because it enables one to analyze the relationship between prices and quantities demanded.

The conclusion that at any price the consumer will purchase the quantity at which marginal utility is equal to price makes it possible to draw a demand curve showing-to a reasonable degree of approximation-how the amount demanded will vary with price. A curve based on the previous example of bread consumption is given in Figure.



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This shows that if the family gets 10 sfices per day the marginal utility of bread will be nine cents(point A). One may reverse the question and ask how much the family would purchase at any particular price, say three cents. The graph indicates that at this price the quantity would be 30 slices, because only at that quantity is marginal utility equal to the three-cent price(point B). Thus the curve in Figure, to a reasonable degree of approximation, may be able to do double duty: it may serve as a marginal utility curve relating marginal utility to quantity demanded to price.

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As originally conceived, utility was taken to be a subjective measure of strength of feeling. It was not long before the usefulness of this concept was questioned. It was criticized for its subjectivity and the difficulty(if not impossibility) of quantifying it. An alternative line of analysis developed that was able to accomplish most of the same purposes but without as many assumptions. The idea was that to analyze consumer choice between, say, two bundles of commodities. A and B, given their costs, one need know only that one is preferred to another. This may at first seem a trivial observation, but it is not as simple as it sounds.

0 5 7 10 15 20

units of commodin- X

In the following discussion, it is assumed for simplicity that there are only two commodities in the world. Figure **is** a graph in which the axes measure the quantities of two commodities, X and Y, Thus, point A represents a bundle composed of seven units of commodity X and five units of commodity Y. The assumption is made that the consumer prefers to own more of either or both commodities. That means he must prefer bundle C to bundle A, because C lies directly to the right of A and hence contains more X and no less of Y. Similarly, B must be prefer-red to A. But one cannot say, in general, whether A is preferred to D or vice -,-ersa, since one offers more of X and the other more of Y.

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COT=odity Y

commodity X

The consumer may in fact not care whether he receives A or D-that is, he may be indifferent. Assuming that there is some continuity in his preferences, there will be a locus connecting A and D, any point on which(E or A or D) represents bundles of commodities of equal interest to this consumer. This locus(I-l' in Figure) is called an indifference curve. It represents the consumer's subjective trade off between the two commodities - how much more of one he will have to get to make up for the loss of a given amount of another. That is, one may treat the choice between bundle D and bundle E as involving the comparison of the gain of quantity FD of X with the loss of FE of Y. If the consumer is indifferent between D and E, the gain and loss just offset one another; hence, they indicate the proportion in which he is willing to exchange the two commodities. In mathematical terms, FE divided by FD represents the average slope of the indifference curve over are ED; it is called the marginal rate of substitution between X and Y.

Figure also contains other indifferent curves, some representing combinations

preferred to A(curves lying above and to the right of A) and some representing combinations to which A is preferred. These are ae contour lines on a map, each such line being a locus of combinations that the consumer considers equally desirable. Conceptually, through evert point in the diagram there is an indifference curve, is called an indifference map. This map obviousl,,, does no more than rank the available possibilities; it indicates whether one point is preferred to another but not by how much it is prefer-red.

It is easy to show that at any point such as E the slope of the indifference curve, roughly FE divided by ED, equals the ratio of the marginal utility of X to the marginal utility of Y for the corresponding quantities. For in moving from E to D the consumer gives up FE of Y, a loss valued, by definition, at approximately FE multiplied by the marginal utility of X. Relative marginal utilities can be measured in this way because their ratio does not measure subjective quantities - rather, it represents a rate of exchange of two commodities. The how much of the conunodity used as money the consumer is willing to give for more of the conunodity X but not what psvchic pleasure the consumer gains.

UTI]LITY HEROY

PSYCHOLOGICAL AND PHILISOPHICAL PERSPECTIVES

[DEFINITION OF UTI]LIT@: Utility is the principle of greatest happiness. Man is affected by "two sovereign masters" - pleasure and pain. Maximizing pleasure and minimizing pain are the goals towards which ethics guides us. "Thus utility is that which promotes the greatest pleasure and the least amount of pain for the greatest number of people possible"

@ALCULATING UTILIT : Philosopher Jeremy Bentham (1748-1832), developed a method for evaluating utility called hedonic calculus. This system is a kind of moral mathematical calculation of pleasures and pains and by using it is possible to tell which was a right or wrong action.

HOW TO CALULATE: 1. Identify courses of action

2. Determine all forseeable benefits and harms that would results\ from each course of action for everyone affected by that action

3. Choose the course of action that provides the greatest benefits after the costs have been taken into account.

[UTILITARIAN APPROACH TO ETHICSI: Bentham claimed that by using hedonic calculus one could ascertain what was morally right and justifiable. The morally right action is thus, that which promotes the greatest utility. So as long as a course of action produced maximum benefits for everyone, utilitarianism does not care weather these benefits are produced by lies, manipulation or coercion. In short, Bentham called the concept of 'natural rights' and property rights, "nonsense on stilts", because rights are only 'moral' if they enable man to achieve the greatest utility.

@ROBLEMS WITH CALCULATING UTELIT@:

1. It is impossible to measure the values or costs of some items i.e. art or life

2. How can we compare the costs of items such as money with the value of time or human dignity?

3. It is doubtful if we can ever predict with absolute certainty, what the outcome or value of our actions will be.

4. Utility fails to take the principle of justice into consideration.

OISPROVING UTILITY THERO@: Psychologists Tversky and Kahneman show that there are two major flaws in making decisions using the utility theroy

1. Their studies demonstrate that decision making depends on the framing of the problem.

   In the instance that a frame refers to the 'decision maker's' perception of the acts, outcomes or contingencies associated with a decision." Their work indicates that on the whole people try to avoid taking risks when the problem is stated in tert-ns of gains. However when tile problem is stated in terms of loss, most people are more likely to take risks.

2. When seeking to gain, people avoid risk. However they usually choose risks when faced with sure losses.

Thus we cannot assume decisions based on judgments (as in utility theory) are correct, "because judgements themselves may be flawed." (Kahnemen)