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Institutional Utilitarianism

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Institutional Utilitarianism

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1. Introduction and Overview
Utilitarianism is a philosophical position in ethical theory which holds that moral judgments should be derived from a principle of joint utility maximization. Joint utility is the sum (or the average) of the utilities of all individuals in society or mankind or some other universe of moral subjects.

When the idea of utilitarianism was introduced by Bentham, no attention was payed to the scale on which utility is supposed to be measured. Obviously, adding up utilities does not make sense unless cardinal measurement is possible.

With the rise of Paretian economics more and more economists began to look at utility as an ordinal concept. Moreover, utility was thought of as purely subjective and a comparison of utility levels of different persons was held to be impossible. Since utilitarianism crucially depends on cardinality and interpersonal comparability it appeared to be an outmoded theory of merely historical interest.

The idea of cardinal utility was reintroduced into economics by von Neumann and Morgenstern who axiomatized expected utility maximization in their famous "Theory of Games and Economic Behavior" (1944). Since then it is well understood that rational behavior in the presence of risk must be based on a concept of utility with measurability on an interval scale. The unit of measurement and the zero point are arbitrary, but this exhausts the degrees of freedom of numerical representation.

The reestablishment of cardinal utility removed one objection to utilitarianism but the situation remained essentially unchanged as long as the impossibility of interpersonal comparisons was considered to be self-evident by the vast majority
of economic theorists. Utilitarianism continued to be looked upon as an untenable position.

In 1955 John Harsanyi published a relatively short paper on "Cardinal Welfare, Individualistic Ethics and Interpersonal Comparisons of Utility" whose fundamental significance was at first hardly noticed but became more and more apparent in the following decades. Harsanyi challenged the dogma of the impossibility of interpersonal utility comparisons by a convincing philosophical argument and thereby reestablished utilitarianism as a respectable ethical position. Modern textbooks on social choice do not any more reject interpersonal utility comparisons as impossible (Sen 1970). Such comparisons are recognized as the basis of ethical judgment, not only by utilitarianism, but also by competing ethical positions like Rawlsian egalitarianism (Rawls 1972).

Ethical theories based on utility judgments may be called "economic" since they fit into the framework of modern economic theory. Utilitarianism and Rawlsian egalitarianism are representatives of the economic type of ethical theories. Other types of ethical theories emphasize fundamental values like "freedom" or "human dignity" as goals to be achieved independently of whether they are valued by individuals or not. Such ideas have not yet been worked out in a way which permits them to be used as a tool of economic analysis. Some ethical theorists are more concerned with logical structures of ethical reasoning than with the content of moral judgement. They look at systems of statements about actions which "ought to be taken" are "forbidden" or "permitted" and their logical relationships (Hare 1971, von Wright 1963). This type of logicist ethics has little to offer to economic theory, even if it may be of interest for other reasons. Of course, these short remarks cannot do full justice to a vast body of literature on non-economic ethical theories but they may serve to indicate the basis of the author's preference for theories based on interpersonal utility comparisons.
Rawlsian egalitarianism maintains that the minimal utility obtained by any individual should be as high as possible. One can speak of an ethical maxmin-criterion. However, this view is incompatible with the idea that society as a whole should exhibit the same kind of rationality as a rational individual according to Bayesian decision theory (Harsanyi 1975). The author thinks that this argument decides the issue of utilitarianism versus Rawlsian egalitarianism in favor of utilitarianism. However, this view is by no means shared by all social choice theorists. It must be expected that the debate between both schools of thought will continue for some time.

Utilitarianism is maybe the most elaborate consistent view of ethical theory. Nevertheless, it has its internal problems. Different versions of utilitarian ethics must be distinguished. It is necessary to contrast act utilitarianism with rule utilitarianism. Act utilitarianism maintains that every single action should be judged in terms of the maximization of the sum of all utilities whereas rule utilitarianism rejects judgements on isolated actions in favor of the evaluation of generalized rules of moral behavior.

In this paper it will be argued that another distinction between personal and institutional utilitarianism needs also to be made. The term "personal" is meant to characterize ethical imperatives directly applied to individual behavior in everyday life. Personal utilitarianism is an appeal to every human being to act ethically wherever he or she has a choice to make.

Institutional utilitarianism is based on a pessimistic attitude towards the effectiveness of moral appeals. It is based on the idea that the institutions of society should be such that a maximum of total utility is achieved under the condition that every individual mainly follows his self-interest. Moral appeals, even if they could have some limited effectiveness, should not be necessary for a satisfactory functioning of society.
After this broad overview it may be useful to cover some of the issues which have been raised above in somewhat more detail, even if it cannot be the aim of a relatively short paper to offer a thorough discussion of utilitarianism and its problems.

2. Harsanyi's argument for interpersonal comparability

Suppose that there are \( n \) individuals \( i = 1, \ldots, n \) each of whom has a von Neumann-Morgenstern utility function \( u_i \) defined on all possible futures of the world. We can think of a possible future of the world as described by a huge set of parameters \( x_1, \ldots, x_m \). Individual \( i \)'s utility has the form:

\[
 u_i = f_i(x_1, \ldots, x_m)
\]

Preferences are determined by natural law. If the genetic structure and the past history of individual \( i \) are given, complete knowledge of natural law would permit the prediction of \( f_i \). Suppose that hereditary and environmental influences on \( i \) are described by a set of parameters \( p_{i1}, \ldots, p_{ik} \). Then player \( i \)'s utility is a function of \( x_1, \ldots, x_m \) and \( p_{i1}, \ldots, p_{ik} \):

\[
 u_i = f(x_1, \ldots, x_m; p_{i1}, \ldots, p_{ik})
\]

Note that the function \( f \) is the same for every individual. \( f \) will be called the universal utility function.

The mere fact that individual utilities can be expressed by a universal utility function does not yet establish interpersonal comparability. One needs an additional assumption which shall be called the "principle of hypothetical preference judgements". This principle assumes that an individual can make meaningful preference comparisons involving different values of the parameters \( p_{ij} \) and that these judgements are correctly expressed by \( f \).

One of the parameters \( p_{ij} \) may be the size of a person. Somebody may say: I would be happy to lose 20% of my income if
in exchange I could be 10 centimeters taller. This is a meaningful preference judgement, even if the person is fully grown. In fact, some such comparisons may be much easier than other comparisons which are not merely hypothetical. Since accidents do happen one must develop an estimate of the loss of utility involved in blindness in order to evaluate some possible futures.

Examples of this kind show that interpersonal comparisons are not really different from intrapersonal comparisons. An estimate of my utility loss in case of blindness is very similar to an interpersonal comparison with a blind twin, who is identical with me in every other respect.

The principle of hypothetical preference judgements contains a consistency assumption: preferences between different hypothetical positions do not depend on the actual position. Ceteris paribus, the utility loss involved in blindness should not depend on whether the person is not blind and considers hypothetical blindness or whether the situation is the other way around. It is not unreasonable to think of this assumption as satisfied for fully rational individuals.

3. Act utilitarianism and rule utilitarianism

Harsanyi has shown that contrary to earlier philosophical opinions there is an important difference between act utilitarianism and rule utilitarianism (Harsanyi 1977). In order to illustrate the fact that both views may have different consequences it is useful to look at an example. Suppose that there are 1000 individuals who have to vote on a measure of great common benefit. At least 501 of these must take part in the vote in order to secure the desired outcome. Taking part in the vote involves a utility loss which is small compared to the common benefit but not negligible. Consider a rule which commands every one of the 1000 individuals to take part in the vote. If one of the individuals, say individual 1, is an act utilitarian who
expects the others to follow the rule, he will not vote, since thereby total utility is increased.

Obviously, if all 1000 individuals are act utilitarians they cannot follow the rule that everyone should vote. On the other hand, a society of rule utilitarians can adopt this rule if it is the best one available.

The example assumes that the 1000 individuals cannot communicate in order to coordinate their behavior; it also neglects the possibility of mixed strategies.

An act utilitarian looks at the expected behavior of all other individuals and maximizes total utility taking this behavior as fixed. A society of rule utilitarians looks at the situation as a problem of joint optimization where the behavior is varied for all individuals simultaneously.

4. Personal utilitarianism and institutional utilitarianism

As has been explained above institutional utilitarianism takes a pessimistic view towards the effectiveness of moral appeals. Probably, personal utilitarianism would advise us, who are lucky enough to live in countries with high income per head, to sacrifice a large part of our salaries to the hungry people in underdeveloped parts of the world. We cannot really expect that moral rules of this kind will be followed. Within very narrow limits people are willing to sacrifice some of their own utility for the common good. Therefore, moral appeals, e.g. an appeal to save water in a time of drought may work if it does not cost too much to obey. In exceptional situations like natural catastrophes the willingness may increase beyond the usual level but even then we cannot expect too much of the average person.

Institutional utilitarianism takes the behavior of people as given and tries to find those institutions which produce the best result under this restriction. The description of human
behavior on which the optimization is based should neither neglect nor overestimate the limited effectiveness of moral appeals.

In fact, institutional utilitarianism could not hope to produce practical results if people would be exclusively motivated by self-interest. If those who decide on the change of social institutions cannot be influenced by moral considerations, then any attempt of improvement is bound to fail.

If moral considerations have some weight they will strengthen the position of those whose self-interest points in the right direction. Moreover, desirable changes like the abolition of slavery may be brought about by many morally motivated people each of whom is willing to sacrifice a little. Of course, those who derive their income from slavery must be expected to resist the change and moral interests alone may not be powerful enough to achieve the purpose.

5. The universe of morally relevant individuals

It is a serious problem of utilitarianism to describe the set of all individuals whose utilities should enter the total utility to be maximized. We call this set the universe of morally relevant individuals. Most theorists would agree that all human beings living now belong to this universe. But what about unborn children and members of future generations? Maybe one has to include everybody who may live in the future but should we weigh everybody equally or should we apply a time discount?

In connection with measures which influence the size of the population, it also becomes important to decide whether one really wants to maximize the sum of all utilities or whether it is maybe preferable to maximize average utility.

Institutional utilitarianism should be mainly concerned with the long run consequences of social institutions. In principle, those institutions are best which produce the highest total
utility in the long run. However, costs of transition cannot be completely ignored. An adequate solution of this problem seems to require some kind of time discount.

6. The purification problem

It has been pointed out by many philosophers, e.g. by Leonhard Nelson whose ethical view is similar to utilitarianism that a distinction must be made between justified and unjustified interests (Nelson 1972). It cannot be morally right to hang an innocent man in order to satisfy the desires of many sadistic onlookers even if their total utility gain outweighs the utility loss of the hanged one. Not only interests in the suffering of others but to a certain extent also interests in the well-being of others have to be excluded from consideration. Somebody who has hundred aunts who love him dearly should not be unduly preferred over others merely because of this fact.

In order to overcome these difficulties one may propose to "purify" the individual utility functions of preferences concerning the well-being of others, before they are added up in order to obtain total utilities. As far as the author knows no satisfactory formal theory of utility purification has been developed up to now, but the problem is by no means hopeless and may be solved eventually.

The structure of the purification problem

Further insight into the purification problem can be gained by a decomposition into two subproblems. The first subproblem will be referred to as the identification of justified interests. The identification of justified interests concerns the question which aspects of possible futures should be included or excluded in the determination of purified utilities.

The second subproblem arises once the first one has been solved. One has to find a way to construct purified utility functions on the basis of the original ones, given a specification of those influences which should be included in the determination of purified utilities. This subproblem will be
referred to as the construction of purified utilities.

The decomposition of the purification problem into these two subproblems provides a workable approach to the development of a purification theory. Of course, there may be other approaches which structure the problem in a different way. The separation of the identification of justified interests from the subsequent construction of purified utility functions has the advantage that it helps to clarify the nature of the moral judgements involved.

8. The identification of justified interests

Purification is concerned with the elimination of preferences concerning the well-being of others. Therefore, influences which primarily concern the welfare of other persons should not be taken into account by purified utilities.

As an example one may look at a policy measure which helps to avoid accidents on public playing grounds. A measure of this kind primarily benefits the children's welfare. The fact that the parents value the life and the health of their children should not lead to an undesirable double counting of the beneficial effects. Of course, there may be direct effects on the parent's welfare like diminished costs for health care, etc., which should be taken into account in the parents' purified utilities. However, it is clear that the mere fact that the parents love their children should not increase the gain in total purified utility attributed to the policy measure. Otherwise, one might come to the conclusion that accident preventing improvements are less important for playgrounds used exclusively by orphans.

As soon as one looks at practical examples it seems to be quite clear which influences on an individual's utility should enter or not enter the determination of purified utilities. If one wants to explore questions of institutional change in the framework of a formal theoretical model, it can be decided on an ad hoc basis which variables should be included as influences on purified utilities. This means that
the identification of justified interests is settled by the moral judgement of the modeller. As long as a more elaborate theoretical framework for the identification of justified interests is not available, it is reasonable to take this approach.

It would be desirable to develop a formal theory on the basis of which the identification of justified interests could be obtained by derivation from general postulates in every particular case. However, this seems to be a very difficult task. It is not even clear what kind of theoretical framework could be used in order to give a precise meaning to the questions to be asked by a general theory for the identification of justified interests.

9. The construction of purified utility functions

An individual's utility function evaluates possible futures of the world described by a huge set of parameters. The identification of justified interests determines a subset of parameters on which the purified utility function is permitted to depend. It will be convenient to refer to this subset as the individual's purified parameter subset. Of course, every individual has a different purified parameter subset.

In order to solve the problem posed by the construction of purified utility functions one needs a mathematical rule which can be applied to a given utility function and a given purified parameter subset in order to obtain the purified utility function. A rule of this kind will be called a purification rule.

A reasonable purification rule should be based on an axiomatic theory which derives the precise form of the rule from basic postulates which express intuitively desirable requirements.

Unlike the development of a general theory for the identification of justified interests the axiomatic characterization of a purification rule is a reasonably well defined research task.
10. The rationality problem

Utilitarianism assumes individuals with von Neumann-Morgenstern utility functions. However, it is doubtful whether human beings are rational enough to permit this description.

In a world of limited rationality where people fail to maximize utility not only utilitarianism but also most of economic theory is an inadequate instrument of analysis. Unfortunately, the theory of limited rationality is not yet sufficiently developed to be able to replace our traditional picture of man as an infinitely clever optimizer. However, it is not inconceivable that the fundamental ideas of utilitarianism can be reconciled with a sufficiently elaborate theory of limited rationality once it will have been developed.

The basic problem to be solved by a formal theory of limited rationality is the replacement of the utility maximization hypothesis by an alternative mathematical description of human decision making. From this point of view it is important that the utility maximization hypothesis can be decomposed into two parts: existence of utility and maximization of utility.

Of course, one cannot assume maximization of utility without presupposing existence of utility but the reverse is not true. Existence of utility simply means that a decision-maker has the capability to make consistent preference judgements. This does not imply that such judgements are easy to obtain. The decision-maker may have to employ a difficult, painful and time consuming cognitive process in order to form consistent preference judgements. If this is the case he may not go into the trouble unless a very important occasion arises and even then he may fail to make as many preference comparisons as are necessary in order to obtain an optimal decision.

A theory of limited rationality may be utility based in the sense that it makes use of the utility concept without the assumption that utility is maximized. In order to see this one may look at learning as an alternative to optimization. Learn-
ing is guided by reinforcement and it is not unreasonable to think of reinforcement as related to utility. A utility based learning theory would look at utility as something which is experienced rather than known in advance.

It is clear that institutional utilitarianism is easily reconcilable with utility based theories of limited rationality. It does not matter whether the decision-makers maximize utilities or not. As long as utilities exist one can try to design institutions which improve utilitarian welfare in a world of limited rationality.

Unfortunately, the existence of utility is a doubtful assumption. It may be true that at least in some situations of practical importance human beings are unable to form consistent preference judgements, even if they try very hard. The consistency requirements in the axiomatic characterization of von Neumann-Morgenstern utility are very severe. They are known to be violated in many experiments. In the long run, it can easily turn out to be unavoidable to develop a theory of limited rationality which is not utility based.

It is not easy to see how institutional utilitarianism can be combined with a theory of limited rationality which is not utility based. However, even there the situation is not hopeless. It may be possible to reconstruct utility as an individual welfare measure based on behavioral tendencies.

11. Utilitarian comparison of institutional arrangements

Generally, a section of social reality like the provision of health care is shaped by a multitude of legal and organizational facts which are constraints on individual behavior and create incentives and disincentives. Thereby, individual behavior is limited and guided by a system of rules. The use of the words institutional arrangement refers to a rule system of this kind.

It is important to compare the social desirability of different institutional arrangements which can be proposed
for the same section of social reality. This is a task which can be approached in the spirit of institutional utilitarianism. In order to do this, one has to construct formal models of the institutional arrangements under consideration. The consequences of individual decision behavior within these models must be explored and the overall effect on utilitarian welfare must be assessed. Utilitarian welfare is the sum (or the average) of the purified utilities of all individuals concerned.

The comparison of the utilitarian welfare obtained for different institutional arrangements indicates which one of them is best from the point of view of institutional utilitarianism. Of course, such conclusions depend on the assumption that the formal models reflect reality sufficiently well.

An extremely simple example for this kind of theoretical analysis will be given in the appendix. The example does not intend to be more than an expository exercise.

The usual methods of cost benefit analysis are not in total agreement with the spirit of utilitarianism. Cost benefit analysis employs welfare measures like consumer's rent which do not necessarily correctly express gains or losses in total utility. Consumer's rent measures the public's willingness to pay. Since the willingness to pay depends not only on utility but also on income it may happen that cost benefit comparisons give less weight to the utility gains of low income receivers than to those of high income receivers. This point is illustrated by the example in the appendix.

In practice, the utilitarian approach meets the difficulty that in most cases empirical knowledge on interpersonally comparable utilities is unavailable. Under such circumstances, the methods of cost benefit analysis can be looked upon as an approximation to utilitarianism.

The difficulties of practical application do not diminish the theoretical importance of utilitarian comparisons. Hypothetical exercises in the framework of abstract models without
Immediate empirical application enhance the understanding of reality by a clarification of conceptual issues. Moreover, the results of purely theoretical investigations may inspire the improvement of empirical research techniques.

12. Concluding remarks

Utilitarianism is a well worked out ethical theory which can be used to judge the moral desirability of social institutions. It is well adapted to the present methodology of formal modelling and analysis of economics. This methodology has proved to be successful not only in economics but also in other social sciences.
APPENDIX

Should we pass an open space ordinance? - A hypothetical example

Imagine a posted forest area near a community of n low income receivers 1,...,n. The forest area is owned by a single individual A. The question arises whether an open space ordinance should be passed which opens access to the forest area for recreational use. Up to now, the area is fenced in and nobody except A has access to the forest.

Recreational use of the forest by the n individuals would cause damages of D money units. Individual A has to bear this cost if the ordinance is passed. For the sake of simplicity it is assumed that it is legally impossible to compensate the owner by a payment from public funds. It is also not practicable to take an entrance fee. The administrative costs are too high.

The n+1 individuals 1,...,n and A are the only ones whose welfare is influenced by the ordinance. It is assumed that all individuals including A have the same utility function. An individual's utility $U$ depends on his or her income $y$. The utility of income is a monotonically increasing strictly concave function $u(y)$. This utility is increased by a positive constant $v$ if the individual has access to the forest area.

$$U = \begin{cases} u(y) & \text{without access to the forest area} \\ u(y) + v & \text{with access to the forest area} \end{cases}$$

It is assumed that each of the individuals $i = 1,...,n$ has the same income $x$. Individual A's income is $X$. The idea that A is relatively rich is expressed by the following inequality:

$$X - D > x$$

This means that A remains richer than the other individuals, even if he has to bear the damage D.

Utilitarian analysis: Let $W$ be the sum of all utilities of the $n + 1$ individuals 1,...,n and A. Suppose that the ordinance is not passed. Then we have:
\[ W = n u(x) + u(X) + v \]

In this case only A has access to the forest. Each of the individuals 1, \ldots, n has utility \( u(x) \) and A has utility \( u(X) + v \). Now consider the case that the ordinance is passed. Then we have:

\[ W = n u(x) + u(X-D) + (n+1)v. \]

The comparison between both cases yields the conclusion that the ordinance should be passed if the following inequality (a) holds:

(a) \( n v > u(X) - u(X-D) \)

On the left hand side, we find the utility gain \( n v \) of the individuals 1, \ldots, n and the right hand side shows the utility loss of individual A. The ordinance should not be passed if the reverse inequality holds.

Cost benefit analysis: In order to compute the gain in consumers' rent obtained by the n individuals, if the ordinance is passed, one has to determine the highest price \( p \) which these individuals would be willing to pay for getting access. Suppose that an individual \( i \) with \( i = 1, \ldots, n \) has to pay \( p \) in order to get access. Then the income which still can be spent for other purposes is \( x-p \). This is the relevant income to be inserted for \( y \) in the utility function. The highest price \( p \) which individual \( i \) is willing to pay for access is determined by the following equation:

\[ v + u(x-p) = u(x). \]

On the left hand side, we find his utility if he buys access. The right hand side shows his utility for the case that he does not buy access. At the highest price he would be willing to pay, both utilities must be equal.

The gain in consumers' rent obtained by individuals 1, \ldots, n is \( np \). This gain must be compared with the damage \( D \). This yields
the conclusion that the cost benefit comparison works in favor of the open space ordinance if we have:

(b) \( np > D \).

According to the cost benefit comparison the ordinance should be passed if this inequality (b) holds and it should not be passed if the reverse inequality is satisfied.

Comparison of the two criteria: We have obtained two different criteria for passing the ordinance, the utilitarian criterion (a) and the cost benefit criterion (b). It is our intention to show that there is a substantial difference between the two criteria. The utilitarian criterion is more favorable to the open space ordinance. Wherever the two criteria disagree, the utilitarian criterion recommends the ordinance and the cost benefit criterion rejects it. The figure shown on next page illustrates the derivation of this result. The criteria (a) and (b) can be rewritten as follows:

(a') \( n > \frac{u(X) - u(X-D)}{v} \)

(b') \( n > \frac{D}{p} \)

This shows that the utilitarian criterion is more favorable to the ordinance if we have:

(c) \( \frac{u(X) - u(X-D)}{v} < \frac{D}{p} \)

If (c) holds then the utilitarian criterion leaves more room for a favorable decision. (c) is equivalent to the following inequality:

(c') \( \frac{u(X) - u(X-D)}{D} < \frac{v}{p} \)

In view of the strict concavity of \( u \) and the assumption \( X-D > x \) inequality (c') holds. This can be seen immediately with the
Figure: Comparison between the utilitarian criterion and the cost benefit criterion.
help of the figure. We can conclude that the utilitarian criterion is more favorable to the open space ordinance than the cost benefit criterion.

In order to make the result more clear it may be helpful to look at it in a slightly different way. Suppose that the utility function and the income levels $x$ and $X$ are kept fixed and that $D$ is gradually increased. Obviously, $p$ does not depend on $D$ and remains fixed, too, if only $D$ is varied. As long as $D$ is smaller than $np$ both criteria recommend the ordinance. As soon as $D$ surpasses the critical level $D_1 = np$ the cost benefit criterion begins to disfavor the ordinance. The utilitarian criterion continues to recommend the ordinance until a second critical level $D_2$ of $D$ is reached where the utility gain $nv$ exactly equals the utility loss $u(X) - u(X-D_2)$. For $D > D_2$ both criteria reject the ordinance. The difference between both criteria matters in the interval $D_1 < D < D_2$. There the utilitarian criterion recommends the ordinance whereas the cost benefit criterion rejects it.

The example illustrates a general point. If marginal utility of income is decreasing then the utilitarian welfare theorist must have the suspicion that cost benefit comparisons underemphasize the interests of poor people. Consumers' rent measures the willingness to pay. If marginal utility of income is decreasing then a poor individual is willing to pay less for the same utility gain than a rich one.

The conclusion reached in the example also depends on the assumption that the owner remains richer than the other individuals even if the ordinance is passed. Therefore, the assumption of decreasing marginal utility of income has the consequence that the owner's utility loss per dollar shown on the left hand side of $(c')$ is smaller than the other individuals' utility gain per dollar, shown on the right hand side of $(c')$. As we have seen, inequality $(c')$ is crucial for the result that the utilitarian criterion is more favorable to the ordinance than the cost benefit criterion.
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