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Reinhard Selten

Institutional Utilitarianism

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H. G. Bergenthal

Institutional Utilitarianism

by Reinhard Selten,
Bielefeld

1. Introduction and Overview

Utilitarianism is a philosophical position in ethical theory
which holds that moral judgements 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 sup-
posed 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 maximi-
zation 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 de-
grees of freedom of numerical representation.

The reestablishment of cardinal utility removed one objection
to utilitarianism but the situation remained essentially un-
changed as long as the impossibility of interpersonal compari-
sons was considered to be self-evident by the vast majority

of economic theorists. Utilitarianism continued to be look-
ed upon as an untenable position.

In 1955 John Harsanyi published a relatively short paper
on "Cardinal Welfare, Individualistic Ethics and Interper-
sonal 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 text-
books on social choice do not any more reject interpersonal uti-
lity 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 econo-
mic 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 lo-
gicist 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 lite-
rature 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 con-
tinue 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 uti-
litarianism. 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 bet-
ween personal and institutional utilitarianism needs also
to be made. The term "personal" is meant to characterize ethi-
cal imaratives 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 at-
titude 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 satis-
factory 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 $i = 1,...,n$ each of
whom has a von Neumann-Morgenstern utility function u_i de-
fined 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 $x_1,...,x_m$. Individual i's utility has the form:

$$u_i = f_i(x_1,...,x_m)$$

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 $p_{i1},...,p_{ik}$.
Then player i's utility is a function of $x_1,...,x_m$ and
$p_{i1},...,p_{ik}$:

$$u_i = f(x_1,...,x_m; p_{i1},...,p_{ik})$$

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 inter-
personal comparability. One needs an additional assumption
which shall be called the "principle of hypothetical pre-
ference judgements". This principle assumes that an indivi-
dual can make meaningful preference comparisons involving
different values of the parameters p_{ij} and that these judge-
ments are correctly expressed by f.

One of the parameters p_{ij} may be the size of a person. Some-
body may say: I would be happy to loose 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 hypothe-
tical. Since accidents do happen one must develop an esti-
mate 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 hy-
pothetical 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 indi-
viduals.

3. Act utilitarianism and rule utilitarianism

Harsanyi has shown that contrary to earlier philosophical
opinions there is an important difference between act uti-
litarianism and rule utilitarianism (Harsanyi 1977). In
order to illustrate the fact that both views may have dif-
ferent consequences it is useful to look at an example. Sup-
pose 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 abolishment 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 utili-
ty 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 con-
cerning 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 inter-
ests.The identification of justified interests concerns the
question which aspects of possible futures should be includ-
ed 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 specifi-
cation 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 develop-
ment 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 be-
neficial effects. Of course, there may be direct effects on
the parent's welfare like diminuished costs for health care,
etc.which should be taken into account in the parents' puri-
fied 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 utili-
ties. 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 in-
cluded 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 par-
ticular 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 iden-
tification of justified interests determines a subset of pa-
rameters on which the purified utility function is permit-
ted to depend. It will be convenient to refer to this sub-
set 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 pu-
rified 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 puri-
fication rule.

A reasonable purification rule should be based on an axioma-
tic theory which derives the precise form of the rule from
basic postulates which express intuitively desirable re-
quirements.

Unlike the development of a general theory for the identifi-
cation 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-Morgen-
stern 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 maxi-
mize utility not only utilitarianism but also most of econo-
mic theory is an inadequate instrument of analysis. Unfortu-
nately, the theory of limited rationality is not yet suf-
ficiently 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 utili-
tarianism can be reconciled with a sufficiently elaborate
theory of limited rationality once it will have been develop-
ed.

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 im-
portant that the utility maximization hypothesis can be
decomposed into two parts: existence of utility and maximi-
zation 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 as-
sumption 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 re-
concilable 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 require-
ments in the axiomatic characterization of von Neumann-Morgen-
stern 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 organi-
zational facts which are constraints on individual behavior
and create incentives and disincentives. Thereby, indivi-
dual 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 dif-
ferent 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 uti-
litarianism. 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 dif-
ferent 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 ana-
lysis will be given in the appendix. The example does not in-
tend to be more than an expositional exercise.

The usual methods of cost benefit analysis are not in total
agreement with the spirit of utilitarianism. Cost benefit ana-
lysis 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 uti-
lity but also on income it may happen that cost benefit com-
parisons 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.Hypothe-
tical 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 re-
ceivers 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 pay-
ment from public funds. It is also not practicable to take an en-
trance 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 monotoni-
cally 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 rela-
tively 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:

$$W = nu(x) + u(X) + v$$

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

$$W = nu(x) + u(X-D) + (n+1)v.$$

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

(a) $nv > u(X) - u(X-D)$

On the left hand side, we find the utility gain nv of the individuals 1,...,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,...,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,...,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 crite-
rion rejects it. The figure shown on next page illustrates the
derivation of this result. The criteria (a) and (b) can be re-
written as follows:

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

(b') $n > \dfrac{D}{p}$

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

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

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

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

In view of the strict concavity of u and the assumption $X-D > X$
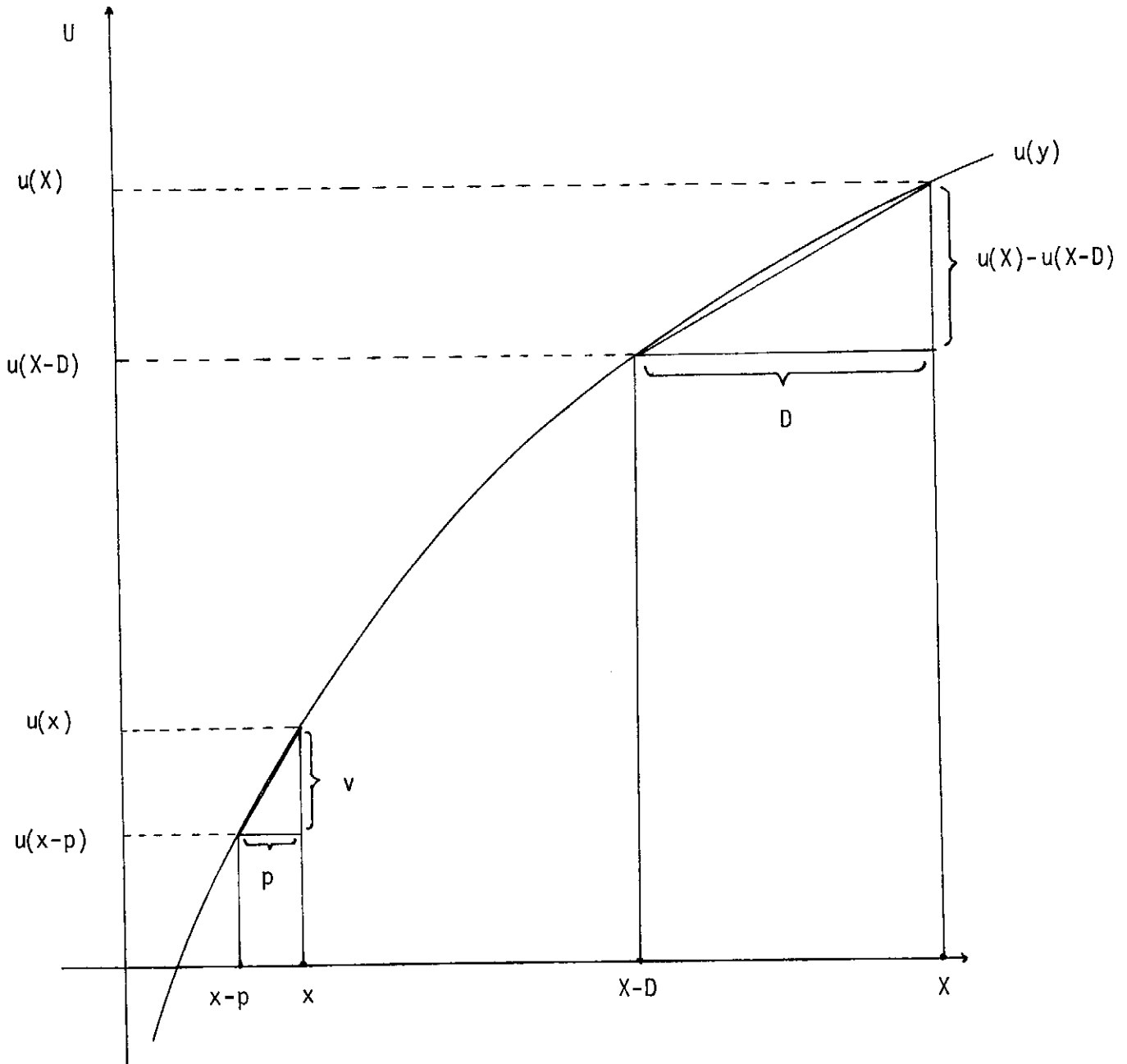inequality (c') holds. This can be seen immediately with the

Figure: Comparison between the utilitarian criterion and the cost benefit criterion.

help of the figure. We can conclude that the utilitarian cri-
terion 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 sur-
passes the critical level D_1 = np the cost benefit criterion be-
gins to disfavor the ordinance. The utilitarian criterion con-
tinues to recommend the ordinance until a second critical le-
vel 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 re-
ject the ordinance. The difference between both criteria matters
in the interval D_1 < D < D_2. There the utilitarian criterion re-
commends the ordinance whereas the cost benefit criterion re-
jects 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 wil-
lingness 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 de-
creasing 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, in-
equality (c') is crucial for the result that the utilitarian
criterion is more favorable to the ordinance than the cost bene-
fit criterion.

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