

## **10.0 MEASUREMENT OF BENEFITS IN CBA AND CBH**

### **10.1 Diverse Origins and Principles behind Measurement**

The widening out of evaluation from financial appraisal related to the private sector has brought with it the identification of a large array of benefits which are not bought and sold in the market (4.0). This has generated a large body of theory and practice on ways of measuring those benefits whose values could not be derived from the market-place.{1}

This exploration of benefits has been pursued along two parallel inter-related lines. First, has come the search by practitioners engaged in cost benefit analysis to find ways of measurement in case studies in order to draw conclusions on their evaluation. Second has come the exploration of theoreticians searching for methods and techniques linking research to analysis.

However, owing to the diverse nature of the projects under evaluation, both the practitioners and the theoreticians have come from different fields. In the first are financial analysts, psychologists, operational researchers, etc. In the second come economics, decision theories, sociology, etc. Accordingly, we have no choice but to present our treatment of benefit measurement in a manner which reflects the diverse origin of the contributions that have been made to the subject.

### **10.2 Micro-economic Theory in Cost Benefit Analysis**

Some measurement problems were necessarily presented above when introducing the array of benefits which are explored under traditional cost benefit analysis (3.0). From these some generalised principles can be stated:

- (a) Just because cost benefit analysis is rooted in economics there is reliance on values expressed in the market through exchange. This reliance stems from the recognition that prices as revealed in the market are a reliable record of transactions entered into by the aggregate of buyers and sellers, which express the utilities perceived by the purchasers and sellers in the transaction.

Nonetheless economists are aware of the limitations in economic analysis, and in particular behind the adoption of such prices. The economic evaluation of historic conservation is subject to all the limitations of any application of economics to the real world. Applied economics is as much an art as a science; it is a set of ideas and developed techniques from economic theory that when applied violate many of the assumptions underlying the theory that gave

birth to it. This, of course, is well understood but often forgotten by economists when they take their tools of trade to apply them. It is easy to forget that we do not work with pliers and screwdrivers; where and when applied, we can see the result and so can everyone else. When we apply economics, since it is a set of ideas, we cannot be certain that the result we postulate and test is a "truth". Nor can we be certain that we have asked the correct questions to begin with; economics as a social science is always open to questions.

But if we assume that economics can be usefully applied then there are some particular problems of applying benefit-cost adaptations of economic reasoning to conservation. One methodological problem is that the technique cannot define in monetary terms all the effects of an expenditure. Therefore, there is always the risk that some important aspects of what we might call intangibles are more important even in economic terms than the things we do measure.

Is an incomplete measure better than none at all? Proponents would argue that we measure what we can and that in correct applications we can measure most of the significant economic facts. Opponents might argue, as do many political scientists, that when there are diverse types of benefits from a project and many different beneficiaries, it is difficult to account for them all; it is difficult not to double count and therefore a poor measure is worse than none. This form of incompleteness is the result of aggregated data. Costs and benefits may vary widely in the minds of various participants to the decision and among citizens. There are discrepancies between individual benefits and our conceptions of total benefits. The view that all political decisions are made primarily in the self-interest of the decision maker is widely held. The view that all public decisions are to the public good is also widely held. If the truth lies somewhere in between then the uses to which benefit-cost may be put can be questioned, because in the intentions as given by the economist Government purposes are often accepted as given.

Another methodological problem with applied economics is in the comparison of shadow prices between two projects that are different (such as comparing a conservation project to a health project) where the means of measuring the shadow prices of the two projects are quite different. The two sets of benefits and the two sets of costs are not automatically comparable with each other.

Another long-standing problem in analysis is that of selecting the appropriate way to deal with time elements, including the rates used in discounting costs (the social opportunity cost rate) and benefits (the social time preference rate). Thus far, the process seems

straightforward. To understand the nature of the benefits of conservation it is necessary to discover the economic benefits that occur in a conservation project and then assess to whom in the community these benefits and costs devolve. But nowhere do we find a generalised method or set of procedures because there is the need to treat differently the scale of plans and the kind of plan (strategy, policy or project). The content or nature of projects differ. There are even different aspects to a particular kind of content and there are differences between a study in depth and a rapid assessment.

- (b) As brought out above (7.1), one of the questions posed in cost benefit analysis is whether or not to carry out the project at all. This is an inevitable option and is therefore conveniently used as a datum by predicting the situation without the project for comparison of the with situation of carrying out the project. This inevitably requires a consistent prediction of the future under both options. From this it follows that the difference in the situations which are compared is not before or after the decision but over the period following the point of decision, for example some adopted time during the operation of the project itself. This incidentally enables the analyst to see whether or not factors unrelated to the project would produce an improved or worse situation without intervention.
- (c) A corollary of the basic reliance on market prices must be that the measurement of benefits from market prices amounts to an aggregation of individual satisfaction. The level of benefits is thus seen independently of the views of the decision takers, evaluation analysts, etc. It is derived "objectively" from the aggregate "subjective" evaluation of the individuals in the market-place.

This raises the difficulty that certain conclusions derived in this way are clearly not acceptable to society; a clear example is the adoption of the aggregation of individual satisfaction of drug-takers as a measure of the benefit of that habit. By definition, therefore, there is introduced the need for some adjustment of such level of benefits by those concerned with the cost benefit analysis. This for example could reflect the views of the decision takers that while the market price for the drug was an expression of individual value to the drug-takers, it did not represent the social cost, such as the wastage of human lives; the repercussions on families and medical services; the crime and corruption that follows the drug industry; the costs of policing and protection in trying to control that industry. This introduces the need for some social and opposed to individual valuation.

- (d) The reliance on market price raises the need to address the consequence: that the individual's satisfaction is not necessarily a reflection of the uneven distribution of income and wealth between the individual consumers and thereby the acceptance of an inequalitarian bias to the cost benefit analysis itself. This results either in the attempt in the analysis to adjust for such disparity in resources; or to ignore them for the analysis itself and leave the adjustment to be made by decision makers at a political level.
- (e) The feature of following market prices is that they are necessarily linked to a chain of transactions, in which the prices for say raw materials to a mineral operator becomes a cost in the construction of the building in which they are used. Accordingly, if prices were aggregated then it would be a double and perhaps treble counting in the aggregation of satisfaction. There is therefore the need to avoid double counting in order to find the net effect. This double counting also applies in a geographical sense. A conservation project may stimulate investment near it that would otherwise have been made but would have been made elsewhere in the community or indeed outside of the community altogether. We have at least the problem of determining within the locality if there is anything "net" about the investment that would permit our saying that it would not have occurred without the conservation project to stimulate it. Do we really reduce the value of other property at other locations? Do we really reduce employment at other places of work, lowering income, or do we really have a net expansion of economic activity?

### 10.3 The Consumer Demand Curve

#### 10.3.1 General

Cultural economics argues that the demand curve for a particular cultural program or site provides the basis for an appropriate statement of value for that program or site. An estimate of value gained by measuring the area under the demand curve will provide an estimate of the monetary value of a particular cultural program or site at a particular point in time. The primary benefit that is deemed useful for most analysis is the maximum value or esteem (stated in monetary terms) that consumers place upon the service. This correct measure of esteem is theorised to be the sum of the maximum price that individuals are willing to pay to use that site or to participate in the program.

If we have interest in the maximum price that people are willing to pay, then the simple prices they do pay times the quantity of visits or participations ( $P \times Q = TR$ ) is not a sufficient statement of value since

consumers either do not pay a direct price to use some institutions such as historic sites, or the price they pay is for some less than they would be willing to pay. The implication of market price in this case is that at higher prices there are still a number of persons who would have been willing to take units of the service. Thus, any particular price-quantity relationship implies that a total revenue less than its true economic value. Some consumers get a "bargain" at the stated price because in fact they would have been willing to pay something more. The difference between what individual consumers have to pay and what they would be willing to pay is what Alfred Marshall called the consumer's surplus.

### 10.3.2 Consumer Surplus

Consumer's surplus is based on the marginal valuations that the consumer makes of the particular good under various quantities.

What would individual consumers be willing to pay for a first chance to win a ring toss game at a carnival? What would they pay for the second? The third, etc? If in the short run, there is a direct price of ten cents, as in Figure 10.3.2A, consumers gain a surplus (the shaded area) with the first through the fourth chance; there is a consumer surplus attached to each chance. By the time consumers select the fifth chance, the price equals their valuation of the chance. They will not elect to play the sixth game because the value to them is less than the price, but the value exceeds the price (a surplus) for each of the first through fourth games. The shaded area in the demand curve in Figure 10.3.2B represents the consumer surplus. If there is no direct price then the individual demand curve of Figure 10.3.2C is all shaded, that is, all consumer surplus. But in reality, even a zero price has costs associated with it. Consumers expend time and money to get to the historic site; thus they pay an indirect price in travel cost terms.

Part of the difficulty in visualising the demand curve for a cultural site is that the price line (PT) in Figure 10.3.2B is a composite; that is, consumers do not all face the same price; rather they face a differential price depending upon how far away from the site they live. One characteristic of a normal private good is that consumers may adjust their desired and different quantities to a given market price. In the case of this public good, however, each consumer is faced with a different price and must adjust to a common quantity. Thus this picture of the aggregate demand curve, while accurate for a normal good, is not accurate as a true picture of the aggregate demand curve for a historic site, an exhibition, an orchestral performance, a theatre, etc.

The demand curve for the particular cultural site or program will look like Figure 10.3.2B in which all the marginal valuations of consumers have been added together to form the market demand curve. But the price must be

thought of as an average. At a price of 10 cents, the rectangle OPTQ represents the price-quantity aspect, while the triangle UPT represents the consumer's surplus, and the triangle TQX represents unmet or latent demand. Each point along the demand curve UX represents someone's maximum willingness to pay. The net value or benefit of the particular good at a price of OP is represented by the surplus UPT. The triangle TQX at a price of OP leaves some potential value uncounted.

One element of the primary benefit of the good or service produced then becomes the maximum price that consumers are willing to pay (in excess of what they have to pay). A second element included is that for a service or good for which there is a charge; the value is the price-quantity area of the demand curve plus the consumer surplus triangle, that is, the entire area of OUTQ in Figure 10.3.2B. If, as in the case of many cultural services, there is no cost or charge to consumers of any kind, then the value of the service is the entire area under the demand curve, OUX in Figure 10.3.2C, less consumer costs in consuming the service.

Our problem in measuring primary benefits is then one of calculating the appropriate area under the demand curve. This is not an easy task, for even when there is a price charged it is only one price and quantity dimension: thus we have only one set of co-ordinates on the demand curve. When there is no charge at all, there is no clear obvious measure of the value of the cultural site or program.

### 10.3.3 Clawson-Knetsch Demand Curves{2}

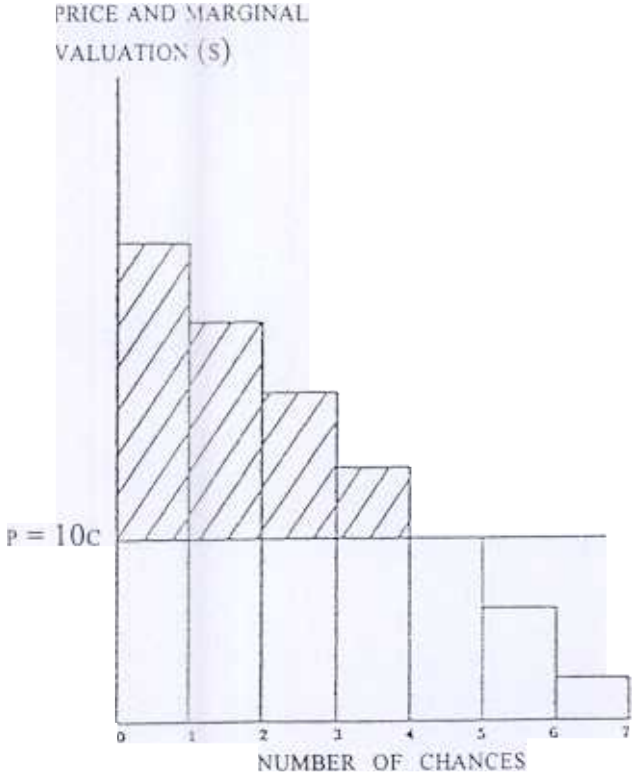
In 1959, Marion Clawson proposed a means of estimating the consumer's surpluses accruing to a park or recreational site. There is posited a group of consumers who are willing to give up a certain amount of income in the pursuit of goods and services. Their demand uses travel costs to the site as a proxy for what consumers were willing to pay when there is no charge levied to enter the site. For this we need to know something about the experience that people have in going to a particular program or site. This represents the source of our knowledge of the demand for the good or service.

The Clawson-Knetsch demand curve has been widely used in leisure services and has been found to be translatable to cultural events and sites. Illustratively, in a trip to the historic site the consumer gives up income (in the form of costs such as travel costs, time costs, etc). Assume that for a given cultural site,  $C_{ij}$  is the cost to a person who lives in population zone  $i$  to visit historic site  $j$ :

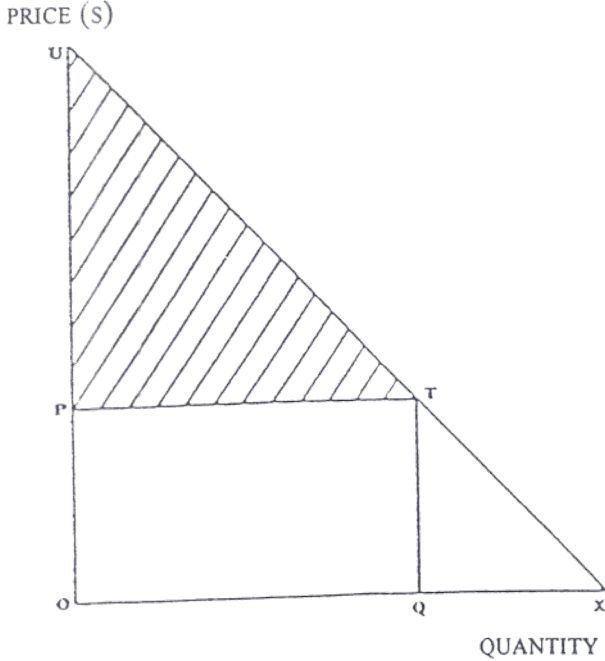
$$(1) \quad V_{ij} = f(C_{ij}, P_i)$$

or letting the per capita visit rate be a function of cost:

**FIGURE 10.3.2A**  
**CONSUMER'S SURPLUS IN THE INDIVIDUAL DEMAND CURVE**



**FIGURE 10.3.2B**  
**MARKET DEMAND FOR THE GOOD AND CONSUMER'S SURPLUSES**



$$(2) \quad V_{ij}/P_{ij} = f(C_{ij})$$

Letting  $X_{ij}$  equal  $V_{ij}/P_{ij}$ , the function relating visit rates and costs for historic site  $j$  is called the demand curve for the cultural experience as shown in Figure 10.3.3A. This curve represents at each point the number of visits per capita, per unit of time that consumers will take at various costs. By visitation rate is meant the per capita visitation rate to the historic site among the total population of a set of concentric distance zones drawn around the historic site. From recreational analysis, it is known that a distance decay function exists; that is, the more distant from the historic site consumers are, and travel costs (or all transfer costs) increase, the less frequently they will come to the historic site.

The first demand curve that Clawson-Knetch refer to is the entire cultural experience, i.e. as a set of stages that descriptively can be called anticipation of the visit, travel to the site, activity at the site, return travel, and finally, recollection of the experience. Total visits to the historic site are estimated by multiplying the population in each distance zone or population centre within the zones by its visitation rate as given by the curve (Figure 10.3.2C). Total visits to the historic site are then:

$$(3) \quad \sum_{i=1}^N f(C_{ij})P_i = V$$

when we assume an initial price of zero, that is, no admission fees, etc. Now add an additional cost  $C$  on each visit. Visits per capita will change in the demand curve for the cultural experience (as in Figure 10.3.3A) such that:

$$(4) \quad \sum_{i=1}^N f(C_{ij} + C)P_i = V_1$$

with the result that total visits at  $V_1$  are less than total visits at  $V_0$ . Continuing in this fashion, incremental increases to cost are calculated at  $v_2, v_3$ , etc. for each zone until the expected visitor rate has been reduced to zero. The result of this manipulation can be seen in Figure 10.3.3A in which visits are related to added cost.

If the added costs are assumed to be in the form of admission fees, and labels on the curves change accordingly, then Figure 10.3.3A can be restated as the demand curve for the cultural site as shown in Figure 10.3.3B. As such the demand curve for the site (as a function of added cost) indicates the maximum prices consumers would be willing to pay at different levels of total visits, that is, total units of consumption. This demand curve representing the site demand for the relevant population living in the various zones (1, 2, 3, etc) is therefore based on the notion



that there is a difference between the demand for the cultural experience as shown in Fig.10.3.2C and the site demand curve of Fig.10.3.3B. The demand for the cultural experience consists of travel to and from the site as well as whatever anticipation of the visit occurs and whatever recollection results from the visit. If, for example, one plans a visit to a historic site, then there is some value to the anticipation and planning. Similarly, the travel to the historic site and the return trip may have positive value to the consumer. If the visitor takes slides of the visit, then recollection may be positive (except for the nonparticipants who are coerced into watching the slides). Clawson and Knetsch were interested in isolating the value people find in the entire cultural experience from that segment of the value that could be defined as the value at the site, or in other words, that portion of value that can be seen clearly as site value.

As a result of this concern, the demand curve for the total experience (Figure 10.3.2C) was thought to be too inclusive and the correction therefore was made to derive a demand curve that isolate the site value (Figure 10.3.3B). Calculating the sum of the various prices, or the area under the demand curve, the economic value of the site is:

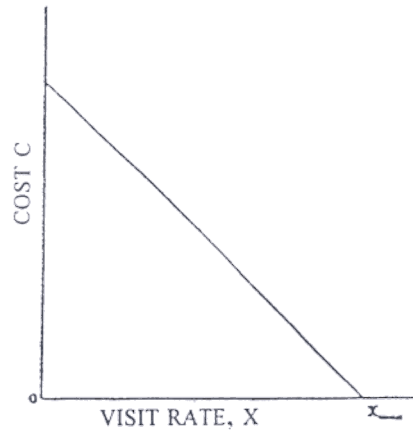
$$B1 = \int_0^V \text{MAX}f(V)d(V)$$

The above integral (total willingness to pay) measures the total economic value of the site and its services to society at any point in time. This formulation can also be stated as the total consumer's surplus at a price of zero. This valuation statement is the benefit to the customers, that is, the value they hold for the particular visit, being all of the area under the appropriate demand curve when summed. If a price is charged for admission, however, the total benefit is unrealised. Part of the benefit has remained with visitors, part has been transferred to the supplier, and part is not longer sought given the price above zero. This total set of benefits (prices paid plus values to consumers in excess of prices paid) for a particular period of time (for example, a year) can be compared to the allocated annualised public costs of providing the activity (or site). One thereby ascertains if the activity or site generates benefits in excess of costs.

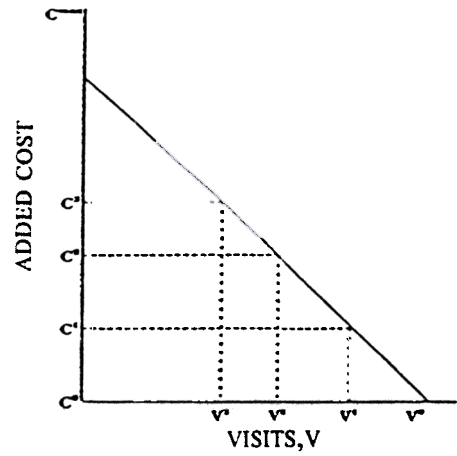
At this point it might be wise to point out that the sum total value of a historic site would be the total of all uses to which the historic site is put expressed in terms of the consumer's maximum willingness to expend time and money to gain those satisfactions. Thus, the evaluation of a particular cultural program offered in a historic site is a part of that historic site's total value.

Clearly, what the demand analysis shows us is the benefits that can be gained by the direct consumers of a cultural good or service including the values above prices paid. It also shows us the interplay or pricing and demand and leads us to be able to detail producer behaviour and

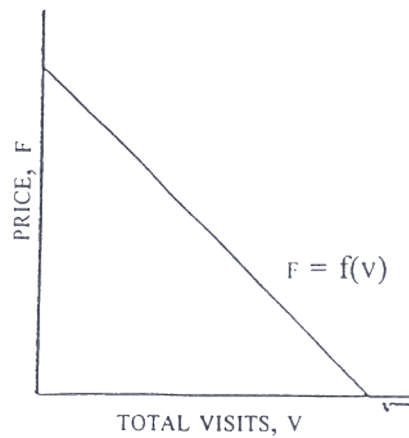
**FIGURE 10.3.2C**  
**DEMAND CURVE**



**FIGURE 10.3.3A**  
**FUNCTION RELATING VISITS AND**  
**ADDED COST FOR RECREATION SITE**



**FIGURE 10.3.3B**  
**DEMAND FUNCTION FOR**  
**RECREATION SITE**



consumer behaviour. It provides some inferential insights into incidence of benefits. And perhaps of most importance, it opens up the entire field of micro-economics to assist us in further pursuit of the economics of conservation as to pricing, markets, substitute goods, complementary goods, elasticities, etc.

#### 10.3.4 Some Italian Experience

Since potential social demand for the conservation of the cultural heritage cannot be easily quantified, public intervention in this field has often been justified by defining the good which is subject to the intervention as a "merit good" (therefore bypassing the problem of quantifying the demand for it) or by considering the benefits associated with potential demand as marginal when compared with those deriving from the effective demand.

Effective demand is easier to quantify when linked to direct usage of the good in question by the community when the good in question fulfils a basic individual and collective need. An example is a demand for **general education** - a museum, library, archive, for temporary exhibitions, congresses, etc; or a demand for **recreation**.

The procedure for assessing cultural benefits of the kind mentioned above has had one positive and one negative implication for the planning of interventions.

On the former, since the benefits deriving from effective demand for direct utilisation of the cultural goods are the only ones that can be quantified, interventions emphasize direct collective utilisation of the good. This has led to the practice of using monumental buildings, which would remain under or not utilised otherwise, for satisfying social demand for social services of a cultural kind. The positive aspect of this procedure is that those projects which only envisage the mere conservation of the monumental building, without a contemporary beneficial use, are consequently penalised. On the other hand, since one cannot accept the principle that only those buildings that can conveniently be converted for activities with an economic return should be conserved, the negative aspect is that some projects also result in an improper and controversial utilisation of the good in question rather than conservation.

The proposal is to adopt a two-phase approach in the project evaluation process on the basis of the following value judgement: the economic analysis can only be of help in those choices relative to the employment of resources with clear, quantifiable economic effects. It is less helpful in the choice of a "merit good".

Following this approach, a project consists of two parts: interventions aimed at the conservation of the monumental complex, and interventions

necessary to utilise the complex as a museum with additional services (rooms for temporary exhibitions, conferences, concerts, administrative offices, etc). It is necessary to distinguish between discretionary choices (choices between alternative activities, or alternative sites) where the economic analysis can help in the decision-making process; and choices relative to the definition of "merit good". The choice between alternative "merit goods" can only be made according to "political" criteria. The economic analysis can only give some indications of relative opportunity costs.

In the above example, the economic analysis can answer the question of whether it is worthwhile to employ additional resources to implement the second part of the project, concerning the activities to be located in that particular site.

If the answer is negative, the problem will be that of assessing whether it is worthwhile to undertake those interventions aimed at the conservation of the monument. The economic analysis will provide indications on the most effective interventions but will be unable to discriminate between alternative sites, since that requires a political value judgement.

If the answer is positive, the worthiness of additional activities, once the conservation of the site has already been decided, will have been proved. The economic analysis will express the contribution that these activities will give towards meeting the costs of their realisation and of the conservation itself. If all costs are met, the project is justified on the basis of the direct benefits only. If a part of the costs for the conservation is not met, the remaining amount represents the minimum threshold that the benefits arising from the potential demand must reach to justify the project. This amount represents the opportunity cost of the "merit good".

Use can also be made of the concept of "avoided costs". These are the costs that are avoided as a result of having placed additional activities in the best possible alternative. Provided that the utilisation of the monument being restored as a container of additional activities corresponds to a real need of the community - this is a condition that, unfortunately, is easily satisfied in Southern Italy - the "avoided costs" can be treated as benefits of a particular location where it would be relatively easy to place additional activities, or as costs of an alternative location where these activities could not be placed.

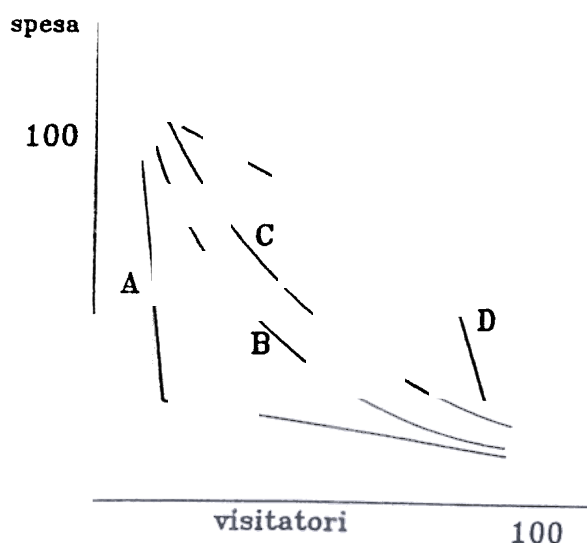
The effective demand for recreation is measured in terms of the number of visitors. The procedure under examination prescribes that the benefits of activities meeting this kind of demand are imputed on the basis of the shadow price for visitors (L10,000 per visitor) and on the basis of the additional expenses incurred by the visitor on location (accommodation, meals, purchase of brochures, souvenirs, etc).

The same shadow price is applied to any project in the cultural sector, where it is foreseen that an additional tourist demand will be generated as a result of the project. This practice is a direct consequence of the principle of homogeneity. The only differentiation is given by the demographic characteristics of the location of the project: when a commune (administrative unit) has more than 300,000 inhabitants, it is necessary to distinguish the local from the external component in the flow of visitors and apply the coefficient of generation of 1.138 together with the amount of net tourist expenses only to the external component. The homogenisation attempt however is frustrated by the requirement that the visitor's expenses - set to L95,000 per day - must be deducted from the costs of production of the tourist good purchased by the tourist, without at the same time providing guidelines for a homogeneous calculation of those costs in different circumstances.

Although the effective demand for recreation is measured in terms of number of visitors, it is insufficient to refer just to the tariff revenue to assess social benefits. The tariff revenue in fact does not consider the consumer's benefits gross of the tariff and the social benefits in terms of value added. Both benefits are expressed as a function of the total expenses that the visitor incurs in order to benefit from the service.

*Ceteris paribus*, these expenses are an increasing function of the distance from the visitor's place of residence. The profile of expenditure also differs according to the characteristics of the area in which the tourist site is located. This is shown in Figure 10.3.4 which presents a fixed sample of visitors on the x-axis and expenditure on the y-axis.

**FIGURE 10.3.4**  
**FUNCTION RELATING VISITS AND COSTS**  
**FOR DIFFERENT LOCATIONS**



Profile A describes a localisation within a large urban centre, where the majority of the visitors come from within the centre. Profile D is instead an area sparsely populated. In this case, the majority of visitors come from outside the area. Profiles B and C describe intermediate situations.

Let us assume that the intervention is localised in an area falling within profile B (an urban area highly populated with a large number of visitors coming from other regions). In order to calculate visitors' total expenditure a sample of 100 visitors in Profile B has been divided into 10 equal groups in decreasing order of expenditure.

Given those numbers, total expenditure is equal to 2,452 units with an average of 24.5. The willingness to pay for the museum could be considered equal to a certain percentage (30%, say) of that expenditure. However, such procedure would underestimate the willingness to pay of those visitors coming from nearby areas with low expenses.

Assigning a value in lire to the units, and calculating the daily expenditure of the visitor belonging to the first group, we obtain a measure of the average expenditure. Multiplying this by the number of visitors, the amount of total expenditure is obtained. By subtracting the estimated value of the opportunity cost of goods and services consumed to the amount of total expenditure, we obtain a value which represents the benefits enjoyed by the local production activities.

In the example above, assigning a value of L1,000 to the units and assuming that the average expenditure of a visitor of the first group is L150,000, the average expenditure calculated on the total demand is then equal to L49,000. The average willingness to pay for the museum is L15,000 and value added per visitor (making the hypothesis that it is equal to 40% of the expenditure) is then around L20,000.

An average willingness to pay of L15,000 would allow the admission price to be set at L3,000, without generating disincentive on the level of demand: net of the fee, the consumer surplus is L12,000. Since visitors belonging to the tenth group would be discouraged from the level of the tariff, it would be best to introduce, if possible, reduced tariffs for that group.

There is a risk of rewarding excessively those areas that are already main tourist centres by considering as cultural tourism also that part of the flow of tourism that has in fact a different origin (business, recreation, consumption of other cultural goods, etc). In this case, the benefits attributed to the good in question should not be calculated for the whole amount of the net expenditure. In other words, the consumption of the cultural good should be considered as one of the outcomes of the visit together with all the other reasons for the journey.

## 10.4 Economic Impact Analysis: The Multiplier

When we turn to the usual impact analysis reasoning, we are still in some sense working with economic demand. But instead of dealing with it as an estimate of demand using micro-economics, impact analysis measures income and employment changes with a macro economic concept, the multiplier effect.

Between consumers and producers flow money and goods and services. When in equilibrium the economy provides just those goods and services for which it can pay. However, if there are additions to or leakages from the economy then it will expand or contract with accompanying ripple effects. As Vaughan says:{3}

"The basic concept of a multiplier ... is that there is a relationship between an autonomous injection of money into an economy and the resultant economic changes that occur. Such autonomous injections can take many forms that include, for example, increases in government investment and increases in exports. Each of these forms of injection create a stimulus to further economic activity and therefore generate additional business turnover, income and employment. The Multiplier value is simply a numerical value in which each of the successive rounds of activity is summed".

Formulation of this multiplier concept is attributed to Keynes,{4} although reference to it can be found in earlier economic literature.{5} "Multiplier", however, is a generic term that in empirical application can cover a number of different types of analysis. As Vaughan notes:{6}

"Each different formulation has strengths and weaknesses dependent on the objectives of the application. There are three traditional forms of empirical application, ... the Export Base, Input-Output and Orthodox Keynesian analysis".

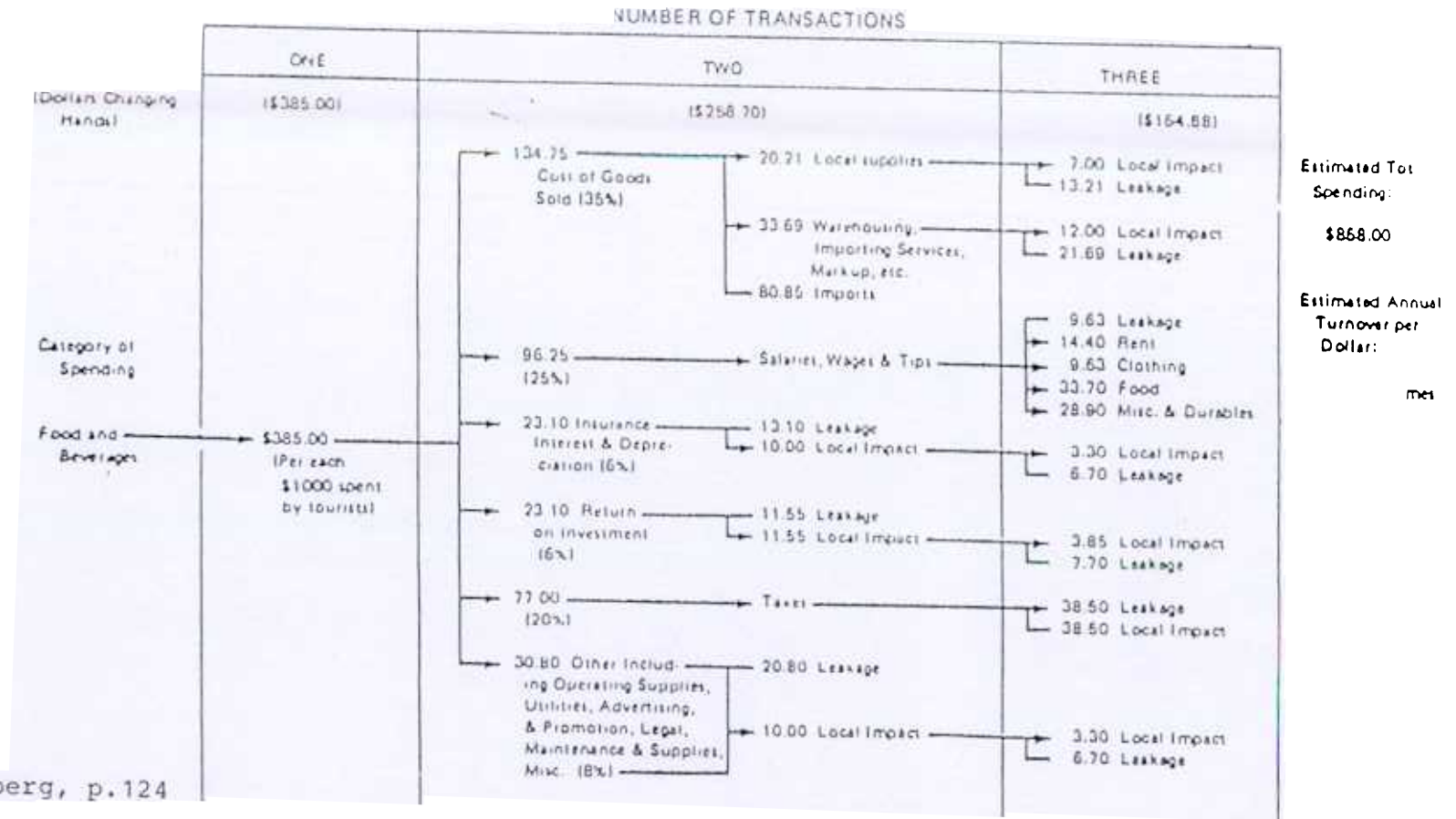
The orthodox Keynesian multiplier is the traditional  $M = 1/MPC$  where MPC is the marginal propensity to consume. Taking this basic idea, researchers have developed sophisticated models to estimate the impact of tourism expenditures on a local economy. Archer's "Anglesey" model of 1973 is a practical application.{7} An example from Lundberg{8} is provided in Figure 10.4, where the expenditure by the tourist of \$385 is "multiplied" into an income of \$858, a turnover of 2.22 times, by the time successive rounds of spending are accounted for.

### The Application

Within the field of cultural economics Cwi and Lyall's work on the impact of the arts on Baltimore, and Vaughan's work on the Edinburgh Festival, represent the first research of the impact of the arts on urban

FIGURE 10.4  
 MODEL OF ESTIMATED TOURIST EXPENDITURES FOR FOOD AND BEVERAGE

(Note: Arrows Point To Dollars Changing Hands.)



Source: Lundberg, p.124



communities.{9} Recent studies in Colorado, New York and in Canada, among others, have continued the interest and expanded the literature on what the arts can mean to the economic development of cities.{10} What is found is that the arts and culture generally are considerable contributors to local economies. Reminiscent of the origins of this Report (1.1 above), benefit-cost analyses had for many years served to show policy makers the benefits of particular program efforts; the desire for these studies arose out of the culture advocate's need to develop economic accountability results in budgetary competition with parks and recreation departments and other local program areas. As Horowitz has noted, the Baltimore study was supported by the Endowment{11} because the need for the arts people to have economic analysis available to them to use in defence of their budgets before policy makers.

### **A Proportional Approach to Measuring Impact**

While its logic is traditional, Vaughan's Unorthodox Keynesian Multiplier is really a "proportional" approach, and Vaughan in his studies tends to come down on a 25% proportional value. As he puts it,{12}

"The main features are firstly, that the results are expressed as a proportion of the injection rather than as an increment to the direct effect and, secondly, that it is a modified form of input-output analysis with separate formulae being utilised for each principal business activity".

Further,

"The basis of the approach is to use expenditure as the link through the three stages of circulation in a local economy. Direct Expenditure is the spending on the goods and services provided by the business in which the spending occurs. Indirect Expenditure consists of the successive round of business transactions that occur as a result of direct expenditure from the purchase of goods and services by the initial business in which the money is spent. Induced Expenditure is consumer spending of income received, either directly or indirectly, as a result of direct or indirect spending".

While there are a range of different types of injection, such as expenditure on construction and on investment, tourism studies have been based on visitor spending on goods and accommodation, and the multiplier analysis has been used to assess the three forms of income in succeeding rounds of local expenditure: direct, indirect and induced effects. These latter two, the spillover or ripples from the first direct effect, continually reduce as income is "leaked" out of the local economy. In a sense, the multiplier is a statement of the leakage from the local economy.

## Data Requirements

While it has proved possible to use some existing data, the basis of proportional multiplier research in connection with tourism has been sample surveys of different economic activities at the enterprise level and of tourists. In the absence of valid input-output tables for the local economy in question, the core of any study using proportional multipliers is a business survey aimed at measuring the conversion of turnover into income and purchase and also the relationship between turnover and employment. As Vaughan suggests, for both tourism and the cultural heritage there are several ways such impacts can be set in motion. {13}

"Firstly, there is expenditure on any initial construction necessary. Secondly there is expenditure by the primary beneficiaries; those visiting the heritage. This can take the form of either, primary spending at facilities offered by the heritage itself (theatre tickets) or secondary spending at ancillary facilities in the local community (accommodation costs). Finally, there is induced business spending resulting from the attraction of the heritage. Such spending can take the form of investment in new facilities to meet demand. Thus there are different types of injection that will start the process of impact".

In the case of income creation the general model can be defined as:

$$1) \quad Y_t = Q_n Y_n \frac{1}{I}$$

$$I = \sum_{i=1}^n L (E X_i Z_i Y_i)$$

where

total local income generation.

$Q_n$  = the money introduced into the economy through the purchase of the goods and services from business type n,

$Y_n$  = the income generation coefficient of a business of type n incorporating both direct and indirect generation.

$L$  = the average propensity of local residents to spend income earned.

$X_i$  = the proportion of local resident spending accounted for by the  $i$ /th type of business.

the proportion of local resident spending in the  $i$ /th type of business that is spent in the local area.

$Y_i$  = the income generation coefficient of the  $i$ /th type of business, incorporating both direct and indirect generation.

This model, therefore, consists of two parts. Firstly:

(2)  $Q_n Y_n$

which is the multiplicand. In an expanded form this formulation allows for the removal of instantaneous leakages from the initial amount spent and from subsequent spending by the  $n$ /th type of business and its suppliers. Secondly:

$$(3) \quad \frac{1}{1 - \sum_{i=1}^n (E_i X_i Z_i Y_i)}$$

that is the multiplier that quantifies the income generated by the re-spending of direct and indirect income. This model, therefore, is a practical application of work by Tiebout in 1962 and Clawson and Knetsch in 1966.<sup>{14}</sup> The general model, however, requires expansion for its practical application to be accurately used. Vaughan (1984)<sup>{15}</sup> provides complete detail in the development of the actual equations and their application. Actual work has been widely undertaken in tourism studies in the United Kingdom, including studies in Winchester, Torbay, Brighton and Hove, as well as other local economies. Clearly, however, the model and its application can be far wider than just tourism.

## 10.5 Value to the Community

As the name implies, in community impact analysis (8.0 above) it is the value to the community of the options which is being sought. In doing so the analyst relies on the twin pillars of CIA, namely impact assessment and cost benefit analysis. Each of the changes proposed by the project plan (plan variables) will have its effect on particular community sectors whose outcome (effects) can be measured in scientific terms (e.g. amounts of noise, atmospheric pollution, traffic congestion). These will change the activities (way of life) of those sectors which are defined by the impacts in question. These impacts will be judged as beneficial (benefit) or harmful (cost) by the sectors impacted, according to their "sectoral objectives" in relation to the impacts. It is this judgement which produces the costs and the benefits which will be valued in accordance with the approach employed in cost benefit analysis, as described above (10.3-10.4). But in practice, valuation in money terms is applicable only to a minority of the benefits, since so many are "intangibles" (see 10.6 below). It is here that the surrogate measures need to be employed.

There is however a departure from traditional cost benefit practice in the aggregation of the benefits. Instead of the total benefit being the sum of the individual benefit (without adjustment) CIE recognises that there could be a divergence between the aggregate individual values and "social value", that is the valuation of the impacts made by the decision-takers on behalf of the community whom they represent in taking the decision. This is produced by first registering the aggregate in the traditional way (within the limitations of treatment of intangibles, etc) and then adjusting upwards or downwards to reflect divergence. In those cases where the benefits are flows, adjustment can be made by altering the discount rate to be applied, by adopting a "social discount rate".

## 10.6 Multi-dimensional Values

Benefits refer in general to all economic consequences of a plan or project that increase social welfare. Several benefits can be directly, while others are only indirectly, attributed to a plan or project. In both cases, benefits can be expressed in monetary terms or not. In the latter case, benefits (e.g. employment effects) may be either incommensurable (i.e. not transferable into the measuring rod of money although they may be quantifiable in other measurement units) or intangible. Intangible benefits do often occur in problems related to environmental, medical and cultural policy. An example is the derived benefit from the experience and expertise acquired in restoring a monument, so that this knowledge can also be used in other cases.

Benefit estimation is often hampered by the problem of joint benefits, because of the joint use of the assets by different actors, so that they cannot be attributed to the project or plan concerned.<sup>{16}</sup> For instance, infrastructure investment necessary for a new project or plan generates benefits which cannot exclusively be attributed to a single use, as they have normally a multipurpose character. The allocation of such joint benefits is one of the most complicated issues in public expenditure analysis.<sup>{17}</sup>

In the absence of a fully operating market mechanism the valuation of benefits in monetary terms is extremely difficult. In many cases there are alternative social welfare criteria, which also play an important role in any plan or project evaluation. Thus it is relevant to consider a situation where multiple objectives - and thus multiple benefit indicators - may be distinguished, each of them playing a certain role in the judgement of the performance of a plan or project.<sup>{18}</sup> Clearly, a simultaneous consideration of multiple objectives (including financial benefit criteria) implies that we may have to replace the market prices by artificial prices, based on the policy maker's judgement, so that it may sometimes be impossible to find all conversion factors necessary to compare those effects. How to weigh, for instance, the loss of natural beauty and the number of birds of passage killed by the power lines that guarantee uninterrupted

supply of electricity to the location of consumers, be it a residential area or industrial estate?

Proceeding with the last example, we will consider here two investment options in a project that, due to its design and its operation and environmental effects, employ the same amount of capital. In Figure 10.6, these combinations are represented by the feasibility frontier  $F'F$ , of which only part  $AF$  reveals substitution of contributions to one objective for those to the other. Theoretically, knowledge about the policy maker's equal welfare curves  $W$  (indifference curves, showing equally desirable contributions to the two objectives), would allow us to identify the optimal point as the point of tangency between  $AF$  and the highest  $W$  available, viz.  $T$ .

As known from conventional economic theory,  $T$  is characterised by the equality of the marginal rate of substitution (m.r.s) of aggregate consumption for environmental preservation (i.e. the slope of  $W_2$  at  $T$ ) and the marginal rate of transformation (m.r.t), i.e. the slope of  $AF$  at  $T$ . This marginal rate of substitution is at the same time the relative weight of policy makers, and the society, place on environmental preservation relative to aggregate consumption.

Should the investment project have effect on other objectives as well, then the condition of optimality has to be extended for every pair of objectives. In other words, we would have:

$$\text{m.r.s. } ij = \text{m.r.t. } ij$$

If aggregate consumption is chosen as the 'unit of account', the relative weights of the other objectives with respect to consumption are comparable and total benefits of each investment project (at one point in time) could be expressed as the weight sum of each constituent  $B_i$ :

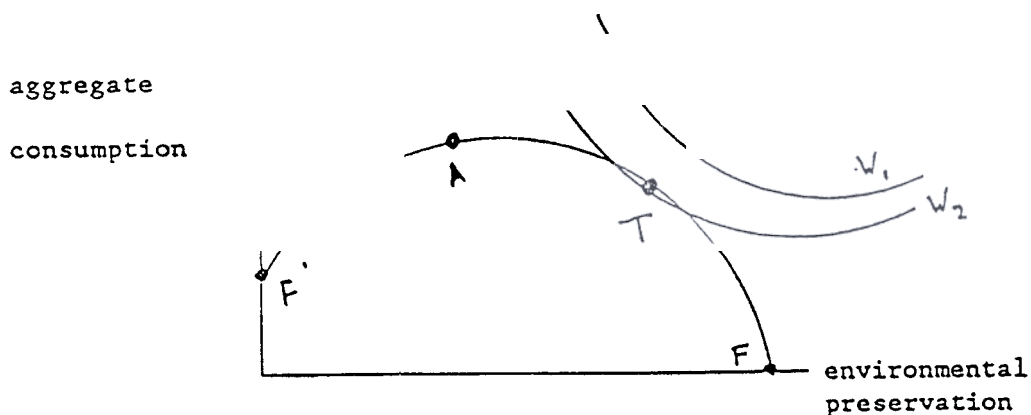
$$B = \sum_{i=1}^I W_i B_i$$

However, in reality the shape and position of the equal welfare curves,  $W$ , are unknown, and so are the relative weights  $W_i$ . This implies that in many practical situations an economic evaluation is hampered by limitations originating from two sources:

the existence of multiple objectives which leads to mutually unreconcilable welfare criteria; then there is no single 'measuring rod';

the existence of social costs which due to market imperfections cannot be translated into monetary units.

**FIGURE 10.4A**  
**A TRADE-OFF CURVE BETWEEN CONSUMPTION AND ENVIRONMENT**



In various evaluation situations, these two issues may be interrelated. A good illustration can be found in the valuation problem regarding the Norman Church of St Michael at Stewkley, which stood in the middle of a possible runway of a possible Third London Airport. {19} This church reflected a social welfare component (i.e. an ancient monument) which could not be included in the traditional economic efficiency accounts, as it represented a different objective or value. At the same time, the removal of the church would imply high social costs, as it concerned a unique monument.

In view of the abovementioned evaluation problems two different directions for measuring benefits in conservation policy can be chosen. The first one is to take resort to standard economics and to make a systematic attempt at finding indirect ways of translating different objectives/criterion values and/or social costs and benefits into the measuring rod of money. Examples can be found in:

**hedonic prices:** the intangible effects are gauged by investigating the indirect implications of social costs/benefits for marketable commodities; for instance, the effect of environmental pollution or noise annoyance on housing prices in the relevant area; {20}

**contingent valuation:** the monetary value of a non-priced commodity is found by measuring indirectly the willingness to pay for this commodity on the basis of questionnaires, interviews, controlled experiments, etc. {21}

**shadow project valuation:** a starting point is the economic compensation principle for the loss of non-priced commodities

which seeks to assess the costs (and possibly benefits) of reconstructing the same commodity (e.g. building up an old monument somewhere else, etc).{22}

The second approach takes for granted that multiple objectives (e.g. equity considerations) and social costs are hard to translate into one common denominator. Hence, no attempt is made to create a surrogate valuation scheme. In this framework, a multidimensional approach is normally followed, via multiple criteria analysis. This takes for granted the various steps necessary in a multidimensional impact assessment (for instance, community impact analysis) and tries to build, upon a solid impact analysis, a policy evaluation model. Multiple criteria analysis has become a popular tool in policy evaluation studies in many countries.{23} Seen from the viewpoint of conservation strategies, there is a need for an integrated cultural and functional economic urban development strategy, in which economic, social, architectural, and historical aspects of city life are brought into harmony. In this view it is no use looking exclusively at the monetary side of a cultural built heritage policy. Monuments have a social benefit whose (economic, social and cultural) value is related to the history of society and it perceived by the present generation (including all direct and indirect users) in view of the future.

These benefits are clearly multidimensional in nature. Here a parallel may be drawn with antiquities sold on the market. According to multi-attribute utility theory, the value of an antique good (a painting, for example) depends on its attributes: its age, state of preservation, degree of uniqueness, artistic quality and representation of a certain style period. The same holds true for an urban monument, although here an additional important consideration plays a role, the attributes of the existing historical urban structure into which it is integrated.

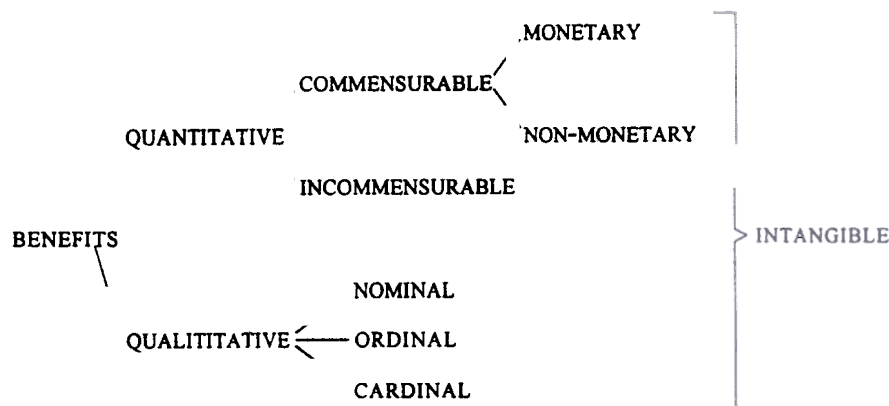
Thus the second approach implies that an urban monument has to be valued from the angle of a multiattribute utility approach, which forms the basis of both community impact analysis and multi-criteria analysis. Its value for society is determined by the value that society places upon its various attributes. The multidimensional profile constitutes the indigenous socio-economic and historical-artistic attributes of a cultural resource, seen from the viewpoint of society.

## 10.7 A Typology of Measurement

In the light of the foregoing exposition, it seems plausible to start any benefit assessment of cultural policy with a systematic typology of relevant angles and items. The first criterion would then be whether effects of conservation policies can be measured in quantitative terms or not.{24} This leads to a distinction between quantitative and qualitative effects. Quantitative effects can be measured in a common unit (e.g. an energy

equivalent, a performance indicator, money, etc). Qualitative effects are by definition intangible, so that one may distinguish qualitative effects according to different measurement scales, e.g. nominal, ordinal, cardinal. This leads to the following typology:

**DIAGRAM 10.7: A TYPOLOGY OF MEASUREMENT**



It is also possible to make a typology of the nature of benefits of conservation policy. Here an obvious distinction is between observable market impacts and non-market impacts. Examples of the first category are:

economic benefits from tourism/recreation

employment benefits in the maintenance of traditional craftsmanship and artisanal activity;

educational benefits in scientific research/training;

productivity benefits caused by enjoying cultural assets.

Examples of the second non-market category are:

socio-psychological benefits (e.g. mental well-being);

environmental benefits (e.g. upgrading of the broader quality of life and the social ecology of an area.

As indicated above (10.6), in some cases it is possible to translate the non-market benefits into monetary assessments, provided that the limitations of such methods are kept in mind.



All the above benefits are related to the actual use of the heritage building. In addition there is a category of benefits to non-users who appreciate a cultural asset, even if they do not and may not actually use it. This brings in the notion of option value.{25} This concept may have various meanings:{26}

- (a) risk aversion: potential visitors are not sure that they will ever visit the opportunity concerned, but do not want to lose the possibility to visit it in the (near or distant) future;
- (b) quasioption demand: potential visitors have an interest in visiting the recreational good concerned, but prefer to wait until sufficient information is available;
- (c) existence value: non-users attach a high value to the fact that the scarce socio-cultural asset is maintained, even when they do not plan to visit it;
- (d) vicarious use value: non-users want to keep a certain public good intact, because they like it when others can enjoy this good;
- (e) bequest value: non-users see it as their moral responsibility (or altruism) to protect and maintain a certain public good for future generations.

Consequently, the concept of option value is strongly related to the symbolic value of a good. However, a reliable monetary assessment of 'option values' in the framework of monuments is far from easy.{27}

## 10.8 Scales of Measurement

Where monetary assessments cannot be made, benefits have to be measured on a scale which is as accurate and appropriate as possible; frequently, however, only soft or qualitative information is available. For a meaningful policy analysis, this information should not be disregarded, especially in the cultural and environmental sector where we are often facing a situation with limited precision of the necessary policy information.

In general, the following measurement scales for benefits may be distinguished (Diagram 10.7):

nominal scale: a classification of benefits into distinct groups (e.g. green or red) or into distinct size classes (e.g. small benefits and high benefits);

ordinal scale: a ranking of events or effects in order of magnitude of their benefits (e.g. 1, 2, 3, 4 .....);

cardinal scale: a measurement system which allows a calculation of distance between benefits, either in a relative sense (an interval scale) or in an absolute sense (a ratio scale).

The benefits may be measured in any of these scales depending on the accuracy of the information. In case of a large set of ordinally measured impacts, it may sometimes be meaningful to transform the ordinal information into metric (cardinal) units by means of multidimensional scaling methods or alternative techniques.**{28}** This is especially useful if one wants to reduce ordinal information in a long list of attributes of a certain benefit profile to a limited set of main (metric) indicators of the profile at hand.