Challenges when Valuing Cultural Heritage Associated with Water

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This article outlines some of the difficulties associated with valuing cultural heritage. They include the surmountable problems of pricing cultural heritage and the associated market failures inherent in all water systems. Critical to any attempt to value cultural heritage is the need to quantify exactly what cultural heritage encompasses. While the theoretical concept of economic value is a relatively simple one, applying it to cultural heritage can only be accomplished if it is well defined.

KEY THEMES

< *Fig.1 Gondola repair shop, Venice Italy (Source: Brian Davidson, 2008).*

Introduction

What are the challenges in valuing the cultural heritage of a water system and how might it be incorporated in the total value of a water system? In economics, to answer these two questions initially requires some concept of the quantity of the item (cultural heritage) in question and then how it might be priced and then valued. The aim in this short article is to briefly outline some of the concepts, issues and difficulties surrounding how the cultural and heritage value associated with water could be valued.
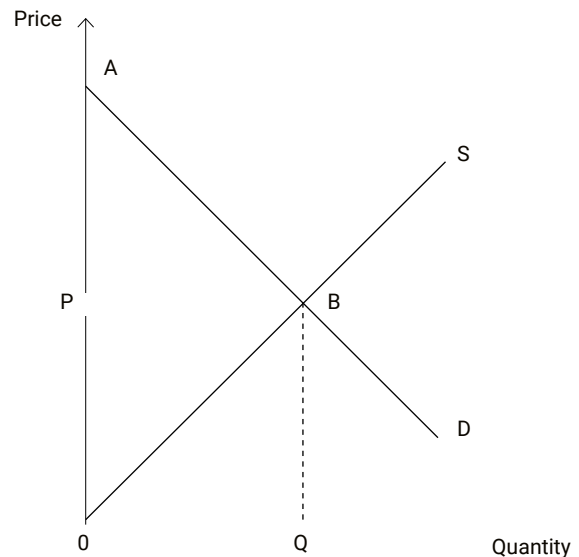
The Theoretical Concept of Value

While small marginal changes in the value of any good or service can be calculated by multiplying the prevailing market price by the change in the quantity involved, this is not adequate for measuring the total value of the good or service. The total value of a good or service (in this case cultural heritage) can be defined as the difference between what people are willing to pay for it, minus what they actually pay for it.

To understand the concept of value and the differences between it and the price or the cost of a good, please refer to figure 1. What is being suggested is that there is both a downward sloping demand curve (D), which reveals the declining willingness of people to pay for successive quantities of a good, and an upward sloping supply curve (S), which reveals the increasing cost of producing successive quantities of the good. The assumption is that cultural heritage is just like any other good or service. Where supply and demand intersect (B) the optimum quantity society demands for cultural heritage (Q) is determined, along with the price society would pay for it (P). This point is an optimum because it represents a position where the marginal cost of providing extra units of the good

equals the amount people are willing to pay for it. Beyond that point, the costs of provision outweigh what people will pay for extra units of it.

The total value of the cultural heritage, as defined above, is equal to the area under the demand schedule (what people are willing to pay for it), less the area under the supply schedule (what is paid for cultural heritage), out to the optimum quantity. In other words, the total value of cultural heritage is given by the area AB0 in figure 2. It should be noted that its value is different from the price of cultural heritage (P) and the total cost of cultural heritage (area BQ0 in fig. 2) (Hanemann 2006; Young 2014).

While many may only be interested in the demand for cultural heritage, it is important to realize that its provision at all levels comes at some cost. Thus, to assess the value for cultural heritage requires understanding its cost to society, which is embodied in the supply schedule. To calculate the value of cultural heritage what

∧ *Fig. 2 The theoretical concept of value (Source: Brian Davidson, 2022).*

is required is some idea of the supply and demand schedules associated with it. If the two schedules are known, then they can be equated to calculate the equilibrium price and quantity. In addition, the slopes of each schedule can be determined, or more importantly the own-price elasticities of demand and supply, to determine the total value. The own-price elasticates of demand and supply are measures of how responsive the quantities demanded and supplied (respectively) of cultural heritage respond to a change in its price. The more inelastic (unresponsive) the schedule, the greater the total value.

Difficulties in Determining the Value of Cultural Heritage

While it is easy to conceive of the value of cultural heritage in purely economic theory terms, the reality of course is a lot more difficult. Heritage is not a traded good with a revealed price. Furthermore, it isn't just a good, but also a service, which represents a different set of problems (Petit 1987). Because the interest is in the cultural heritage of water, it is part of a market littered with a lot of market failures. These issues need to be resolved. The greatest difficulty will be in measuring the quantity of "cultural heritage" available.

Quantifying cultural heritage

Cultural heritage could manifest itself in very tangible (e.g., historical infrastructure) and intangible (ways of thinking and practices) items. Could all the tangible items be classified as the "heritage" and all the intangible items be the "cultural"? Or is it a case that the two are so intertwined that they cannot be separated from one another? All these questions need to be addressed.

Clear definitions of what is involved in the quantity of "cultural heritage" and the contribution it makes to the water system need to be established before any valuation work is undertaken. This cannot be a vague statement, like those that are associated with the term "values" many use to justify some ethical position. Rather, an answer to the question "What are the quantifiable elements associated with water-related cultural heritage?" is needed as a precursor to any economic evaluation of its value.

Like other social values of water, what people mean by culture and heritage and how these are defined will change over time and through space. This change will in part be determined by the political will of those who control water (Hellegers 2018). In the long run, one also needs to consider the possibly perverse impact of creative destruction (as defined by Schumpeter [Hellegers 2021]) on heritage and culture. To illuminate this point, economic theory would suggest that the replacement of windmills with more efficient mechanical pumps is an act of creative destruction and technical progress. As this is beneficial, so cultural heritage (the act of preserving windmills) may need to be defined in different terms than the task it was originally used for.

Pricing cultural heritage and incommensurability

In terms of the valuing factor (the price in the simple analysis outlined above) does not need to be expressed in monetary terms. A solution to this problem is presented by Hellegers and Davidson (Schumpeter 1950). What they suggest is that non-monetary measures of value can be determined assessing the trade-offs from the opportunity costs of sacrificing the value of a monetary measured item with those of a non-monetary measured item.

A greater problem may well be that there is no way of measuring one of the intangible items of cultural heritage that are considered important. Economics does have a number of solutions to valuing things where market prices do not exist (see Sinden and Thampapillai [Sinden 1995] and Sinden and Worrell [Sinden 1979]). Contingent Valuation is also a widely used technique in this field, one that does present some problems.

Market failures

A far greater problem in taking this approach to valuing cultural heritage in the water sector is that the market for water is riddled with market failures. Market failures arise from when the trade in a good or service is affected by a monopoly, externality, a public good, inadequate property rights or asymmetric information (Sloman 2005). In water it could well be the case that the sector suffers from all five malaises. If a market for cultural heritage has its own market failures inherent in it, adding that to those associated with the water sector may well muddy the waters.

Concluding Remarks

Notwithstanding the issues associated with valuation (raised above), the real question that needs to be addressed is whether cultural heritage could be thought of as part of the total value of a water system. Under a classification system specified by Rogers and colleagues (Rogers 1998) social values are identified as a legitimate component of a water system. They would suggest that social values are those elements of the total value that fulfil societies' objectives. If maintaining and protecting parts of the culture and heritage of a water system are justified by fulfilling a societal objective, then they become part of the valuing process. While it is easy to conceptualize the value associated with preserving culture and heritage, a set of problems need to be resolved if the value is to be determined. The first and most difficult of those problems would appear to be those associated with quantifying what cultural heritage is.

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