1.   Application of welfare economics to the arts
William J. Baumol

> There are some very agreeable and beautiful talents of which the possession commands a certain sort of admiration; but of which the exercise for the sake of gain is considered, whether from reason or prejudice, as a sort of public prostitution. The pecuniary recompense, therefore, of those who exercise them in this manner, must be sufficient, not only to pay for the time, labour, and expense of acquiring the talents, but for the discredit which attends the employment of them as a means of subsistence. The exorbitant rewards of players, opera-singers, opera-dancers, &c. are founded upon those two principles; the rarity and beauty of the talents, and the discredit of employing them in this manner . . . Such talents, though far from being common, are by no means so rare as is imagined. Many people possess them in great perfection, who disdain to make this use of them; and many more are capable of acquiring them, if anything could be made honourably by them. (Smith 1776 [1904], bk I, ch. X, pt 1, pp. 108–9)

WELFARE ANALYSIS AND RATIONALE FOR PUBLIC FUNDING OF THE ARTS

Welfare economists seem not to have devoted much systematic attention to the arts. The connection, rather, grew from the other direction – the arts seeking justification in the analysis of welfare theory, not for themselves, but for the public funding on which they often rely. The problem is that, for a number of reasons, the arts have found it difficult to support themselves in the marketplace. There are obvious exceptions, such as commercial theatre and painters who have achieved popularity and wealth. However, much of artistic activity historically has depended on the voluntary patronage of royal princes and, later, merchant princes. As democracy took over the world's wealthier economies, government support often replaced that of the patrons. However, this gave rise to a troubling issue: why, in a society whose government ostensibly acted so as to contribute to the welfare of its citizens, should products, such as paintings, and services, such as opera performances, be singled out for financial support, when the bulk of the goods and services generated by the economy are left to their own devices to sink or swim in the marketplace?

The answer to some, few of them economists, seems obvious. The arts are among the most desirable products of civilization – indeed, they are among the most worthy of the outputs of the economy. However then, we must ask, if they are so worthy, why is this not matched by their demand? The answer is that their limited audience simply reflects inadequate education of the consuming public, and the consequently undeveloped ability to appreciate the finer things is all too easily attacked by those who question the credentials of the self-appointed arbiters of taste. The difficulties of those who advocate public support for the arts are compounded by the well-documented fact that their audience is typically composed of individuals whose incomes, wealth and education are well above those of the population as a whole. This means that devotion of general taxation to support of the arts invites condemnation as a reversal of Robin Hood practice, taking from the poor to give to the rich.

Economists with interest in the arts have been led to employ the tools of welfare economics to construct a more solid foundation for public funding. They have proposed a number of arguments in support of this approach – among them equality of opportunity, the external benefits of education, the public-good properties of the product, the infant organization argument and investment for the future. In addition, economists have returned to the merit-goods argument, the judgement that the arts merit public support simply because of the superiority of their inherent worthiness.[1]

Equality of Opportunity

There can be little doubt that, on average, consumers of the arts have incomes above those of members of society in aggregate. However, alternatively, the less affluent often do not get the opportunity to experience the arts and to discover the attraction of cultural activity for themselves. This problem is exacerbated by the high admission fees made necessary by high costs of live performance, museum operation and other cultural activities. So, if equality of opportunity is included in the calculation of social welfare, this can be taken as one justification for public support.

Beneficial Externalities

It is a standard argument of welfare economics that if an activity generates beneficial externalities, public subsidy of that enterprise may well enhance welfare. The externalities of artistic activity are, however, not entirely clear. There is the likelihood that one artistic undertaking can inspire others and, thereby, facilitate further creative endeavours. It has also been claimed that persons with interest in the arts are generally better members of society, increasing the benefits to others from their presence. However, these claims are not easy to prove or even to make explicit.

Culture as Public Good

There can be little doubt that cultural activities often possess public-good properties. A half-empty theatre or a sparsely attended museum is perfectly analogous to the uncrowded bridge (in the example provided by Dupuit 1844 [1952]) – since the true cost of an additional user is zero, if any non-zero price prevents anyone from using the facilities the result is a net social loss. This problem is particularly acute in the case of mass media, such as broadcasting, because there is no practical limit to the number of listeners who can be served without depletion of supply to others. Here too, however, a zero price is impossible without subsidy.

Infant Cultural Enterprise

The financial difficulties of new art forms and even new arts organizations are well known, and the starving unrecognized artist has become a cliché. The notion that new enterprises merit public assistance and that society benefits from such aid in the long run is an ancient argument, and has elicited much scepticism from economists.

Cultural Reputation and Investment for the Future

It is often claimed that, even if a society does not value the arts for itself sufficiently to provide the requisite support through the market, it may want to do so for other reasons. For example, it may want to avoid the reputation of being a society of Philistines, or it may feel that future cultural activity justifies current preservation of the arts. This attitude is parallel to that of that King of Naples who reportedly supported the opera on condition that he never be asked to attend.

Merit Goods

It seems generally to be felt among economists – even among those most personally supportive of the arts (see, for example, Peacock 1969 [1997]) – that, while these arguments have some validity, they do not by themselves constitute an overwhelming case for extensive support of the arts. The basic objection is that, while cultural activity undoubtedly offers such benefits, so do other human activities, and it is not clear on the grounds so far noted that the arts deserve to be singled out for special support. In response, it can be argued that subsidies are provided to many other activities, some with little in demonstrable benefits other than those they provide directly to their purchasers. However, few if any of these activities have made a convincing case for public support. Ultimately, at least some of the economists (and others) who advocate generous subvention to the arts fall back on Professor Musgrave's device: the merit-goods argument (see, for example, Scitovsky 1976), which proposes that the arts deserve support simply because they are significantly worthy. That is, the arts deserve public funding because they are good. If asked why, or how one tests the proposition, the implied answer is that it is self-evident. Whether or not this is accepted as convincing, it must be recognized to be an honest reply.

This completes the brief survey of the issue that is surely central to the welfare economics of the arts. It must be admitted that its protracted investigation by analysts of the highest calibre has not carried the discussion much further from where it stood some decades ago. The discussion turns now to a second critical issue for which welfare theory is pertinent: the role of instruments, such as copyright, in ensuring compensation of the suppliers of cultural products. This issue is hardly new, but recent economic developments have made the matter more acute, and analysis has contributed greatly to our insights on the subject.[2]

CULTURAL OUTPUT: COMPENSATION, THE NEED FOR REPEATED SUNK COSTS, PUBLIC-GOOD PROPERTIES AND MEASURES TO PROTECT INTELLECTUAL PROPERTY

The Basic Problems

Many art forms are characterized by public-good properties: they are not depletable, meaning that the number of consumers of a cultural product can increase without having to reduce consumption by anyone else, and exclusion may be difficult, meaning that individuals may be able to consume such a product without the permission of the supplier.

These two attributes, in turn, raise two issues: how can suppliers be compensated for their efforts (something desired not only as a matter of equity, but also in order to elicit their continued supply) and, if compensation is to be obtained through the market mechanism, what price, if any, should be charged for the products?

These are not new issues for the arts. A half-empty theatre raises all of these problems, but recent technological change has greatly increased their significance. The availability of the mass media and, especially, the Internet has magnified the size of the audience that can be provided for without depleting the provision to others. Moreover, these new transmission modes have made it more difficult to collect whatever compensation the supplier may consider appropriate.

As Dupuit (1844 [1952]) and Samuelson (1954) made clear, a key dilemma here is the desirability of charging consumers anything at all. If the price mechanism is the means used to compensate suppliers, a zero price cannot be optimal socially because artistic activity is not costless and, particularly where the activity is carried out for profit, a zero price will not elicit the socially optimal supply. Indeed, with such a product price, the output of commercial suppliers can be expected to be zero. However, zero output of such desirable products patently cannot be optimal.

Any non-zero price cannot be optimal either, for, if additional consumers can, for all practical purposes, be supplied at zero marginal cost, the exclusion of any consumer by a non-zero price must entail a social loss – preventing a benefit to a consumer whose cost to society would be zero.

This is only the beginning of the puzzles. Suppose that this dilemma is ignored as an unsolvable theoretical problem, and non-zero prices are the norm. What second-best price is consistent with maximal welfare benefits? The textbook conclusion does not suffice because price equal to marginal cost will generally not allow recoupment by the suppliers. The problem is traceable to the character of sunk cost that is common in artistic activity. Standard theory tells us that sunk costs do not matter, that their magnitude should not affect optimal price. As a piece of ancient history that cannot be changed by any current or future pricing decision, these are simply irrelevant, but in the arts, sunk costs are not just historical data. The problem is that sunk outlays, characteristically, must be incurred again and again. For example, the production costs of a newly mounted drama are indeed a sunk cost, and if an acting company were to present that drama and no other for the indefinite future, the sunk cost would be irrelevant. It would not matter whether the future performances rewarded the investors handsomely or failed to return any of their outlays. However, that is patently not how an acting company carries on its activities. New productions must be brought to the stage, normally at fairly frequent intervals, so that sunk outlays take the form of an inter-temporal stream of periodic and relatively large expenditures, rather than a once-and-for-all occurrence. Also, future sunk costs are still variable, not sunk, in the present. To induce investors to keep providing the necessary resources, past recoupment history must be such as to promise the possibility or even the likelihood of recovery of future sunk investments. This is true not only of stage productions, but also of the training required for singers or dancers. Trained performers have a very limited working life, and the sunk outlays entailed in their training must be repeated constantly if the activities in their fields are not to come to an end.

These difficulties have a near perfect analogue in the 'new economy', in which innovation has become the prime weapon of competition in much of industry. The proprietary

knowledge that emerges from inventive activity is well known to have significant public-good properties, and competition forces firms to repeat constantly the sunk outlays that are entailed in the innovation process. Not only are these problems in the performing arts and the innovation process the same, but it is arguable that the pricing principles that are applicable to either are also pertinent to the other.

Government Buyout of Intellectual Property and the Public-Good Problem

The analogy with the economics of innovation immediately offers one way of dealing with the problem that contributes further justification for government support. In the case of innovation, patents constitute the most direct analogue to copyright, in the arts. Both of these raise the public-good problem; they are designed to reward the creator of intellectual property by enhancing that person's ability to exclude unauthorized users, thereby making it prospectively possible for the creator to extract a price for its use. However, that non-zero price runs into the Dupuit–Samuelson dilemma: why exclude anyone from the benefit of costless usage of a product?

There is a considerable literature (see, for example, Kremer 1998, for an excellent discussion and citations of other writings) that suggests a way to cut this Gordian knot: patent buyouts. This entails outright purchase of the property by government, with the creators thereby offered appropriate rewards, in return for which they give up any right to charge for use of their creations. Kremer provides a dramatic example:

> In 1839 the government of France combined elements of the patent system and of direct government support of research by buying out the patent for Daguerreotype photography and placing the technique in the public domain. After the patent was bought out, Daguerreotype photography was rapidly adopted worldwide and was subject to myriad technical improvements. (Kremer 1998, p. 1138)

This goes a good part of the way towards providing a solution to the problem, as it provides the desired incentive for creative activity, while not precluding socially costless access to others. Such an approach is possible in the arts, but it must be recognized that it does not completely solve the problem. First, as Ramsey analysis shows (see below), the government subvention, and the resources it provides to recipients, must come from somewhere. This, in turn, must entail non-zero taxes, which themselves unavoidably distort decisions and therefore entail welfare costs. Second, there remains the unsolved theoretical problem of determining an optimal buyout price, particularly in light of a patent or copyright is a (deliberate) granting possible monopoly power to the creator of the intellectual property, who may well seek to extract a monopoly profit via the price. Finally, there is the problem of reality. While governments are often willing to supply part of such a subvention, they may not be prepared to provide enough to permit the activities to remain solvent with a non-zero price for their use, a problem exacerbated by the arts' ever-rising real costs.

Solvency Generally Requires Price Discrimination

Cultural products, then, are generally supplied at non-zero prices, even when they are produced with substantial government support. Moreover, the process is often characterized

by considerable price discrimination – student and senior discounts, reduced subscription prices, lower group prices, arrangements with schools, churches, and trade unions, and a variety of other such arrangements. This is done, at least in part, for reasons of equity – to prevent exclusion of the impecunious. Part of the purpose, however, as in subscription pricing, is to help in dealing with the financial needs of the enterprise. Economics teaches us that the need for this approach may be more pressing than practitioners recognize. It has already been noted here that marginal cost pricing is incompatible with survival of firms that need to incur substantial sunk costs repeatedly. Nor will even absolute freedom of competitive entry at zero entry cost drive prices down to the uncompensatory marginal cost level, in such circumstances. This is because entry can be expected to occur only if prices in the field offer the prospect of enabling an entrant to cover all of its prospective sunk costs. So any prices above marginal costs, but insufficient to cover sunk costs, will elicit no entry. Entry will only occur and drive down prices if at least some of those prices are sufficiently above marginal costs to recoup the sunk outlays. However, it has been known, at least since the writings of Dupuit in the mid-nineteenth century (see also the illuminating recent discussions by Hausman and Mackie-Mason 1988 and Varian 2000), that price discrimination helps the firm with fixed costs to recover its outlays. Indeed, recovery is sometimes unachievable without this. Here I go one step further and demonstrate that solvency generally is impossible without recourse to discriminatory prices, although this is not true in every case. Moreover, I show that effective competition in the form of totally unimpeded entry, at least into commercial cultural activity, not only does not prevent the adoption of such prices in those circumstances where it is required to prevent insolvency, but instead, these competitive pressures tend to make price discrimination mandatory.

Socially Optimal Discriminatory Prices

The full story follows from the observation that full ease of entry not only ensures that the incumbent firm's profits will be driven down to the competitive level, but goes beyond that. In such a market, entry and the threat of entry ensure that the incumbent, in the long run, cannot expect to earn more than competitive returns, no matter what prices it chooses to adopt for its products. Then our result follows:

1. Among the prices more than very temporarily available to the incumbent, those that maximize its profit will yield exactly the competitive rate of return.
2. If that maximum is unique, any other prices adopted by the incumbent will yield a rate of return below the competitive level, that is, a rate of return that is not viable financially.
3. Since differential prices are not subject to the constraint that all purchases must be provided at the same price, the profits attainable under discriminatory prices will generally be higher, and certainly no lower, than those offered by any uniform price. Consequently, the unique profit-maximizing prices that the firm is required to charge in order to break even normally will be discriminatory, with the firm that adopts them occupying the position of discriminatory price taker.

The competitive model, as a guide to socially optimal pricing, then suggests that not only financial viability, but also static optimality, requires the prices for cultural products to be

discriminatory. However, there is a more direct way to see that. Ramsey theory addresses itself directly to the determination of second-best prices in the presence of recoupment shortfall, if prices were set at marginal costs (see Ramsey 1927, and, for a simpler description, Baumol and Bradford 1970). Moreover, the well-known Ramsey formula clearly calls for discriminatory pricing, with the differences between prices and marginal costs determined by demand elasticities. Given the solvency constraint, the prices that emerge are precisely those that, in the past, were referred to as charging what the traffic will bear. However, the zero economic profit constraint means that these prices constitute no exercise of monopoly power. This is one of the key implications of the discussion of this section.

Licensing of Copyright for Commercial Reuse

Ramsey theory constitutes the foundation of welfare analysis of the pricing of cultural products. In the world of mass media, however, this is not the end of the story. Once copyright becomes an instrument for the extraction of compensation, a new issue arises. Others engaged in cultural activities will want access to the material covered by copyright for its reuse in their own pursuit of profit. For example, films and recorded television programmes often are re-broadcast by others not their proprietors, and recordings of music are played by broadcasters. In some cases, the users are direct competitors of the copyright owners. The question is whether or not there exists an economically efficient price for this access to the material covered by copyright. I show next that there is such an efficient price.

There are levels of the access price that are materially too high or substantially too low for a social optimum. Prohibitively high licensing fees are equivalent to outright refusal to give a licence to anyone, while inadequate fees, which can easily occur if licensing is compulsory, constitute a strong disincentive for investment in the creative activity that yielded the product. Fees that are excessively low can also lead to use of the product by some inefficient firms at the expense of others better qualified to do so.

The theory of price regulation provides a pricing principle that can be used in finding an efficient copyright-licensing fee. This principle has been referred to as the efficient component-pricing rule (ECPR) or as the parity principle. The efficiency property of the parity-pricing rule is the attribute that, when charged the parity licence fee, a renter of the copyrighted material will be able, viably, to charge consumers a lower price than the copyright owner's only if the former is the more efficient of the two in the process of transmitting the item to consumers.

The logic of the proof that the parity-pricing formula (given below) satisfies this requirement is not difficult to understand. For this purpose, it is helpful to think of the item covered by copyright as one of the inputs to the final product provided to consumers. Then, the purchaser of access to the material under copyright (the renter) is engaged in the transmission of this material to customers. Thus, the latter is clearly not placed under an inefficient competitive handicap by the licence fee if, when the renter's remaining input cost of supplying (transmitting) the final product to consumers is X pounds per unit of final-product output lower than the copyright owner's, the renter can just afford to provide the final product exactly X pounds cheaper than the copyright owner can. This has been called the level playing field theorem.

All this can be described formally, giving an explicit formula for an efficient licence fee. We use the following notation:

$P_{f,i}$ = the copyright owner, I's, given price per unit of final product;
$\min P_{f,c}$ = the competitor, C's, minimum viable price of final product;
P_i = the price charged for a licence to use the copyright, per unit of final product;
$IC_{r,i}$ = the incremental cost to the copyright owner of the remaining final-product inputs, per unit of final product;
$IC_{r,c}$ = the corresponding figure for the competitor; and
IC_i = the incremental cost to the copyright owner of use of the copyright by itself or by others.

As will be demonstrated, ECPR requires that the licensing price satisfy the following rule:

$P_i = P_{f,i} - IC_{r,i}$. (licence price = I's final-product price – I's IC of remaining inputs)(1.1)

Equation (1.1) tells us that ECPR establishes a tight link between the price, $P_{f,i}$, that the copyright owner charges for its final product and the price, P_i, it charges its rivals for the licence to use the copyright. If incremental production costs do not change, efficiency requires that a rise in one of these prices must be matched, pound for pound, by a rise in the other.

Then our task is to prove the level playing-field theorem. The parity price, as given by equation (1.1), for use of material covered by copyright is both necessary and sufficient for the playing field to be level. This means that the maximum difference between the remunerative prices of the perfect substitute final products of the two firms, the copyright owner (I), and its final-product competitor (C), is exactly equal to the difference in the firms' remaining incremental costs (other than the licence fees).

Proof: The level playing field is defined by

$$\min P_{f,c} - P_{f,i} = IC_{r,c} - IC_{r,i}. \tag{1.2}$$

That is, the lowest compensatory price the competitor can afford to charge should differ from the copyright owner's exactly by the amount (positive or negative) that the former's remaining costs are below the latter's. The lowest price that is financially viable for the competitor clearly is given by:

$$\min P_{f,c} = P_i + IC_{r,c}. \tag{1.3}$$

That is, the price must cover the copyright licensing cost plus the remaining cost of supplying the final product (including the normal profit on the required capital).

Comparing the two equations, we see at once that the level playing-field condition (1.2) will be satisfied if and only if:

$$P_i = P_{f,i} - IC_{r,i}. \tag{1.4}$$

However, this is the parity-pricing formula (1.1). Thus, parity pricing is both necessary and sufficient for a level playing field. QED.

This completes our proof that parity pricing of a copyright licence is necessary for economic efficiency in the provision of final product by its competing suppliers. For, if the rule is violated, a less efficient supplier of the remaining inputs can win the competition for the business of supplying those inputs, instead of the task going to its more efficient rival. That is, violation of equation (1.1) permits the less efficient supplier of the remaining inputs, such as transmission, to under-price its more efficient competitors.[3] The proof is readily extended to cases with three or more competing firms.

OTHER ISSUES AND CONCLUDING REMARKS

There seems, so far, to be no systematic literature that can be deemed to constitute a welfare economics of the arts and culture. Yet it has been possible to show here that these arenas do give rise to issues that are definitely within the scope of welfare theory and that require such theory for their analysis.

I have noted some appropriate analytic methods, but the topics discussed here qualify primarily as illustrations. There are many other topics related to culture that appear to demand welfare analysis. For example, the issue of cultural heritage, and its valuation, is a significant and fascinating topic that calls for study in terms of welfare analysis. In addition, communication of the products of artistic activity naturally gives rise to such issues as network externalities and compatibility of the instruments of communication.

In summary, much remains to be done in the field. However, the promise of such an undertaking is underscored by the analytic tools already available in other areas of applied economics, which means that a good part of the requisite work already has been carried out.

NOTES

1. For two excellent compendia of pertinent discussions, see Blaug (1992) and Towse (1997, vol. 2, pts V–VII). For other discussions with significant additional insights, see Frey and Pommerehne (1989) and Throsby (1994). For a sceptical view, see Grampp 1986, also in Towse (1997, pp. 669–73).
2. Much valuable information on the subject and much insight has been provided in Towse (2001).
3. Here, we should pause to admit that, where scale economies mean that marginal cost pricing is not feasible, theory calls for adoption of a Ramsey price for the licence, as well as for final product, and that Ramsey price can violate ECPR. It should be noted, however, that a frequent complaint against ECPR in regulatory arenas, such as telecommunications and electricity, is that it yields bottleneck input prices that are disturbingly high. Yet, the Ramsey-adjusted ECPR prices can be expected to be even higher. Specifically, as long as any rents are left to a competitor of the owner of an essential facility, such as a patent or a copyright, the rival's demand for the essential facility will be inelastic. Thus, the Ramsey rule requires the price of access to the facility to be raised until all such rents accrue to the facility's owner, while ECPR leaves competitors' efficiency rents to them.

SEE ALSO:

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FURTHER READING

For a general overview of the economic issues raised by the arts, there can be no better source than the superb collection put together by Ruth Towse (1997). Though an older volume, the work by Blaug (1992) lays out the subject very effectively. On the issue of public funding, opinions range from Scitovsky (1976), who was an enthusiastic supporter of government financing, to Grampp (1986), who is at the opposite end of the spectrum, with careful intermediate positions taken by Peacock (1969 [1997]) and Frey and Pommerehne (1989). The classical exposition of the issues raised by public finance and the 'public goods' issue, in particular, can be found in Musgrave (1959). For more on the optimal pricing of permission to use material covered by copyright, see Baumol (2005).