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THE MEASUREMENT OF DAMAGES TO PUBLIC PROPERTY AND INTEREST

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INTRODUCTION

IN RECENT YEARS there has been a significant rise in concern among the public and the legal profession concerning damages to public property and public interest. The collapse of a dam in the Buffalo Creek area of West Virginia caused many deaths; it also caused vast damage to the property of the state, counties, towns and other governmental units. Assets destroyed or damaged included a wide range of property, such as roads, bridges, schools, buildings and equipment.

The new concern with measuring damages to public property and interest comes in part from attempts to include such damages in the evaluation of the desirability of constructing private and public projects. Environmental impact statements and land use studies need objective measurement of the consequences flowing from proposed projects. No one method or technique is going to solve the problem of the measurement of impacts, but this article will attempt a partial and limited answer.[1]

NO PROBABLE BUYER

The criterion for judicial measurement of money damages is fair "market value."[2] In wrongful death cases, the appraiser seeks the decedent's worklife capacity to earn.[3] In cases of damages to an ongoing business, the preferred method of evaluation of loss is capitalization of net earnings at an appropriate rate.[4] The appraiser of loss to public (government) property uses this same legal standard (fair market value), but must rely on a different method because of an almost unique characteristic of public property. That characteristic is the frequent absence of a probable buyer in a free market.[5]

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[1] The analysis in this article may also have use in appraising damages in the case of some private property, particularly property of some non-profit corporations such as private schools and colleges.

[2] See Hedderman v. Robert Hall of Waterbury, Inc., 145 Conn. 410, 144 A.2d 60 (1958); Covey v. Western Tank Lines, Inc., 36 Wash. 2d 381, 218 P.2d 322 (1950). See also H. L. OLECK, CASES ON DAMAGES, ch. 5 (1962) [hereinafter cited as OLECK].

[3] Proof of amount in cases of wrongful death has been covered in Leonard, *Future Economic Value in Wrongful Death Litigation*, 30 OHIO ST. L.J. 502 (1969).

[4] Proof of amount in cases of business loss has been covered in Leonard, *The Measurement of Damages: An Economist's View*, 31 OHIO ST. L.J. 687 (1970).

[5] In some cases there is a probable buyer. If so, the evaluation should consider the demand side of the market just as in a case involving personal or corporate property.

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The appraisal of loss in a wrongful death case properly assumes an employer willing to hire. The appraisal of loss to an ongoing business properly assumes a willing buyer in a free market. In many cases, there is no probable buyer in a free market for many of the items of public property, such as roads, bridges, schools, and park facilities.

The absence of a probable buyer in a free market excludes all those evaluation theories and techniques which rely on a comparison of costs and revenues, whether these be total costs and total revenues, or marginal costs and marginal revenues.[6] Without a probable buyer there can be no defensible evaluation of worth to the buyer. This excludes not only neo-classical price theory, but also the newer cost-benefit analysis, often used to decide the desirability of constructing new public (government) projects.[7] Therefore, in the absence of a probable buyer, value must depend on conditions of cost for the project being evaluated.

WHOLENESS REQUIRES TOTAL COST

In the case of public (government) property, the most defensible concept of cost is total cost. This is due to the fact that most public projects (roads, bridges, etc.) exist and render services as a whole (a totality). Marginal analysis is not possible since parts do not generally render partial services; parts render services generally in relation to the whole or not at all. For example, the highway surface, or berm, or safety fence, when used alone, has no real use value. It is only when they are used in a totality, permitting to the public the safe enjoyment of the entire facility, that they take on any ascertainable use value. Thus, value must depend not upon an analysis of the parts, but rather upon an analysis of the whole.[8]

THE TIME DIMENSION

Having determined that in the case of public property total cost may be

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[6] The classical tradition in economics taught that price depended upon a single socially necessary cost of production, namely labor costs. As the classical tradition altered to **become neoclassicism**, economists made price dependent upon both costs (all necessary costs) and revenues. The price determining relationship was between marginal costs and marginal revenue. *See* A. SMITH, AN INQUIRY INTO THE NATURE AND CAUSE OF THE WEALTH OF NATIONS (1937) for the classical view. *Cf.* 5 A. MARSHALL, PRINCIPLES OF ECONOMICS (8th ed. 1920) for the neo-classical view.

[7] The planning-programming-budgeting system (PPBS) or cost-benefit analysis was introduced in 1965 by President Lyndon Johnson for use in public sector decision-making on policies and projects. It has since become an important management tool in wide areas, of both the government and private non-profit sectors, of the economy. *See* F. J. LYDEN & E. G. MILLER, PLANNING, PROGRAMMING BUDGETING: A SYSTEMS APPROACH TO MANAGEMENT 5 (1968).

[8] The relation of parts to the whole is an important issue in the philosophy of the scientific method. *See generally* WHITEHEAD, PROCESS AND REALITY, ch. 3, 4 (1929). For an applications to economics see Leonard, *Economics and the Problem of Method*, 30 SOCIAL SCIENCE 89 (1964).

the best measure of value, we must now decide upon issues dealing with the dimension of *time*. Should total cost be based upon costs actually incurred to originally build the facility (historically actual cost) even if construction costs have risen; or should total cost be interpreted as the present cost of reproduction? How should the evaluation reflect the passage of time from date of construction to date of evaluation (date of trial, or date of settlement)? Should depreciation allowance be based on a straight-line, on a double-rate declining balance, or sum of the digits, or an end-load, or upon some other method of measurement? These are important questions since different answers yield very different final figures for value.

Our ethical guidance, grounded in the common law of damages, is that the plaintiff should be "made whole";[9] that is, he should be placed as nearly as possible in the exact pecuniary position he held immediately prior to the damage to the property. In the case of public property, wholeness is achieved only upon the complete replacement of the damaged facility. Therefore, the valuation of a bridge destroyed by a wrongful act, requires more than the value of steel and concrete and labor; it also involves analysis of that valuable input item called *time*.

COMPARABLE AND ADJUSTED HISTORICAL COSTS

Obtaining a money amount which would make the aggrieved party whole first requires a still picture of total costs, with the total costs computed as of the day of the wrongful act. If comparable facilities were priced at or near that time, the price of these facilities may be used to help price our studied facilities,[10] taking into account necessary adjustments for size, location, and other important variables. If comparable facilities cannot be found, historical actual total cost for the facility may be used,[11] with adjustments made in accordance with those economic indices most nearly related to total cost, such as costs of construction materials, wage rates for construction labor, and/or indices of

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[9] "An award of damages for a civil injury or loss . . . is meant to put the claimant [insofar as money can do so] in the position in which he would have been if the injury . . . had not occurred." OLECK, *supra* note 2, at 1.

[10] The use of comparable assets to evaluate an asset is well established in cases involving businesses for profit. *See* Bigelow v. RKO Radio Pictures, Inc., 327 U.S. 251 (1946); Elyria-Lorain Broadcasting Co. v. Lorain Journal Co., 358 F.2d 790 (6th Cir. 1966); Karseal Corp. v. Richfield Oil Corp., 221 F.2d 358 (9th Cir. 1955); Goldman Theaters v. Loew's Inc., 69 F. Supp. 103 (E.D. Pa. 1946), *aff'd* 164 F.2d 1021 (3d Cir.), *cert. denied* 334 U.S. 811 (1948).

[11] The actual historical cost, or the value at the time of the harm, or the highest value reached by the time of the trial, have all been approved in various jurisdictions. *See, e.g.,* Standard Oil Co. of N.J. v. Southern Pacific Co., 268 U.S. 146 (1925); Isthmian S.S. Co. v. McElligott, 177 F.2d 591 (5th Cir. 1949); Hedderman v. Robert Hall of Waterbury Inc., 145 Conn. 410, 144 A.2d 60 (1958); Covey v. Western Tank Lines, 36 Wash. 2d 381, 218 P.2d 322 (1950). *See generally* OLECK ch. 5.

total construction costs.[12] Where possible, the index or indices used should be different for different items of real capital (property) to reflect the actual production function (the mix of resources) used in the construction of each.

DEPRECIATION

Now that we have determined a total reproduction cost, new as of date of wrongful act, we must now allow for the depreciation[13] of the real capital (property). Since the value of the asset normally declines in use as time passes, we should determine a reasonable and proper rate of depreciation and compute the remaining depreciation to the end of the useful life of the asset. If the dollar value of the depreciation discount were used to figure the value "used up" before the date of the wrongful act, it would seriously overstate the amount. However, this makes no difference to our problem, since our evaluation is being made of the remainder (unused portion) of the asset, where the remainder value is properly a fraction of the total reproduction cost new as of the date of the wrongful act.

The reason for a depreciation allowance for the purposes of this article is to help determine a fair market value. It is therefore quite different from the issue of depreciation allowances for tax purposes (federal, state or local). It is also quite different from depreciation as a system of allocation of resources inside a business firm.[14] It is much closer to the evaluation often carried out by corporate financial officers for purposes of insurance and borrowing.

Having considered the movement of prices in our total reproduction cost new, our rate of depreciation becomes a measure of the decline in the ability of the asset to render useful services, both from the date of construction to the date of wrongful act and from the date of wrongful act to the end of the useful life of the asset (property). What is a reasonable and proper rate of depreciation when it has been divorced from the problem of the changing value of the asset? The straight-line method depreciates the asset by the same percentage amount each year. If the asset has a 10-year life, each year, the depreciation is *10%* of the original value.

The double rate declining balance system depreciates the asset in the first year by two times the rate used in the straight-line method. The second year

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[12] Applicable wages may be found in MONTHLY LABOR REV. (U.S. Dept. of Labor, Bureau of Labor Statistics). Applicable prices may be found in FEDERAL RESERVE BULL.

[13] At one time the accountant's concept of depreciation involved an amount of money set aside to replace an asset when it had completed its useful life. Today most accountants deal with depreciation (decline) in the value of assets over time whether or not any funds are set aside for replacement. Using up the asset does not depend upon setting money aside, nor upon eventual replacement of the asset. *See* E. CAREY BROWN, DEPRECIATION ADJUSTMENTS FOR PRICE CHANGES 1, 2 (1952).

[14] A more detailed discussion may be found in R. LINDSAY & A. W. SAMETZ, FINANCIAL MANAGEMENT ch. 10 (1963).

the same percentage rate is used as in the first year, but is applied to the declining balance. In the later years it is necessary to shift to straight-line or the asset would never be fully depreciated.

The sum of the digits method depreciates each year by a fraction of the total value. The numerator is the number of years of expected life and declines by one as each year passes. The denominator is the sum of the number of years of life of the asset, *e.g.*, $5+4+3+2+1=15$ for an asset with 5 years' life. The denominator remains the same each year. Thus the annual depreciation in this case is 5/15 then 4/15, 3/15, 2/15, 1/15.

The various reasons used by accountants for private businesses to support the double-rate declining balance system or the sum of the digits system do not apply with great force in the case of public (government) property. Those reasons include:

1. desire to hedge against uncertainty;

2. desire to show a higher rate of return on capital investment;

3. desire to emphasis "quick dollars" rather than "slow dollars" as a means of offsetting some effects of inflation;

4. a belief that efficiency declines in the later years in the worklife of a machine; and,

5. the very low prices available for second-hand or salvage machines and equipment.

Both the double-rate declining balance system and the sum of the digits system speed up the depreciation of the asset. Where the straight-line method would depreciate a 10-year asset by *50%* in 5 years, the double-rate declining balance system would show depreciation of *67.2%* and the sum of the digits method would show depreciation of *72.7%*. The straight-line method seems preferable to the other two in the evaluation of damages to public properties.

It might be argued that the rate of depreciation should be related to the probable pattern of use of the asset being studied. If a highway has an increasing volume of traffic, perhaps the rate of depreciation should be larger in the latter part of its useful life. This proposal has some logical appeal, but the necessity of formulating probable future use patterns for items of public property involves tremendous unknowns and complexities and has apparently not been widely used.[15] For purposes of evaluation the straight-line method seems to be the best method for depreciation of public property.

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[15] For example, if the highway carries more traffic, should the increased quantity of services be corrected for declines in quality, such as road congestion?

PRE-JUDGMENT INTEREST

The plaintiff's claim for damages to public (government) property should include an item for interest on the computed loss from the date the loss occurred until the date compensating payment is made.[16] In some jurisdictions, the rate of interest used is the rate at which that government can borrow. This is clearly too low a figure.[17] Government borrowings occur in a money and capital market where highly liquid funds (demand deposits at commercial banks) are exchanged for securities which, although less liquid than that, are still far more liquid than the real assets whose value we are studying. Since, ordinarily, the less the liquidity[18] the higher the interest rate which is appropriate, the interest rate to be used here, therefore, should be substantially higher than the current rate paid on borrowings by that government entity.[19] The exact rate used should depend upon conditions in the money and capital market at the time of appraisal or trial.

LOSS OF SERVICES

Payment of damages, including money value of assets and prejudgment interest, leaves the plaintiff whole as of date of wrongful act.[20] But in the case of many capital assets of the public (government), money in hand is not capital goods (bridges, roads, etc.) in place. There is a continuing damage to the public in the loss of use of facilities from date of damage to date new facilities are in place for public use. Assessment of damages should, therefore, include compensation for this loss. An approximation of the amount of this loss might be the extension for a new time period of the earlier formula (total reproduction cost new minus straight line depreciation from date of

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[16] Pre-judgment interest is included in some jurisdictions and excluded in others. *See* OLECK 254, "Unliquidated claims which compute their amounts on market or other established base of value are entitled to interest as a right in some courts, or at the discretion of the jury in others." *See, e.g.,* Blustein v. Eugene Sobel Co., 263 F.2d 478 (D.C. Cir. 1959); Foster v. Augusta, 174 Kan. 324, 256 P.2d 121 (1953); Childress v. C. W. Myers Trading Post, Inc., 247 N.C. 150, 100 S.E.2d 391 (1957); State Highway Comm. v. Wunderlich, 194 Miss. 119, 11 S.2d 437 (1943).

[17] *See* 2 INT'L ENC. OF SOCIAL SCIENCES 190 (1969):
> In government, however, there is a persistent tendency to regard the rate at which the government can borrow as that which should be applied in assessing particular investment projects. . . . It is safe to say that the rate with which the efficiency of a public investment project should be compared is normally higher than the rate at which the government can borrow.

[18] High liquidity means the asset may be converted to money with little inconvenience, low cost, and low risk of loss.

[19] Use of the interest rate paid on state or local government securities would reward the alleged wrongdoer (defendant) with the special advantages extended municipalities in the federal and some state income-tax laws.

[20] The pre-judgment interest was to compensate for late payment of loss incurred from date of wrongful act, to the date compensation is paid. *See, e.g.,* Flamm v. Noble, 296 N.Y. 262, 72 N.E.2d 886 (1947). *See also* note 16 *supra.*

original construction), plus a correction for changed costs of construction for each year until the new facilities are in place.[21]

PARTIAL DAMAGES

The analysis so far has assumed total loss of the public (government) assets being appraised. There are cases in which the loss is partial, as when facilities are damaged rather than destroyed. The measurement of the dollar amount of the loss should be based on that percentage of the total value which reflects loss of services the asset supplies, not on a physical or engineering estimate of damages.[22] In the case of a school, it is not what portion of the physical assets which have been destroyed, but rather the loss of what portion of the services of that asset rendered to the school children and the taxpayers. In fact, there may be cases, especially with bridges and highways, where there is a total loss of services of an asset without any physical or engineering loss. A facility which cannot render services because of inaccessibility is, for the time period of its inaccessibility, equal to a facility destroyed. The standard for appraisal of loss should be services not rendered.[23]

It is not likely that any appraisal of damages in an actual case can obtain all the information required by the suggestions in this article. Lacking perfect knowledge, we must rely on what is available and on informed estimates. "The weight to be accorded evidence which is based upon estimates . . . depends upon an evaluation of the relative probabilities that one party's estimates will prove more accurate than the others."[24] Fortunately, "juries are allowed to act on probable and inferential, as well as upon direct and positive proof."[25]

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[21] Damages for the period from date of trial to date new facilities are in place may have to be discounted to present (date of trial) value.

[22] This is similar in some respects to the idea that measurement of damages in cases of partial personal disability, should be based on impact on earnings, rather than exclusively on physical disabilities as measured by a physician. If an individual's ability to earn is based on capacity to use both arms, the loss of capacity to earn by loss of one arm may be 100%, not 50%.

[23] A truly comprehensive view of total compensatory damages might include losses to the government caused by damages to private persons. Loss of a citizen's capacity to earn money due to such an accident reduces the income and other tax receipts of the government. Business losses impose losses to the state through corporate income taxes and other business taxes. The state is "made whole" only if these claims are counted. It is unclear whether the courts would consider this a "proximate cause" or merely "remote" damages. *Proximate* damage means damage which is reasonable, expected, and direct. *Remote* damage means that damage which is unusual, unexpected, and not reasonably foreseeable. *See, e.g.,* Chambers v. Everding, 71 Ore. 521, 526, 143 P. 616, 620 (1914).

[24] A. C. Becken Co. v. Gemex Corp. 199 F. Supp. 544, 533 (N.D. Ill. 1961), *aff'd* 314 F.2d 839 (7th Cir.), *cert. denied,* 375 U.S. 816 (1963).

[25] Bigelow v. RKO Radio Pictures, Inc., 327 U.S. 251, 264 (1946).