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Comment

A MISUSE OF STATISTICS AND FUTURE DAMAGES

I. INTRODUCTION

An injured party may generally recover damages for various types of personal injuries in tort litigation. In particular, a plaintiff is allowed to recover for damages reasonably expected in the future.¹ This comment is concerned primarily with the use of statistics in calculating future earning capacity, but it will also examine other problems encountered in attempting to measure prospective damages.² Initially, the comment will outline and criticize the mechanics involved in the application of the "present approach." Then it will analyze the use of statistics and will note that the present formula used in calculating future damages leads to a consistent overstatement of damages. Finally, the comment will offer alternative approaches that will hopefully avoid the shortcomings of the "present approach."

II. PRESENT APPROACH

A. GENERALLY

Before analyzing the use of statistics in detail it is necessary to briefly note some general characteristics and weaknesses of the present approach to the calculation of damages.

First, and most important to this comment, is the requirement that all damages, past, present and prospective, be awarded to a plaintiff in one lump sum. This requirement necessitates the defendant tendering one payment to a plaintiff for all damages result-

¹ *Washington & Georgetown R.R. v. Harmon's Adm'r*, 147 U.S. 571, 584 (1893): "[T]here was evidence which justified a finding that future damages would inevitably and necessarily result, and this being so there was error in the instruction upon that subject." See also *Peacock v. Brandeis and Sons*, 157 Neb. 514, 525, 60 N.W.2d 643, 650 (1953): "In arriving at the amount of plaintiff's damage the jury was required to take into consideration, as instructed, the character of the injury, pain, suffering, and loss already sustained, the reasonable value of medical care entailed or required up to the time of the trial, and also what in these respects would be entailed or required in the future as a consequence of the accident and injury."

² The courts have held that a plaintiff is entitled to an award for the future effect of his injury. In *Detroit Taxicab and Transfer v. Pratt*, 2 F.2d 193, 194 (6th Cir. 1924), it was held that "[a] person injured by the negligence of another is entitled to an award for the future effect of his injury, the amount thereof to be estimated by the jury and included in its verdict."

ing from the defendant's negligence.³ It further makes it necessary for the legal system to devise some sort of procedure to calculate future damages since the defendant is required to compensate for the future effects of his negligent behavior. Although the "lump sum" doctrine has been criticized as capricious and inflexible,⁴ it nevertheless has been applied in American courts almost⁵ without exception.

Further, damages are typically awarded by the same jury that establishes liability. This procedure has raised some questions related to the accuracy of amounts awarded in such a fashion. The traditional assessment gives rise to the problem of the jury considering the "degree" of defendant's negligence against the amount to be awarded plaintiff.⁶ Where such a weighing occurs the amount of the award no longer reflects the actual damages sustained and expected, but rather the culpability of the defendant. Also, the jury is not generally allowed to consider the effect of probable income taxes,⁷ attorney fees⁸ or insurance⁹ upon the damage award.

³ See generally *Slater v. National Mexican Ry.*, 194 U.S. 120 (1904) (dictum).

⁴ "The jury almost always is asked to reach decision on imperfect, incomplete and conflicting evidence. . . . This ambiguity . . . greatly increases the jury's freedom and affords them the chance to use their special equities, but it also disturbs them to decide so much of a man's future fate. And more than one jury has been puzzled as to why the future cannot be left in the custody of the court to be adjusted as the future events require much in the fashion of alimony payments." Kalven, *The Jury, the Law and the Personal Injury Damage Award*, 19 OHIO ST. L.J. 158, 165 (1958).

⁵ In *M. & P. Stores, Inc. v. Taylor*, 326 P.2d 804, 808-09 (Okla. 1958), the court allowed a lump sum of \$36,000 to be paid in installments saying that "[t]he verdict should not have been rendered in this form and should not have been received in this form. However, it was received and neither party objected to it and neither party now contends that the verdict was void, and under these circumstances this court will not of its own volition invalidate it."

⁶ In *Fuentes v. Tucker*, 31 Cal. 2d 1, 187 P.2d 752 (1947) (concurring opinion), Judge Carter discussed the human tendency of weighing liability against culpability in arriving at damages to be awarded.

⁷ *Chicago & N.W. Ry. v. Curl*, 178 F.2d 497 (8th Cir. 1949); *Plant v. Simon Co.*, 321 F. Supp. 735 (D. Md. 1970); *Hall v. Chicago & N.W. Ry.*, 5 Ill. 2d 135, 125 N.E.2d 77 (1955); *Briggs v. Chicago Great W. Ry.*, 248 Minn. 418, 80 N.W.2d 625 (1957); *Dempsey v. Thompson*, 363 Mo. 339, 251 S.W.2d 42 (1952). *But see* *Floyd v. Fruit Industries, Inc.*, 144 Conn. 659, 136 A.2d 918 (1957) (In a wrongful death action evidence as to the effect of income taxes was properly admitted.)

⁸ *McWeeney v. New York, New Haven & Hartford Ry.*, 282 F.2d 34 (2d Cir. 1960); C. McCORMICK, *DAMAGES* § 71 (1935).

⁹ See Fleming, *The Collateral Source Rule and Loss Allocation in Tort Law*, 54 CALIF. L. REV. 1478 (1966).

Furthermore, while the use of expert testimony is allowed to aid the jury in calculating prospective harm, the courts have been quick to restrict such testimony where it invades the province of the jury.¹⁰

Finally, there are only certain types of harm that are qualified for compensation.¹¹ Where the future damages are concerned¹² the courts generally allow recovery for future pain and suffering reasonably expected,¹³ the future medical care expected¹⁴ and the value of time and earnings reasonably certain to be lost in the future. The Nebraska Supreme Court has said:

In computing the damages for personal injuries resulting from loss of future earning capacity allowance should be made for the earning power of money and when the loss of future earnings are considered the jury should take into account the present value of the future earnings which it finds the claimant has, by reason of his

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- ¹⁰ The actuary demonstrating the proper method of calculation is generally not allowed to use figures pertinent to the plaintiff's situation. Instead the actuary must use neutral figures. See *Allendorf v. Elgin, Joliet & Eastern Ry.*, 8 Ill. 2d 164, 177-78, 133 N.E.2d 288, 294-95 (1956): "To allow an actuary to testify to figures, which the jury might adopt as real, carries with it the danger that the jury will accept them not only as the actuary's explanation of the process of computation, but also as proof We are of the opinion that the proper method for assisting a jury in making damage calculations is for the actuary to use neutral figures."
- ¹¹ Several courts have permitted the loss of enjoyment of life to be considered as a factor in determining damages. See generally *Dallas & Mavis Forwarding Co. v. Liddell*, 126 Ind. App. 113, 126 N.E.2d 18 (1955); *McAlister v. Carl*, 233 Md. 446, 197 A.2d 140 (1964); *Baker v. Manhattan R.R.*, 118 N.Y. 533, 23 N.E. 885 (1890).
- ¹² Generally the courts require that adequate evidence be presented to show that future harm will result before allowing recovery. See generally *Mendoza v. Rudolf*, 140 Cal. App. 2d 633, 295 P.2d 445 (1956) (pain and suffering); *Pueblo v. Ratliff*, 131 Colo. 381, 281 P.2d 1021 (1955); *Seymour v. House*, 305 S.W.2d 1 (Mo. 1957) (earning capacity); *Herndon v. Crawford*, 174 Neb. 618, 119 N.W.2d 82 (1963) (pain and suffering); *Connolly v. Philadelphia Trans. Co.*, 420 Pa. 280, 216 A.2d 60 (1966) (pain and suffering); *Lundquist v. Western Casualty Co.*, 30 Wis. 2d 159, 140 N.W.2d 241 (1966) (earning capacity).
- ¹³ *Husak v. Omaha Nat'l Bank*, 165 Neb. 537, 86 N.W.2d 604 (1957) (plaintiff can recover for future pain and suffering reasonably expected to occur); See also *Chicago & N.W. Ry. v. Candler*, 283 F. 881 (8th Cir. 1922) (allowance for future pain and suffering not restricted to present value).
- ¹⁴ See generally *F. W. Woolworth Co. v. Seckinger*, 125 F.2d 97 (5th Cir. 1942); *Seeing Denver Co. v. Morgan*, 66 Colo. 565, 185 P. 339 (1919); *Steele v. Brown*, 43 Ill. App. 2d 293, 193 N.E.2d 352 (1963); *Helman v. Sacred Heart Hospital*, 62 Wash. 2d 136, 381 P.2d 605 (1963).

injuries, been deprived, that is, the damage for future loss of earning power is the amount thereof reduced to its present worth.¹⁵

Although the above description is rather abbreviated it does demonstrate some of the problems with the present approach. Very simply, the procedures adopted by the courts are likely to impede an accurate estimation of damages.

B. A TYPICAL CALCULATION

Clearly the legal system's requirement that damages, past, present and prospective, be awarded in a lump sum payment¹⁶ has made it necessary for the courts to estimate the amount of future damage that a plaintiff may sustain. This entails a certain amount of clairvoyance on the part of the legal system¹⁷ but, fortunately, the courts have avoided a dependence upon the supernatural for such determination and have instead relied upon evidence of a more scientific nature to arrive at an estimate of future damages. This reliance reflects the courts' continuing policy of divorcing themselves from mere speculation in the assessment of damages¹⁸ and requiring a basis upon which to calculate compensation.¹⁹ In particular, where future income is concerned the courts have stressed the use of life-expectancy tables²⁰ and data concerning wages and interest rates.

The formula that the courts have devised²¹ in ascertaining future income basically involves instructing the jury to estimate the life-

¹⁵ *Borcherding v. Eklund*, 156 Neb. 196, 207, 55 N.W.2d 643, 650-51 (1952).

¹⁶ Note 3 *supra*.

¹⁷ Note 4 *supra*.

¹⁸ *Borcherding v. Eklund*, 156 Neb. 196, 209, 55 N.W.2d 643, 651 (1952): "A jury should be fully and fairly informed as to the various items of damages which it should take into consideration in arriving at its verdict. In this respect it is the duty of the trial court to instruct as to the proper basis upon which damages are to be assessed for each such item.

¹⁹ *Benedict v. Eppley Hotel Co.*, 159 Neb. 23, 32, 65 N.W.2d 224, 230 (1954): "The jury was not advised as to any basis upon which damages could be assessed by it. This omission is plain prejudicial error."

²⁰ The courts have generally required that a plaintiff show that he is permanently injured before admitting life tables. *See generally* *Fogel v. Sinai Hospital*, 2 Mich. App. 99, 138 N.W.2d 503 (1965); *Zager v. Johnson*, 174 Neb. 106, 116 N.W.2d 1 (1962); *Welstead v. Jim Ryan Constr. Co.*, 160 Neb. 87, 69 N.W.2d 308 (1955); *Dominquez v. Albuquerque Bus Co.*, 58 N.M. 562, 273 P.2d 756 (1954); *Kappovich v. Le Winter*, 43 N.J. Super. 528, 129 A.2d 299 (1957).

²¹ "Consequently, if the jury finds, by the use of the life tables and other evidence, that the plaintiff's probable life expectancy is twenty years,

expectancy of the plaintiff prior to the accident, to multiply that amount by the annual loss expected, and to reduce that product to present value.

In computing the damages arising in the future (because of loss of . . . earnings) you must not simply multiply the damages (by the number of years you have found that the plaintiff is likely to live). Instead, you must determine their present cash value.²²

The use of this formula does give the jury some guidance for its task, but in application the formula does have certain deficiencies.

1. *Life Expectancy*

While an average jury may have some knowledge concerning life expectancy, it certainly would seem prudent to provide the jury with pertinent statistics to guide them in their estimation. Recognizing this doctrine, the courts have generally allowed standard life expectancy tables to be admitted as evidence in tort litigation.²³ However, the courts have been exceedingly lax in screening improper measurements and have allowed outdated and inappropriate tables to be considered by the jury when more relevant data is readily available.

For instance, a Georgia court, as recently as 1970, has sanctioned the use of the Carlisle Life Expectancy Tables in a personal injury action.²⁴ The Carlisle Tables were published in 1815 by Joshua Milne from a record of approximately 2,000 deaths in the town of Carlisle, Scotland during the period from 1779 to 1787.²⁵ While the tables may have accurately represented mortality rates in eighteenth century Scotland, one certainly questions their relevance to this country in the twentieth century. Moreover, when one con-

and that by reason of his injury, his earning power will be lessened by an average amount of \$1,000 per year, they can then resort to an annuity table, which will show that, at 6 per cent, the present worth of an annuity of \$1 for twenty years is \$11.469. Multiplying by 1,000, the result is an award of \$11,469." C. McCORMICK, DAMAGES § 86, at 305 (1935).

²² NEB. PATTERN JURY INSTR. § 4.12 (1969).

²³ See note 20 *supra*.

²⁴ Crowe v. Harrell, 122 Ga. App. 7, 176 S.E.2d 190 (1970). The Nebraska courts have likewise held the Carlisle table admissible. Lyons v. Joseph, 124 Neb. 442, 246 N.W. 859 (1933).

²⁵ See NELSON & WARREN, PRINCIPLE MORTALITY TABLES OLD AND NEW 52,

siders that more relevant mortality data is available, the use of such outdated tables seems inexcusable.²⁶

Further, the courts have failed to recognize that life expectancy tables are generally accumulated from groups of people having a wide divergence of characteristics that will influence mortality. For example, where a court is dealing with a male plaintiff, one can readily observe that the application of a life expectancy table that includes females will not accurately reflect the mortality of the male plaintiff since females, on the average, live longer than males.²⁷

In conclusion, it seems ridiculous for the courts on the one hand to advocate an objective basis for calculation and on the other hand to permit the use of outdated and inapplicable data to form that basis.

2. *Annual loss expected*

After estimating life expectancy the jury is then instructed to determine an annual loss that plaintiff is expected to suffer. Generally, the jury will calculate the loss of earning capacity expected every year as a result of the injury. Although the jury is instructed to consider information concerning the plaintiff's personal expectations in his skill or trade, often the jury is not given adequate data upon which to decide. Certainly publications related to trends and future earnings in various occupations are available and would be valuable to the jury.²⁸

3. *Present value*

After the jury has determined life expectancy and expected annual loss, the jury must then reduce that value to a present value.²⁹

²⁶ 1964 PERS. INJURY ANN. 915 (new life tables available through the National Center for Health Statistics, Department of Health, Education and Welfare).

²⁷ See Hayes, *Use of Mortality Tables in Tort Actions*, 32 WIS. B. BULL., June 1959, at 27; Frumer & Biskind, *Some Observations on Mortality and Similar Tables and Actuarial Testimony*, 1963 PERS. INJURY ANN. 796.

²⁸ See Leonard, *Future Economic Value in Wrongful Death Litigation*, 30 OHIO ST. L.J. 502 (1969).

²⁹ In Nebraska, the question of whether or not the failure to instruct the jury to reduce future damages to present value is a reversible error, where defendant has not requested a specific instruction, has been dealt with erratically. See *Chambers v. Chicago, Burlington & Quincy R.R.*, 138 Neb. 490, 293 N.W. 338 (1940) (held not reversible

In the attempt to measure future loss of earning capacity in dollars, to be paid now, it is clear that it will not do for the jury simply to estimate all the future wages that would have been earned . . . and to award the resulting sum. This would be more than compensation, for it would enable the plaintiff to get his future wages long in advance and to reap interest upon the money during the intervening period What must be done, of course, is to ascertain the "present worth" of each of the future installments of lost earnings, and the award should equal the total of these sums. To do this in detail would be difficult and tedious, and no jury would attempt it, unless one of its members were an accountant. A more practicable plan is to resort to tables known as "annuity tables" or tables of present worth. These tables, calculated at various rates of interest, show the present worth of a succession of annual payments of \$1 each for any given number of years.³⁰

Of course, the pertinent parameter here is the applicable interest rate. Again the court should give the jury guidance in the form of data and expert investment counseling to help them arrive at a discount rate.³¹

III. THEORETICAL ERROR

Certainly the formula outlined above does give the jury a basis for determining future damages related to income. Although it does have various shortcomings in its application by the courts, the failures can be remedied if the courts are alert to inappropriate data and the need for expert guidance. However, beyond the deficiencies in the application of the formula, there is also a theoretical error in the formula itself which leads to a *consistent* overstatement of expected damages.³²

While the present formula is believed by laymen to be accurate, statistical and actuarial science demonstrates the shortcomings of the approach. The laymen's mistaken belief results from the failure

error); *Borcharding v. Eklund*, 156 Neb. 196, 55 N.W.2d 643 (1952) (held reversible error); *Wolfe v. Mendel*, 165 Neb. 16, 84 N.W.2d 109 (1957) (held not reversible error); *Zawada v. Anderson*, 181 Neb. 467, 149 N.W.2d 329 (1967) (held not reversible error). See also NEB. PATTERN JURY INSTR. § 4.13 (1969) (present cash value).

³⁰ C. McCORMICK, *DAMAGES* § 86 (1935); Healey, *Reduction of Damages For Loss of Future Earnings to Present Worth*, 32 NEB. L. REV. 583 (1953) (use of simple interest is more complicated for jury than use of present worth tables).

³¹ See Langerman, *Reducing Personal Injury Damages to Present Value*, 15 PRAC. LAW., May 1969, at 53; Leasure, *How to Prove Reduction to Present Worth*, 21 OHIO ST. L.J. 204 (1960).

³² See C. JORDAN, *LIFE CONTINGENCIES* (2d ed. 1967); 1 D. KEMP, M. KEMP & R. HAVERY, *THE QUANTUM OF DAMAGES IN PERSONAL INJURY CLAIMS* 24-61 (3d ed. 1967).

to distinguish between an annuity certain and an annuity for life.³³ The present approach to the calculation of future income, by implementing life expectancy tables with a reduction to present value, awards the plaintiff with an annuity certain. A more accurate estimation of future earnings would be to award the injured plaintiff with an annuity for life.³⁴

In order to ascertain the value of a life annuity, actuaries use commutation tables.³⁵ The tables simply show the present value of a one dollar annuity for the remainder of life at various ages.³⁶ More precisely, the commutation table tabulates the probability of a person dying each successive year, multiplies those values by the present value of an annuity certain for each year, and adds those values to produce a payment. The payment is the annuity for life.³⁷ Commutation tables are not completely foreign to tort litigation and have been used for calculating future damages.³⁸ Few courts have understood the significance of the tables and have summarily described them as a combination of a life expectancy and present value table, implying that the two are equivalent.³⁹ In contrast, the value of a life annuity is always less than an annuity certain.⁴⁰ The present value of a life annuity is dependent upon both interest and mortality. In computing the value by the "commutation table" approach, both interest and mortality are taken into consideration simultaneously. The present approach considers first the life expectancy, which is dependent upon mortality only, and subsequently considers the value of an annuity certain which is dependent upon interest. Computing the damages by this two step approach will always lead to a higher value than if both interest and mortality are considered in one step. The annuity certain method simply places too much emphasis on the effect of interest during later years as compared to the life annuity method.⁴¹

³³ See generally W. MENGE & C. FISCHER, *THE MATHEMATICS OF LIFE INSURANCE*, 20-45 (2d ed. 1965).

³⁴ C. JORDAN, *supra* note 32 at 174-75.

³⁵ See C. JORDAN, *supra* note 32; W. MENGE & C. FISCHER, *supra* note 33, at 27-30.

³⁶ See W. MENGE & C. FISCHER, *supra* note 33, at 147-47.

³⁷ See generally C. JORDAN, *supra* note 32.

³⁸ 1 WYO. STAT. ANN. 587 (1957).

³⁹ The error is a result of the legal system's ignorance in the area of actuary science. See C. JORDAN, *supra* note 32. The theory that the commutation table is equivalent to the life expectancy, reduction to present value process is implied by McCormick. See C. MCCORMICK, *DAMAGES* § 86, at 305 (1935): "The process is simplified by the use of tables, which are combined life expectancy and annuity tables...."

⁴⁰ See note 33 *supra*.

⁴¹ *Id.*

In order to more fully understand the differences in the two approaches, consider the following hypothetical table:

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
0-1	.3	\$1.00	.30
1-2	.4	\$1.95	.78
2-3	.3	\$2.86	.86
			<u>\$1.94</u>

The first column, A, indicates the time in years involved; the second column, B, indicates the chances for death (here there is a 100% probability of death in the 3 year period); the third column, C, indicates the present value of a dollar awarded at the beginning of each time period involved,⁴² and the fourth column, D, simply multiplies column B by column C and adds the products.

After a cursory examination of the table, one will recognize that the present approach used by the courts would result in an award in multiples of \$1.95. This follows since the life expectancy shown by the hypothetical data would indicate death in the 1-2 year range. The present value of a dollar annuity certain for this period is indicated as \$1.95.

The commutation approach would take into consideration the probabilities of death in the other years and would result in an award in multiples of \$1.94, which is less than the "life expectancy" approach outlined above.

As a more practical example, consider the differences in the approaches where a white male, age forty, suffers permanent injury as a result of a defendant's negligence. The investigation of a life expectancy table will demonstrate that he is expected to live thirty-seven years. Checking the present value, it is observed that the present value of a one dollar annuity for thirty-seven years is \$16.54. Therefore, if a jury were to use a life expectancy approach, finding that the plaintiff were to lose \$10,000 in wages annually, they would award the plaintiff \$165,400.

On the other hand, if the jury were only confronted with the commutation table, they would simply locate the age of the plaintiff on the table and find that a one dollar life annuity reduced to present value was worth \$15.96. Multiplying by the annual expected loss, the jury would award \$159,600. Comparing the two approaches

⁴² These figures are compound interest functions at a five per cent interest rate. See S. KELLISON, *THE THEORY OF INTEREST* 6-8, 45, 146 (1970).

reveals only a four percent difference in this particular example, but the relative differences increase with the ages and interest rates involved.⁴³

This description of the differences between the annuity certain and annuity for life is grossly oversimplified, but it will suffice to show that the use of life expectancy tables will lead to a consistent overstatement of expectations as compared to the commutation approach.⁴⁴ The commutation table simply produces an annuity for life which is the most accurate estimation of future damages.

The use of the life expectancy tables in the courtroom has probably resulted from the misconception that actuarial scientists depend heavily on life expectancy tables.⁴⁵ Actuaries simply do not use life expectancy tables to a great extent in their calculations: "It is popularly believed that the expectation of life is widely used in actuarial calculations. In reality, it is of interest to actuaries only because it affords an index for comparing different mortality tables."⁴⁶

In addition, lawyers, like the public in general, are unaware of the subtle although complicated differences between a life annuity and an annuity certain. For example: "One of the persistent misconceptions is that the present value of a life annuity at age x is equal to the value of an annuity certain for a term equal to the life expectancy at age x "⁴⁷

Since the relative differences between an annuity certain and a life annuity are small, the importance of the distinction might be termed inconsequential when contemplating future damages. However, upon reflection two important considerations reveal themselves. First, as a tactical matter knowledge of the differences in

⁴³ The data for this hypothetical calculation was drawn from the 1960 Annuity Study with Projection to 1975. See generally Transactions, Society of Actuaries, 1952 at 262-65. An increase in the age of the plaintiff to age 60 means a 6% relative difference and an award of \$124,759 instead of the correct \$118,270. An increase in the discount rate will always increase the relative error. See C. JORDAN, *supra* note 32, at 174-75.

⁴⁴ See note 33 *supra*.

⁴⁵ W. MENGE & C. FISCHER, *supra* note 33, at 13: "The expectancy of life is often useful in making rough analyses of problems It is often supposed, however, by those unacquainted with actuarial methods that the expectation of life is fundamental in actuarial calculations. That this is not the case will be seen from the developments of the succeeding chapters."

⁴⁶ C. JORDAN, *supra* note 32, at 174.

⁴⁷ *Id.*

the two approaches is important. One can imagine a situation where a plaintiff's attorney would meticulously outline the present approach only to have the defendant's attorney declare that such an approach led to a consistent overstatement of expected damages. The effect on the jury could be harmful from the plaintiff's view. The jury, aware of defendant's objection, but unaware of the small relative differences, might reduce plaintiff's award substantially.

More importantly, the failure of the legal system to distinguish between an annuity certain and a life annuity suggests that perhaps the legal system is unaware of the more accurate means of measurement that might be provided by the scientific community. Instead, the system has adhered to a procedure that allows outdated and inappropriate data to be considered while rather arbitrarily dismissing other considerations. It is reasonable to conclude that future damages in American courts are not an accurate measurement of expected events and that the courts should look to the scientific community for help in searching for a more accurate approach.⁴⁸

IV. ALTERNATIVES

Basically there are two alternatives to the present approach of determining future damages. The present approach could be completely abandoned, or it could merely be modified.

A. ABANDONMENT

In abandoning the lump sum payment doctrine, the courts could devise some sort of periodic payment award similar to alimony payments.⁴⁹ The court would simply require that the negligent defendant reimburse the plaintiff for costs incurred as a result of the injury. Such an approach is obviously more accurate since it could be adjusted to reflect changes in the plaintiff's condition. If the plaintiff should miraculously recover from his injuries, the court could halt payments. On the other hand, if complications

⁴⁸ There are other considerations revealed by distinguishing between an annuity certain and a life annuity. While the relative differences between the two annuities is small the absolute amount could be substantial where the case involves large claims for damages. See S. McMATH, *TRIAL AND TORTS TRENDS* 360 (M. Belli ed. 1969) (article discusses the increases in the modern damage award). As a practical matter, the life annuity approach is a simpler method of computation since the jury is not required to refer to both a life expectancy table and a present value table as is required to derive the annuity certain.

⁴⁹ See generally Kalven, *The Jury, the Law and the Personal Injury Damage Award*, 19 OHIO ST. L.J. 158 (1958).

should occur and the plaintiff should become even more disabled, the installments could be increased.

In practical application, the periodic payment approach does have some drawbacks as compared to the lump sum payment. The first problem caused by adopting the periodic payment approach relates to increased administrative costs. Clearly the courts will be required to continually enforce such payments and may on occasion be obliged to initiate hearings on changes in the plaintiff's conditions. This continuing litigation might lead to substantial costs for the parties and certainly would burden the already busy courts.

In addition, a periodic payment strategy might prove to be unworkable because of the economic instability of the defendant. After the initial finding of responsibility and a judgment for the plaintiff, the defendant might become insolvent and unable to meet the required installments. Likewise the installment approach would be extremely detrimental to the economic well-being of the defendant, since he might be expected to radically increase the amounts of his payments in the future. Of course, the impact of insurance would alleviate some of the instability, however, where future medical costs are concerned even the insurance companies have had little success in coping with the fluctuating rates and complications.

B. MODIFICATION

The other alternative, which is more within the scope of this comment, involves some sort of modification of the traditional approach used by the courts in calculating future earnings.

First, the legal system should re-assess the role of the expert testifying in regards to expected damages. Experts should be allowed more freedom to form conclusions and describe the particular needs of a plaintiff in the future.⁵⁰ Because of the complex, technical considerations and calculations, the jury needs detailed, knowledgeable guidance.

Second, commutation tables that are up to date should be given to the jury for consideration instead of life expectancy tables. The commutations are easier to use since they incorporate present value and mortality data into one table thus avoiding a referral to both a life expectancy table and a present value table. Further, the commutation table encompasses the most sophisticated methods of sta-

⁵⁰ See note 10 *supra*.

tistical extrapolations and results in a more accurate estimation of future values as compared to life expectancy tables.⁵¹

Third, in deciding upon an interest rate to be applied in a particular case, thought should be given to having financial and economic experts establish an interest rate for use in all tort litigation. This interest rate could be adjusted when such experts agreed that economic changes had occurred making a different rate more realistic. This approach has the advantage of time saving since the issue would not have to be litigated in every case and the "uniform rate" would be accurate because it would be established by qualified, impartial experts in the field of investment. Presently, every time the issue of future damages is litigated, the question of an applicable interest rate complicated by the inflation problem⁵² is drawn into question thus creating the possibility of two courts simultaneously applying unequal interest rates in identical situations.

Finally, in regard to the individual plaintiff's expected earnings, the jury should most certainly be exposed to statistics on the matter. A good approach in the area would be first, to classify the injured plaintiff, second, to compare his past behavior with that of those in his class and finally to extrapolate from that data. For example, the court in *Plant v. Simmons Co.*⁵³ used such an approach in calculating prospective damages for an injured plaintiff. First the plaintiff was classified on the basis of occupation, education level and race. Each of these general classifications had subsets showing expected lifetime earnings, the present value thereof at different interest rates and rates of productivity.⁵⁴ From that data the court compared the plaintiff's past performance to the "group" to which he belonged. For instance, if the plaintiff was producing 72% of average expected earnings according to the classification chart up to the time of the accident, then he would be awarded 72% of the prospective earnings stated on the chart.

While this approach does draw heavily from statistical data it is rather complicated and could tend to confuse the average jury. Furthermore, race as a valid classification is questionable in view of court decisions against proliferating racial discrimination

⁵¹ See generally C. JORDAN, *supra* note 32.

⁵² Peck & Hopkins, *Economics and Impaired Earning Capacity in Personal Injury Cases*, 44 WASH. L. REV. 351 (1969) (article investigates inflation and its influence on the future damage award).

⁵³ 321 F. Supp. 735 (D. Md. 1970).

⁵⁴ *Id.* at 738.

through the legal system.⁵⁵ It is probably fair to say that some racial groups have lower expected earnings because they are a minority group and are discriminated against in relation to job hiring, salaries and advancement opportunities.

The ultimate procedure for such a calculation would involve taking the complex computation away from the jury and allowing experts to make the estimates. The jury would be left with the elementary fact finding determinations.⁵⁶

Under such an approach the jury would simply make notations concerning the plaintiff's characteristics that are deemed relevant by the experts, such as age, previous earnings, health, occupation, sex, location. This "index of relevant characteristics" would then be sent to a "computer center" where experts could screen the material, feed it to a computer which would then determine future earnings. The computer would be programmed by experts proficient in the areas of economics, statistics and actuarial science. The program would be designed to give proper consideration to the characteristics of the plaintiff and would employ the latest mathematical processes.⁵⁷

The use of such an approach would be advantageous in several respects. First, the jury would be relieved of burdensome calculations. Second, litigation time would be reduced since the computer would take over a major function of the jury. Third, the use of the computer would insure a precise estimation of a plaintiff's damage because the computer has the capacity to store and consider vast amounts of information quickly and accurately. Thus the computer can focus on a plaintiff and contemplate his particular case by utilizing the facts supplied by the jury and the program provided

⁵⁵ *Shelley v. Kraemer*, 334 U.S. 1, 20 (1948): "State action, as that phrase is understood for the purposes of the Fourteenth Amendment, refers to exertions of state power in all forms. And when the effect of that action is to deny rights subject to the protection of the Fourteenth Amendment, it is the obligation of this Court to enforce the constitutional commands."

⁵⁶ The value of the jury as a decision making body has been a much debated subject. See generally M. BLOOMSTEIN, *VERDICT, THE JURY SYSTEM* (1968); M. GLEISSER, *JURIES AND JUSTICE* (1968); L. GREEN, *WHY TRIAL BY JURY?* (1930); I. STALMASTER, *WHAT PRICE JURY TRIALS?* (1931); Broeder, *The University of Chicago Jury Project*, 38 NEB. L. REV. 744 (1959); *With Love in Their Hearts but Reform on Their Minds: How Trial Judges View the Civil Jury*, 4 COLUM. J. L. & SOC. PROB. 178 (1968).

⁵⁷ See Maher, *Computer Proof of Economic Loss*, TRIAL, July-August 1972, at 54 (example of a computer program used in determining earning trends).

by the experts. Finally, the computer program could easily be altered to reflect changes in economic conditions or scientific advancements.

V. CONCLUSIONS

The calculation of future damages, especially regarding expected earnings, involves a rational extrapolation from all of the relevant information accumulated that relates to an injured plaintiff's past behavior and environment. Hopefully, the estimation will represent the actual damages incurred in the future as a result of a defendant's negligence.

The present approach used by the legal system does not lend itself to an accurate extrapolation. Indeed, the system seems designed to prevent an accurate measurement since integrated into the approach are conflicting, arbitrary and erroneous rules as to what is and is not to be considered in the determination.

Designing a formula that will be more workable involves a balancing between accuracy and ease. The measurement must be comprehensible to the average juror, while retaining the most sophisticated statistical manipulations to insure accuracy. The necessity of ease cannot be over-estimated since under the present approach the courts have often become overburdened with complicated materials related to expected harms, prompting one judge to observe: "The less jurors are burdened with complicated tables and the necessity for complex calculation, the more likely they will be to do substantial justice."⁵⁸

To solve the dilemma encountered in the calculation of prospective harms, the legal system should look to the scientific community for guidance in creating an improved approach. Scientists do have the ability and knowledge necessary to create an approach that could be equitable and accurate. At the very least, the legal system must give more attention to damages and their relative importance.

I suggest that the crucial controversy in personal injury torts today is not in the area of liability but of damages. . . . Questions of damages—and particularly their magnitude—do not lend themselves so easily to discourse. . . . Judges consign them uneasily to juries with a minimum of guidance, occasionally observing loosely that there are no rules for assessing damages in personal injury cases.⁵⁹

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⁵⁸ Moore v. Leininger, 299 Pa. 380, 385, 149 A. 662, 664 (1930).

⁵⁹ Jaffe, *Damages For Personal Injury: The Impact of Insurance*, 18 LAW & CONTEMP. PROB. 219, 221 (1953).