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Stuart S. Nagel

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ATTORNEY TIME PER CASE: FINDING AN OPTIMUM LEVEL

STUART S. NAGEL*

This article will discuss some basic aspects of how attorneys allocate their time to cases, and especially how they should allocate their time in order to increase their total earnings, or to maximize benefits minus costs. The article uses simple principles from modern allocation theory, developed mainly by management science and operations research. The theory builds on the increasing availability of computerized and other systems for gathering, retrieving, and processing legal case data. Although innovative in its perspective, it is a potential part of an improved mode of analysis and technology in modern law practice.¹

Suppose, for example, a law firm has two personal injury cases in which it represents the plaintiffs. Suppose further that case A has a .80 probability of being won, and case B has a .40 probability, although let us leave for later how such information might be determined. For now, an interesting question might be to ask: how should our hypothetical law firm allocate 100 hours of its time to these two cases?²

*B.S. 1957, J.D. 1958, Ph.D. 1961, Northwestern University; Professor of Political Science, University of Illinois; Member of the Illinois Bar.

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1. For a more detailed analysis of some aspects of allocating attorney time to court cases and clients, see Chapter 7 on "Allocating Resources among Court Cases by Legal Counsel" in S. NAGEL & M. NEEF, *DECISION THEORY AND THE LEGAL PROCESS* (1979) (hereinafter cited as NAGEL & NEEF). That analysis treats time allocation mainly as a problem of finding an optimum division of a fixed time budget among a set of cases, whereas this article considers time allocation as more a problem of finding an optimum level of time to allocate to each case on a case-by-case basis. The present analysis also classifies cases mainly in terms of the payment arrangement as contingency fee, flat fee, salaried, or hourly rate cases, whereas the above book chapter classifies cases mainly in terms of their subject matter as personal injury, criminal, divorce, and other types of court cases. *See id.* On legal optimizing analysis in general, see *OPERATIONS RESEARCH IN LAW ENFORCEMENT, JUSTICE AND SOCIETAL SECURITY* (Brounstein & Kamrass, eds., 1976); *THE ECONOMICS OF CRIME AND LAW ENFORCEMENT* (McPheters & Strong, eds., 1976); S. NAGEL & M. NEEF, *LEGAL POLICY ANALYSIS* (1977). The first of a number of articles and book chapters to deal explicitly with legal optimizing analysis was probably Nagel, *Optimizing Legal Policy*, 18 U. FLA. L. REV. 577 (1966).

2. Studies other than NAGEL & NEEF, *supra* note 1, dealing with time allocation among court cases by legal counsel include criminal justice studies like Forst & Brosi, *A Theoretical and Empirical Analysis of the Prosecutor*, 6 J. LEGAL STUD. 177 (1977); Landes, *An Economic Analysis of the Courts*, 14 J. LAW & ECON. 61 (1971); and J. Lachman, *An Economic Model of Plea Bargaining in the Criminal Court System* (1975) (unpublished Ph.D. dissertation in the Michigan State University Department of Economics). In those studies, the time allocation decision is generally only part of a broader economic model of the behavior of prosecutors or the criminal justice system. Like NAGEL & NEEF, *supra* note 1, they emphasize trade-offs across cases and the substance of the cases.

HOW NOT TO ALLOCATE

At first glance, one might say:

1. Allocate all our resources to the better case.
2. Allocate 80/120 or .67 of our resources to the better case, and 40/120 or .33 of one's resources to the case less likely to succeed.
3. Allocate as much resources as are needed in order to win both cases.
4. Allocate as little resources to the case less likely to succeed as one is ethically obligated to do, and the remainder of one's resources to the better case.
5. Allocate the same amount of resources to case A as has been allocated in the past to the average case of the case A type, and do likewise with case B.
6. Use some other allocation.

All of these possibilities lack common sense, as a little careful thought is likely to indicate:

1. Allocating all 100 hours to the better case might be wasteful because we might only need 50 to win. If we allocate 100 hours to case A we might also miss the possibility of receiving a judgment from case B and thereby suffer a substantial opportunity cost.
2. Allocating our resources proportionately would mean giving 67 hours to case A and 33 hours to case B, which might represent wasted hours since case A may need less than 67 hours to cross the threshold between winning and losing. Case B may also need more than 33 hours although not necessarily a lot more.
3. Allocating as much resources as are needed to win both cases may be meaningless if by "to win" we mean with a 1.00 certainty since even an infinite number of hours devoted to each case may not be capable of achieving that. The same is true if by "to win," we mean with more than a .50 probability since achieving that for case B may require more than the 100 hours we have available.
4. The fourth alternative of allocating a minimum to the worse case and the rest to the better case would not exceed our hours available (unlike alternative 3) or violate our ethical obligations (unlike alternative 1), but it may represent an excessive allocation to case A and an opportunity cost for case B (like alternatives 1 and 2).
5. The fifth alternative of allocating in terms of past averages assumes our past average has been optimal or rational in allocating our scarce resources.

The answer to our simple hypothetical problem may be that we need more information. For a starter, it might help to know what the damage award is likely to be if either case A or case B results in a victory. If the damage award in case A upon a plaintiff victory is \$10,000, then that case can be said to have an expected value of \$8,000 (or .80 times \$10,000). If, however, the damage award in case B upon a plaintiff victory is \$30,000, then that case has an expected value of \$12,000 (or .40 times \$30,000). Now it looks as if case B is the better case. However, applying this new information to our five alternative strategies, we still conclude that all five lack common sense for the same reasons.

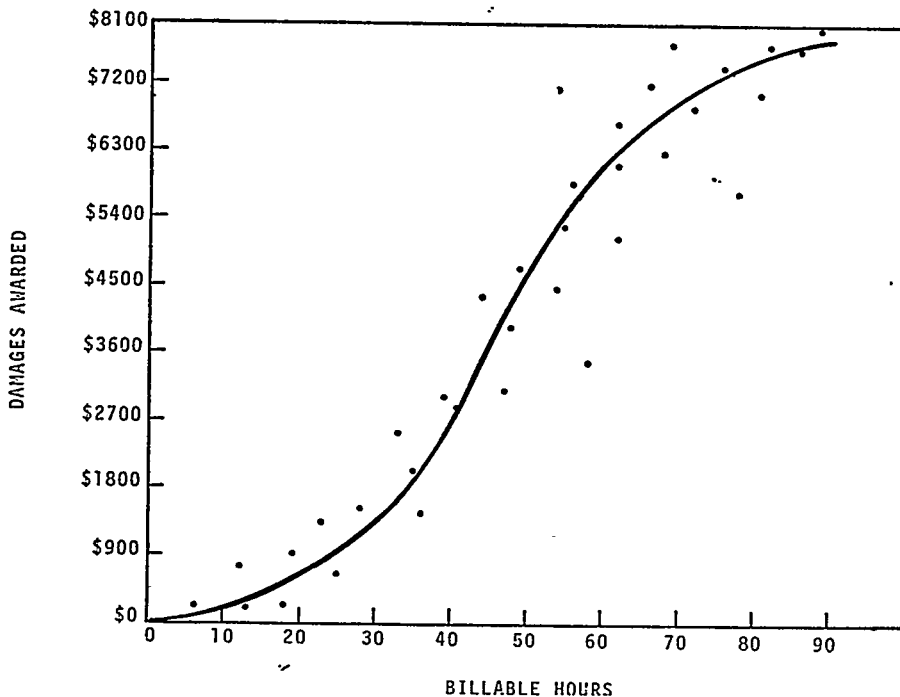
At this point, one might perceive that we need to know not the expected value of each case, as that merely reflects a combination of the victory probability and the average damages awarded for cases of that type. Instead, we might need to know the relation between hours allocated and fees received. To obtain that information it would help to know what damages were awarded in a large sample of cases with characteristics similar to those of the cases we are currently considering. Along with the damages awarded information, we would like to know the number of billable hours devoted to each case. "Billable hours" means hours spent on a case for which a client could be legitimately billed if an hourly rate were being charged even though the case may be handled on a contingency fee, flat fee, or salaried basis. That kind of information could be shown in a graph like Figure 1. Each dot represents a case. The position of the dots on the vertical axis, shows the amount of damages awarded in each case. For many cases there were no damages because they were losing cases in which liability was not established. The position of the dots on the horizontal axis, shows how many billable hours were devoted to each case.

After graphing such a set of dots, it might then be appropriate to try to fit a meaningful curve to the dots in such a way as to minimize the sum of the distances from the dots to the curve. That can be done by a common-sense eyeballing approach or a more sophisticated computerized analysis.³ A well-fitting curve would have an S-shape similar to that shown in Figure 1. Such a curve indicates that prior to a certain number of hours, putting in additional time is not likely to raise the damages substantially above zero. In other words, cases tend to require an initial minimum of hours before additional time will affect the damages received. Likewise, after some number of hours, additional time probably has little effect in increasing the damages awarded. Thus, each type of case probably has a bottom range of hours before hours substantially affect damages, and a top range of hours after which the influence of additional hours seems to plateau out.⁴

Still other studies include personal injury studies such as F. MACKINNON, *CONTINGENT FEES FOR LEGAL SERVICES: A STUDY OF PROFESSIONAL ECONOMICS AND RESPONSIBILITIES* (1964); Schwartz & Mitchell, *An Economic Analysis of the Contingent Fee in Personal Injury Litigation*, 22 *STAN. L. REV.* 1125 (1970); and Clermont & Currivan, *Improving on the Contingent Fee*, 63 *CORNELL L. REV.* 529 (1978). These studies focus on the individual case taken out of the context of the other cases in the caseload. Like the above criminal studies, however, the personal injury studies are primarily concerned with describing and explaining attorney decision-making using an economic model rather than trying to improve the efficiency of attorney decision-making using an implementable management science or operations research model.

3. One does not need to know anything about the technical aspects of statistical analysis in order to plot dots and fit a rough S-shaped curve to the dots using an eyeballing approach. On how that might be done more precisely by a computer, see E. TUFTE, *DATA ANALYSIS FOR POLITICS AND POLICY* 65-134 (1974) and G. HILTON, *INTERMEDIATE POLYMETRICS* 186-218 (1976). For each case, the computer is told the damages awarded (Y score) and the billable hours (X score). The computer then determines numerical values for the "b's" in an equation of the form $Y = b_0 + b_1X + b_2X^2 + b_3X^3$. That equation, when plotted by the computer, will appear as an S-shaped curve.

4. An alternative way of conceiving the relation between damages awarded and hours is via a curve that quickly becomes totally horizontal, as contrasted to a curve like that of

FIGURE 1. THE RELATION BETWEEN HOURS ALLOCATED AND DAMAGES AWARDED
(IN A GIVEN TYPE OF CASE)

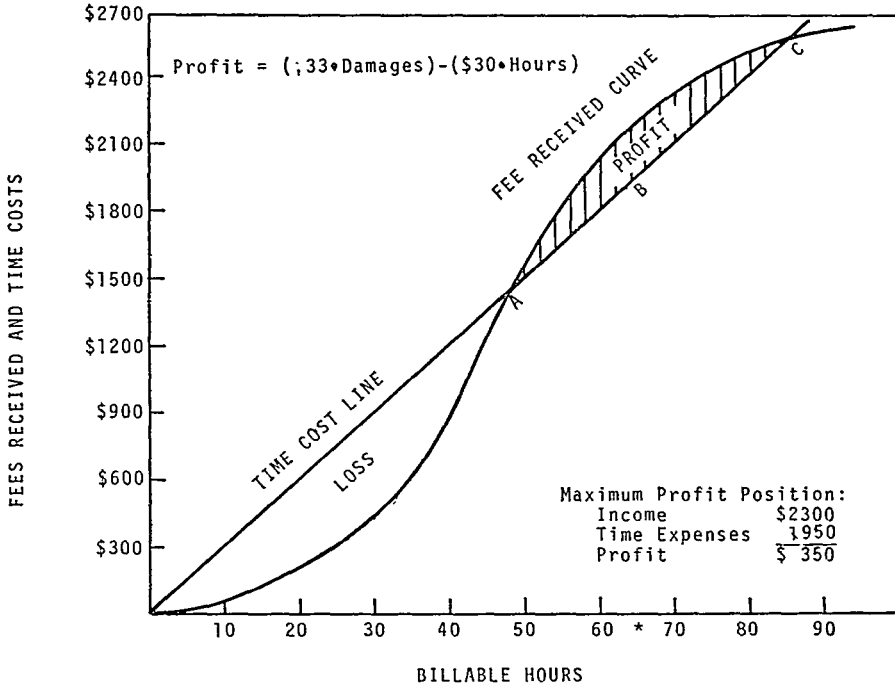
With this information for case A and case B, one might logically justify giving case A about 75 hours since that is the number of hours roughly corresponding to the upper turning point on the S-shaped curve. We would not want to give the case just 25 hours corresponding to the lower turning point since those 25 hours would be wasted by virtue of the fact that 25 hours only brings us to the point where we first take off from a zero damages level. If we devote between 25 and 75 hours, at first glance it looks as if we would suffer some opportunity costs in the sense of missing the additional damages that could be obtained by putting in additional hours. It may be wasteful, however, to devote 75 hours to such a case because the value of 75 hours to us may be greater than the one-third contingency fee corresponding to a 75-hour allocation.

Figure I which always rises, at least slightly, although at a decreasing rate. See Clermont & Currvan, *supra* note 2, *passim*. The Clermont & Currvan perspective assumes a flattening of the relation. The type of curve that best fits the empirical reality of actual cases has more than just geometric implications. If the curve does reach a point where it becomes totally flat that is the point of maximum client recovery which dedicated lawyers should seek. If, however, there is no total flattening of the curve, then there is no point at which the client's interest is maximized, except at an infinity of hours. The diminishing returns but non-flat curve does seem more reasonable in light of empirical statistical analysis in other subject matter areas. What is obviously needed is a gathering of the kind of data suggested later in this article to determine what the relationships are between damages awarded and hours allocated in various types of cases.

HOW TO ALLOCATE

Figure 2 represents an improvement on Figure 1 for viewing the time allocation problem. First, it shows the relation between hours allocated and cost to the lawyer, not just damages awarded. Like any business firm or individual, a lawyer is interested in maximizing not income but income minus

FIGURE 2.
 THE RELATION BETWEEN HOURS ALLOCATED AND BOTH FEES RECEIVED AND TIME COSTS
 (Profit Maximization in Contingency Fee Cases)



expenses, or benefits minus costs. For the sake of simplicity, we assume here that the only cost is our time and our time is worth \$30 an hour. By \$30 an hour we are not referring to the charge to clients (which may be \$50 an hour) but rather to the fact we would be willing to work for as low as \$30 an hour.⁵

5. Clermont & Curriuan, *supra* note 2, *passim*, assume that if a lawyer charges \$50 an hour, he has then incurred \$50 in time expenses. That assumption is essential to their model which then deduces that lawyers have no incentive to add additional hours under an hourly rate arrangement because they are only covering their expenses by putting in additional hours. They do recognize that a lawyer under an hourly rate arrangement may have an incentive to say he worked 10 hours when he only worked 8 hours. They do not, however, recognize that a lawyer may have an incentive to work 10 hours when he could have done the job in 8 hours, since he earns a profit or surplus on each additional hour because he is paid more than he would be willing to pay in order to have those hours regularly free to do something else. This does not mean he can be bargained down from \$50 an hour. It simply means he considers himself as coming out ahead when he works for \$50 an hour, i.e., making a net gain of benefits minus costs. A good test for determining the difference between the billable charge per hour and the self-perceived time cost per hour might be to ask

Second, Figure 2 refers to fees received rather than damages awarded. We calculate fees received by taking one-third of the damages awarded in Figure 1, since one-third is the usual contingency fee. The third and most important difference from Figure 1 is that this new information should allow us to decide more rationally how many hours to allocate to a case of the type shown in Figure 2. The ideal quantity is about 65 hours, rather than the 75 hours where the fee received approaches the maximum. It makes more sense to allocate only 65 hours because that is where the maximum positive difference is between the fee received curve and the time-cost line. At 65 hours, Figure 1 shows damages awarded of about \$6,900, and Figure 2 shows a one-third contingency fee of \$2,300. At 65 hours, Figure 2 also shows time expenses of \$1,950 at \$30 an hour. Any deviation from 65 hours would generally mean a loss, or lessening the profit. Billable hours between points A and C are predicted to yield a profit, but at point B (where an asterisk is shown), the profit is at a maximum. Figure 1 thus emphasizes how the S-shaped damages awarded curve is derived, and Figure 2 emphasizes what to do with such a curve in order to make a profit-maximizing time allocation decision.⁶

the attorney how much the \$50 per hour would have to be lowered before he would change occupations. Most lawyers would continue to be lawyers even if there were a substantial reduction in the dollars per hour or per year and no reduction in the hourly or annual incomes of other occupations. Changing occupations in this context does not, however, mean shifting to an occupation that requires totally new training like becoming a doctor, or a totally new psychological style like becoming an unskilled laborer. It more likely means shifting from one legal specialty to another, from private practice to government or corporate work, from small-town to big-city, from law to business, or similar shifts. The difference between what a lawyer is getting and what he would be willing to work for in his present work can be considered a producer's surplus.

One could also argue in a Marxist way that lawyers, like other wage-earners, are underpaid in the sense that the client might be willing to pay more than \$50 an hour in view of the benefits the client is receiving. A third perspective says that if the lawyer asks \$50 an hour, then he is worth \$50 an hour, because he would not be asking that rate unless he could get it, meaning that by devoting an hour to one client he is suffering a \$50 opportunity cost by foregoing \$50 that he could receive from another client. In the context of this article the most reasonable perspective seems to be that lawyers are obtaining a net benefit from every hour worked at the going hourly rate. Otherwise they would be doing something else.

6. To clarify the relation between billable hours and profit, we could superimpose a profit curve on Figure 2. Doing so would mean having another column on the vertical axis labeled "Profit," which would have a zero point in the middle, be negative below that point, and be positive above that point. The curve would be valley-shaped between zero and 45 hours, reaching bottom at about 30 hours where the biggest loss occurs. The curve would be hill-shaped after 45 hours, reaching a peak at about 65 hours where the biggest profit occurs. There would be three break-even points where the profit curve intersects the zero profit line, namely when billable hours are zero, 45, and 85. After 85 hours, profit goes down continuously as more hours are allocated with little increased damages awarded.

To clarify still further the relation between billable hours and profits, the fee-received or income curve can be expressed as an equation of the form $I = a + b_1H + b_2H^2 + b_3H^3$, which shows an S-shaped relation between I and H . The value of a , b_1 , b_2 , and b_3 can be determined from the data in Figure 1 using a computerized regression analysis routine, and then multiplying each of the parameters which the computer generates by .33 or whatever the contingency percentage is, since the fee received equals damages awarded multiplied by the contingency percentage. We could also recognize that the time-cost or expenses line can be expressed as an equation in the form $E = A + BH$, which shows a linear relation between

When we say 65 hours is the optimum allocation for cases of type A, we do not mean that when a lawyer has put in 65 hours on such a case, he should then stop whatever he is doing regardless of what is happening. Likewise, we do not mean that if a lawyer has put in only 50 hours on such a case that he should throw in an extra 15 hours regardless of what those 15 hours involve. The 65 hours is just an average optimum that may be meaningfully deviated from in light of aggravating and extenuating circumstances. Relevant variables affecting billable hours might include the lawyer's experience, how cautious he is, and how much help he has from assistants, research tools, and counsel for other parties. Also relevant is the case's difficulty in terms of the quantity of factual and legal issues and their newness. The classification of cases, however, is likely to include some general notions of difficulty in that airline crashes are more difficult than dog bites. Although lawyers generally seek to maximize fees minus costs, rather than to maximize fees, it is logical to expect a lawyer to spend more time on a potentially big fee case because he would regret more losing such a case, but the case classification is also likely to consider that. Although aggravating and extenuating circumstances may influence the extent to which one should deviate from the predicted optimum hours, they should not affect where that optimum generally tends to be for a case with a given set of characteristics.

Figure 2 covers cases like case A. We can do the same analysis for cases like case B. Suppose, however, the optimum number of hours for case B turns out to be about 50 hours given the nature of case B. The sum total of both our cases would add to 115 hours, or 15 hours more than the 100 we said we had available. One nice thing about allocating time as contrasted to allocating a fixed budget is that on each day or week we may dip into a new time allocation. In other words, over the next two weeks, we can work 65 hours on case A and 15 hours on case B. In the following week, we can finish off the last 35 hours on case B. In this simplified illustration, we are assuming it is meaningful to concentrate all the time devoted to a case within a single week or two weeks, although in reality the 65 hours or 50 hours may have to be stretched over a period of months or even years while waiting for other events, such as responses by the other side.

When there is a time conflict between two cases, it is logical to work on the case that has the closest non-postponable deadline. If both cases are about equally flexible as to impending deadlines, a lawyer might choose to work on the case that will bring in the largest profit so the money can be invested while he works on the less profitable case. If both cases are equally profitable, a

E and H. We know from Figure 2 that $A = 0$, and $B = \$30$. Net profit (or loss) then becomes $P = a + b_1H + b_2H^2 + b_3H^3 - \$30H$, which represents income minus expenses. That equation can be simplified to $P = a + (b_1 - 30)H + b_2H^2 + b_3H^3$. We can now determine the slope of profit to hours, which is $b_1 - 30 + 2b_2H + 3b_3H^2$. This follows from the rule that if $Y = aX^b$, then the slope of Y relative to X is baX^{b-1} . That slope simplifies to $c + dH + eH^2$, where $c = b_1 - 30$, $d = 2b_2$, and $e = 3b_3$. Setting that slope equal to zero will tell us the value of H when profits either bottom out or reach a peak. Solving for H in the quadratic equation $0 = c + dH + eH^2$ yields two solutions, one where there is a maximum loss at about 30 hours, and one where there is a maximum profit at about 65 hours.

lawyer might tend to handle them on a first come, first served basis. However, such treatment would not be ideal for minimizing the average time from acceptance to completion of a case. To minimize that average time, the shortest cases should be taken first, provided the longer cases are not allowed to exceed a given length of time in light of legal rules and ethical considerations. For example, in our hypothetical situation, if we were to take the 65 hour case first (case A), the 50 hour case (case B) would have to wait 65 hours to begin its processing. That would mean case B would take a total of 115 hours from the time the client was accepted until the case is completed. If case A takes a total time of 65 hours and case B takes a total time of 115 hours, then the cases average 90 hours apiece from time of acceptance to time of completion, assuming no other distractions along the way. However, if we take the shorter case B first, its total time will be 50 hours. Case A will then require those 50 hours to get started plus 65 hours of processing time, or a total of 115 hours. When we add the 50 hours total time for case B to the 115 hours for case A, they will average only $82\frac{1}{2}$ hours apiece rather than 90. That saves the clients about 10 percent, although the lawyer is still putting in a total of 115 hours. The savings would be even greater if there were greater differences between processing time of the shorter and the longer cases than just 50 and 65 hours respectively. Table 1 shows those relations more clearly.⁷

TABLE 1. ALTERNATIVE WAYS OF ORDERING TWO CASES TO MINIMIZE AVERAGE TOTAL TIME.

Order Number 1: First Come, First Serve

	Waiting Time	+ Processing Time	= Total Time
Case A	0	65	65
Case B	65	50	115
	—	—	—
Totals	65	115	180
Averages	$32\frac{1}{2}$	$57\frac{1}{2}$	90

Order Number 2: Shortest Case First

Case B	0	50	50
Case A	50	65	115
	—	—	—
Totals	50	115	165
Averages	25	$57\frac{1}{2}$	$82\frac{1}{2}$

Although we receive a new allocation of time each week, we should not accept an infinite number of cases. It does not seem rational to accept unprofitable cases unless, for example, (1) there is some non-monetary public interest cause being served, (2) we anticipate the unprofitable case will later

7. On the optimum sequencing of events or cases, see J. BYRD, JR., OPERATIONS RESEARCH MODELS FOR PUBLIC ADMINISTRATION 139-56 (1975) and Nagel & Neef, *Time-Oriented Models and the Legal Process: Reducing Delay and Forecasting the Future*, 1978 WASH. U.L.Q. 467 (1978).

lead to profitable ones, or (3) there are some educational benefits to be gained. In this context "unprofitable case" means one in which the fee received curve does not exceed our time cost line. This concept of unprofitability enables us to rank incoming cases on their predicted profitability. The most profitable cases have a fee received curve that most exceeds our time cost line when drawn on the same scale as Figure 2. If we were faced with ten prospective clients simultaneously, we would logically pick the most profitable ones until we use up as much time as we are willing to commit in advance.⁸

Normally, however, ten prospective clients do not approach us simultaneously, but sequentially. Under those circumstances, we might be reluctant to accept the first case even though it is predicted to be profitable because we anticipate an even more profitable case later. This problem is analogous to the lawyer exercising his peremptory challenges in picking jurors. He might be reluctant to use his limited peremptory challenges on the first few jurors because he anticipates that even worse jurors will come up later in the jury selection process. The best way to handle the sequential client problem might be to accept all profitable cases that exceed a certain threshold. If we accept too many cases, we will have to hire help or cut back for a while in accepting new clients. If we accept too few cases, we then will have to lower our threshold.⁹

VARIATIONS ON THE BASIC APPROACH

Emphasizing Total Caseload and Probabilities

The above approach to allocating attorney time to court cases in effect treats each case as a separate allocation problem. In the language of decision sciences, we are in effect treating the allocation problem as one of finding an optimum level of time to allocate to each case on a case-by-case basis, rather than treating the problem as one of finding an optimum mix for dividing a fixed budget of time among a set of cases. The optimum level perspective makes more sense for a number of reasons. First, there is probably only a relatively narrow range of hours that could be meaningfully allocated to a given case without going below a minimum ethical threshold or above a maximum

8. "Most profitable" in this context, however, means the subset of cases that will collectively yield the most profit. For example, if we have 100 hours available, and the ten prospective cases consist of one 100-hour case that will yield an \$11 profit and nine 10-hour cases that will each yield a \$10 profit, then the best subset would be to take just the nine 10-hour cases. Doing so will yield a total profit of \$90, whereas taking the one 100-hour case will only yield a total profit of \$11, even though that one case is individually the most profitable. This example assumes our time is worth \$30 an hour in all ten cases. The one 100-hour case therefore must involve a total time cost of \$3,000 and a fee received of \$3,011. Likewise, the nine 10-hour cases must each involve a total time cost of \$300 and a fee received of \$310. Thus, they all involve the same hourly rate, but the most profitable case is the one that should be rejected in order to allow more time for taking less profitable cases that will collectively add up to a greater total profit.

9. On the problem of making sequential allocations of peremptory challenges, time, or money, from a limited total quantity, see H. RAIFFA, *DECISION ANALYSIS: INTRODUCTORY LECTURES ON CHOICES UNDER UNCERTAINTY* (1970); and Brams & Davis, *A Game-Theory Approach to Jury Election*, 12 *TRIAL* 47 (1976).

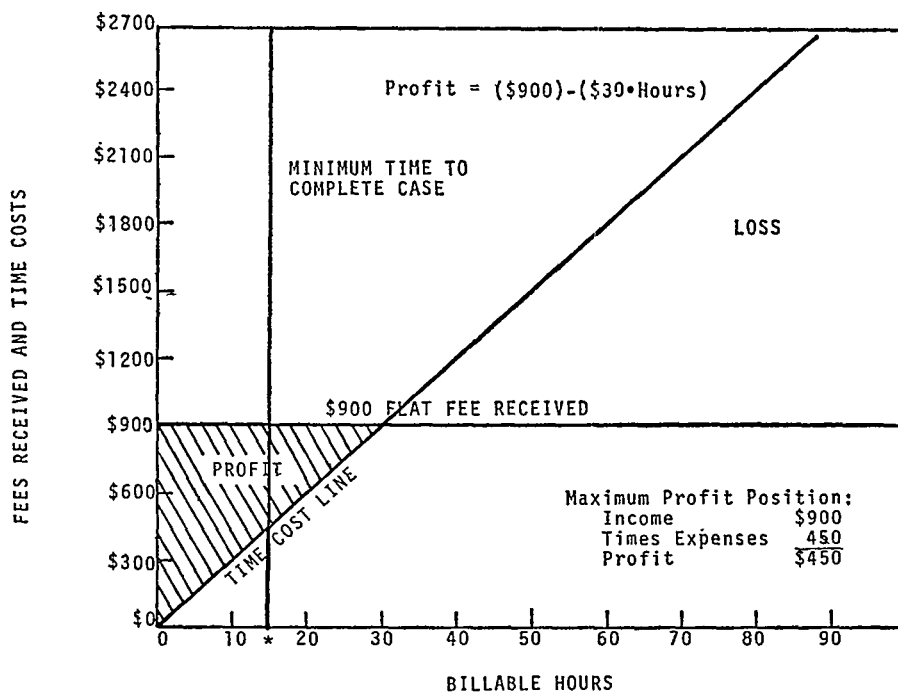
wastefulness threshold. This is unlike the allocation of a business firm's budget to various advertising methods where any number of budget dollars could be allocated to each of the methods, since there are no ethical minimums and the plateauing phenomenon is probably not so sharp. Second, time allocation is more flexible because matters may be postponed and additional help hired, as contrasted to the relative inflexibility of the quantity of money allocated to the advertising department of a business firm for a given time period. Third, it is much simpler to think in terms of an optimum level of time to devote to each case (largely out of the context of the other cases), than to think in terms of having a total amount of time that is to be allocated among many cases.¹⁰

The above approach also differs from the decision science approach which emphasizes making decisions under conditions of risk or uncertainty. Allocating attorney time is an example of that kind of decision-making since each case involves a risk or probability of victory or defeat. The analysis could be modified to consider more explicitly that hours allocated not only influence damages awarded, but also the probability of victory. Specifically, risk analysis would eliminate from Figure 1 all cases in which no damages are awarded, which would shift the curve upward and change its slope but probably not change its S-shape. We would also have to generate a figure similar to Figure 1 in which the vertical axis would show victory probabilities ranging from zero to 1.00. All the dots corresponding to the cases would be either at 1.00 or zero, although they would still be above the same billable hours on the horizontal axis, as in Figure 1. An S-shaped curve would then be fitted to those dots showing the relation between hours allocated and victory probabilities. We would then create a composite figure by multiplying each point on the Figure 1 curve by each point on this new S-shaped curve at each hour's mark. That would produce a composite S-shaped curve showing (for each amount of hours allocated) the predicted *expected* damages (the predicted damages discounted by the predicted probability of their being received). We could then multiply the points on that composite curve by .33 to take into consideration the one-third contingency fee and have a new, more sophisticated expected fee received curve to work with in Figure 2.¹¹ However, this modification substantially complicates the analysis without a commensurate gain in utility.

10. On optimum level analysis, as contrasted to optimum mix analysis, see discussions of inventory modeling and linear programming in any elementary operations text book such as S. RICHMOND, *OPERATIONS RESEARCH FOR MANAGEMENT DECISIONS* (1968); H. THEIL, *OPERATIONS RESEARCH AND QUANTITATIVE ECONOMICS: AN ELEMENTARY INTRODUCTION* (1965); and S. LEE & L. MOORE, *INTRODUCTION TO DECISION SCIENCE* (1975). For a discussion of optimizing methods with legal process examples, see S. NAGEL & M. NEEF, *LEGAL POLICY ANALYSIS: FINDING AN OPTIMUM LEVEL OR MIX* (1977).

11. On making decisions under conditions of risk or uncertainty, see chapters on that subject in the operations research textbooks in note 8. For a discussion of that optimizing perspective with legal process examples, see NAGEL & NEEF, *supra* note 1. For additional sophistication, we could also discount the fees received, not only by the probability of their being received, but also by the fact that some types of cases take longer to receive fees than others. If a type of case tends to take three years for a settlement or a judgment, then the present value of the fee received needs to be divided by $(1 + r)^t$, where r is the interest rate,

FIGURE 3. PROFIT MAXIMIZATION IN FLAT FEE CASES



Flat Fees and Hourly Rates

Instead of discussing more complicated variations that are sometimes referred to in allocation problems, it may be more useful to talk about even simpler situations than the one used to illustrate the basic approach. The simplest (but very common) situation may be that of the salaried lawyer who receives a set annual salary, or the flat fee case which involves, for example, a charge of \$900 for a particular service. Figure 3 shows that the optimum allocation of time to such a case would be whatever minimum amount of time will complete the case. Theoretically, the optimum is zero hours, since any hours allocated above zero means a reduced profit in the sense of a reduction in the positive difference between the fee received and the time cost line. The break-even point on a \$900 fee is 30 hours, figuring time cost at \$30 an hour.

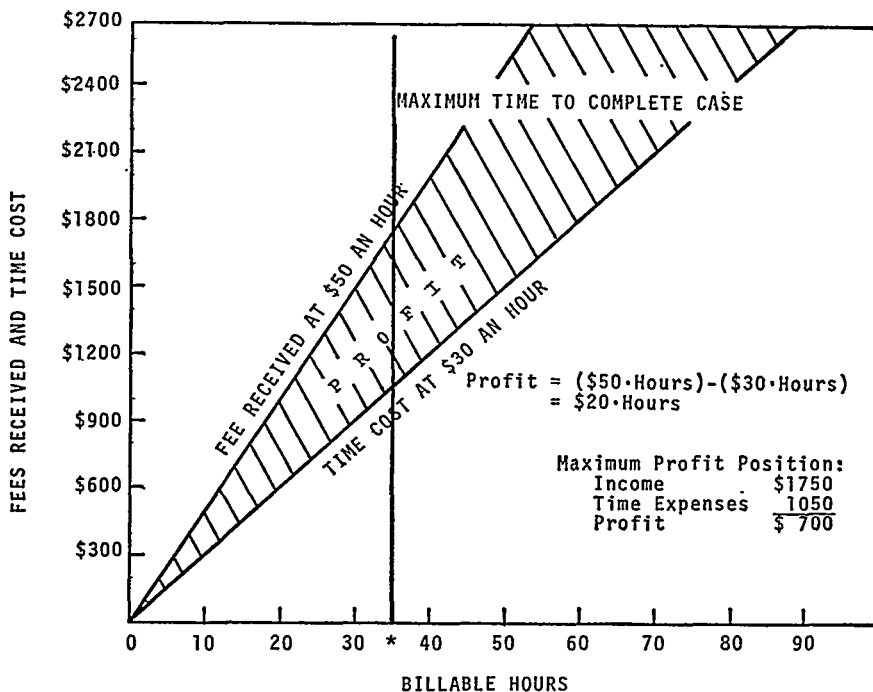
The same situation results if we think in terms of a \$30,000 salary for an attorney working for an insurance company defending personal injury cases, a public defender representing indigent criminal defendants, or an assistant state attorney prosecuting defendants. The \$900 would change to \$30,000 in the graph, and the break-even point would change from 30 hours to 1000 hours. The minimum time requirement, however, changes when we move from the flat fee case to the salaried attorney. In the flat fee case, the attorney is only

and t is the number of years one has to wait. See C. DINWIDDY, *ELEMENTARY MATHEMATICS FOR ECONOMISTS* 199-216 (1967).

expected to complete the case without putting in any minimum number of hours beyond that. In the salaried situation, the attorney is normally expected to show up at an office for some number of hours per week and weeks per year. His total working hours may total more than 1000 hours per year, but salaried lawyers may consider their time per hour to be worth less than lawyers paid by the case, since salaried lawyers have the security of a salary. Both the flat fee and the salaried lawyers may seek to put in more than the minimum number of hours required just to complete their cases and retain their jobs if the additional hours are likely to result in increased fees or salary raises. However, it is quite difficult to determine the relation between hours allocated and client-employer satisfaction or salary raises. Thus, the general strategy of trying to minimize one's hours or time cost when being paid a flat fee or a salary may be the best profit-maximizing strategy.

Another simple but common situation is the hourly rate case. Figure 4 graphically shows what is involved in the optimum time-allocation to maximize the positive difference between fees received and time cost. One can readily see that the optimum time allocation is the maximum time needed to complete the case. Theoretically the optimum time is infinite since the more hours

FIGURE 4. PROFIT MAXIMIZATION IN HOURLY RATE CASES



allocated, the more the profit is, figuring a billable charge of \$50 an hour and a time cost of \$30 an hour. Each hour yields a \$20 profit between revenue and expenses if we ignore expenses other than the cost of our time. The more hours we put in, the more profit units of \$20 we accumulate, thereby building a larger total profit. For 10 hours the total profit is \$200, whereas for 30 hours the

total profit is \$600. At first glance, it appears that a flat fee case and an hourly rate case would involve diametrically opposed optimum time-allocation strategies, with the former strategy emphasizing time minimization and the latter emphasizing time maximization. However, if the minimum time to complete the case is close to the maximum time, one may actually expend about the same amount of time in either situation.¹²

Figures 3 and 4 could consistently refer to the same case since it is possible for a case to have a 15 hour minimum time and a 35 hour maximum time. One cannot, however, conclude from that hypothetical data that an hourly rate is more profitable than a flat fee. The extent to which it is or is not more profitable depends on (1) the hourly rate, (2) the flat fee, (3) the maximum time, (4) the minimum time, (5) the actual time, and (6) the value of one's time as reflected by the time cost line. Figures 1 and 2 do not refer to the same case since the optimum time in Figure 2 of 65 hours exceeds the maximum time from Figure 4. The profitability of the contingent fee versus the flat fee and the hourly fee depends on the above six elements plus (7) the relation between the fees received and billable hours as illustrated by the dots and curve in Figures 1 and 2, and (8) the relation between the probability of victory and billable hours as mentioned in the probability variation on the basic approach. With this kind of information, one should be able to make decisions concerning not only the optimum hours to allocate, but also the optimum payment arrangement between the contingency fee, hourly rate, flat fee, or some legitimate combination of two or more of those payment arrangements.

Profit maximization strategy also involves setting the amount for the flat fee, hourly rate, or contingency percentage. When the bar associations enforced fee schedules, those decisions were largely made by a few influential firms or lawyers in an oligopolistic way. Now that there is more competition in fee setting, flat fees and hourly rates may be determined more by the market forces of intersecting supply and demand curves. To the extent that law practice is a competitive business, the individual lawyer must operate within the market-determined fees. If he goes above those fees, he will lose clients. If he goes below those fees, he will likely operate at a loss. Some law practices may be closer to being monopolistic because they are one of the few firms available in the community or the only firm specializing in a certain field. They are capable of setting their prices as high as the traffic will bear without an off-setting loss of clients. Regardless of the oligopolistic, competitive, or monopo-

12. See note 5 *supra* for the questionable alternative perspective that makes no distinction between hourly fees received and time costs. One could superimpose a total profit curve on Figures 3 and 4, as described in note 5 *supra* with regard to Figure 2. A total profit curve superimposed on Figure 3 (flat fee) would be a straight line, reaching a peak profit at zero billable hours, a break-even point at 30 hours, and going continuously downward after that. The equation for such a profit curve or line is $\$900 - \$30(H)$, which represents income minus expenses. A total profit curve superimposed on Figure 4 (hourly rate) would also be a straight line. The break-even point would be at zero billable hours and going continuously upward after that point. The equation for such a profit line is $\$50(H) - \$30(H)$, which represents income minus expenses. It can be simplified to $\$20(H)$.

listic market of lawyers' services, the price and hours allocated would be designed to maximize the positive difference between fees received and expenses incurred, especially time expense, while operating within ethical and other constraints. This general rule assumes that rational lawyers, like rational people in general, seek to maximize benefits minus costs in their activities, including non-monetary benefits and costs.¹³

Lawyers Versus Firms, Society and Clients

An important variation on this analysis talks not in terms of the individual lawyer maximizing his benefits minus costs, but rather in terms of the law firm, governmental office, or corporation for which the lawyer might work. Each individual lawyer seeking his own profit maximization will maximize the firm profits if he is either a sole practitioner or a partner. The interests of a law office with salaried lawyers, however, may not be the same as those of the individual lawyers. For example, a prosecutor's office may have the collective goal of maximizing the number and percentage of convictions, with each conviction weighted by the sentence received and divided by the maximum sentence that could have been received. If individual salaried lawyers in that office seek to minimize their "billable hours" worked while maintaining at least a minimum quality level, then what is goal maximizing to the office may not be goal maximizing for the individual lawyer who might avoid big cases that are likely to involve after-hours work. Under such circumstances, incentive systems must be established so that the individual lawyers will internalize the office goals into their benefit-cost considerations. The problem moves to a still higher level if we talk about how to get both the individual lawyer and the group with which he is associated to internalize societal or public interest goals. That is the subject of other articles oriented more toward political science or government than a management science or economics.¹⁴

Still another variation on this analysis involves the possible conflict between the profit maximization position of the lawyer and the interests of individual client, rather than the firm for which the lawyer works. Under a contingency fee arrangement, the client is better off if the lawyer invests as many hours as possible, assuming the damages awarded curve keeps rising, even if only to a slight extent as shown in Figure 1. Even the point at which the curve eventually becomes totally flat is likely to involve more hours than the maximum profit position shown in Figure 2. Under a flat fee arrangement, the client is also

13. On the economics of price setting, see any elementary or intermediate economics textbook such as P. SAMUELSON, *ECONOMICS: AN INTRODUCTORY ANALYSIS* (1972); or W. BAUMOL, *ECONOMIC THEORY AND OPERATIONS ANALYSIS* 311-37 (1965).

14. On internalizing group and societal goals into individual benefit-cost considerations, see *Using Decision Deterrence Theory to Encourage Socially Desired Behavior* which is Chapter 8 in NAGEL & NEEF, *supra* note 1, Ch. 8. To illustrate the problem of getting individual salaried lawyers to internalize law office goals, that chapter discusses an incentive system to get assistant prosecutors to move cases faster rather than ask for work-easing continuances. To illustrate the problem of getting a corporation and its house counsel to internalize societal goals, the problem of environmental protection is used.

probably better off the more hours the lawyer puts in since additional hours should result in higher quality work at least up to a point. The lawyer receiving a flat fee, however, would prefer to put in as few hours as possible, as shown in Figure 3. Under an hourly rate arrangement, the client may be better off with the minimum hours needed to complete the case, whereas the lawyer may profit from more hours.

Various systems have been proposed to try to reconcile these conflicts. One system combines different payment arrangements to force the lawyer into a position where his maximum profit involves neither trying to stretch nor shorten his time, which is the middle position usually best for the client. An example of such a proposed system is the contingent hourly-percentage whereby the lawyer charges an hourly rate but receives a percentage of the recovery if the recovery exceeds his total hourly fee.¹⁵ Another type of system involves a fee schedule that describes *actual average and maximum* (1) hours, (2) hourly rates, (3) flat fees, and (4) contingency percentages, as contrasted to the now illegal *recommended minimum* fee schedules. The averages could be determined by carefully surveying attorneys, and the maximums could represent the response from, hypothetically, the upper 20 percent. Regardless of the kind of system adopted to protect clients from lawyer-client conflict over the allocation of lawyer hours, the lawyer could still follow the general approach and its variations described in this article in order to more nearly maximize his benefits minus costs. A better understanding of how attorneys can maximize those net benefits is also helpful in developing a governmental or bar association system for regulating payment arrangements and thus time allocation.¹⁶

Legal aid for the poor is a special kind of attorney-client relationship with

15. A more sophisticated alternative involves no fee unless the lawyer wins, but then instead of receiving about one-third of the damages awarded, the lawyer receives payment for his hours at an hourly rate and a percentage of the amount by which the damages awarded exceeds that hourly payment. Clermont & Corrivan, *supra* note 2, at 546-50.

16. On proposed systems to reconcile the interests of attorneys and clients in allocating time and setting fees, see generally M. BLOOM, *THE TROUBLE WITH LAWYERS* (1968); D. ROSENTHAL, *LAWYER AND CLIENT: WHO'S IN CHARGE* (1974); and Clermont & Corrivan, *supra* note 2. The American Trial Lawyers' Association recently proposed a contingency fee system for defense counsel in personal injury cases. The system would increase the conflict between those lawyers and their insurance company clients. Defense counsel would be paid a basic retainer fee, but would get a percentage of the damages saved in those cases where the damages awarded are less than predicted. Predicted damages would be determined by doing an analysis similar to that shown in Figure 1, except the key variable being predicted from would be something like out-of-pocket medical costs, rather than billable hours. Thus, suppose the out-of-pocket medical costs are \$800 in a given type of case, and that normally predicts damages awarded of say \$8,000. If defense counsel succeeds in settling or trying the case with an award of only \$5,000, then defense counsel would be entitled to about one-third of the difference between the \$5,000 awarded and the \$8,000 normally awarded. The ATLA, which mainly represents plaintiffs' lawyers, would like such a system because it would provide defense counsel with an incentive to resolve the cases faster in order to collect the bonus percentage. Such speed would run contrary to the desire of the insurance company clients to keep the money for investment purposes as long as possible. Such a system, however, might cause defense counsel to work harder and thereby reduce the damages enough to make the situation desirable to the insurance companies, although not so desirable to plaintiff lawyers. See 65 A.B.A.J. (1979) (report on the 1979 ATLA meeting).

regard to payment arrangements and time allocation. Three general kinds of payment arrangements have been tried, namely, volunteer or assigned lawyers who do not generally get paid, salaried lawyers whose salaries are generally paid by the Legal Services Corporation or a public defender's office, and lawyers who are reimbursed by the government for their services on a case-by-case basis analogous to Medicare. The volunteer attorney is not working to maximize monetary profits, but rather for the learning experience or the psychological benefits from contributing his time. The salaried lawyer for the indigent may also have strong non-monetary motivations, although a heavy caseload may prevent him from allocating as much time per client as does hired counsel. The "judicare" lawyer is quite expensive because he charges on a case-by-case basis rather than receiving an annual salary, even without overcharging the government. The salaried system now tends to prevail for both civil and criminal cases, with the exception of cases that can be handled for the poor on a contingency fee basis, and federal criminal cases using a regulated reimbursement system.¹⁷ Insurance systems are now being increasingly developed for people above poverty level, but who are not wealthy enough to readily afford individually hired counsel. Attorneys working for such insurance systems may tend to allocate their time like salaried house counsel, rather than like the more idealistic salaried Legal Services Corporation attorneys.

IMPLEMENTING THE ALLOCATION SYSTEM

The concepts presented so far should make sense at least as a matter of hindsight even though this type of scheme might be difficult to develop in response to a question of "How should attorneys allocate time to court cases?" The Achilles heel of the system is not that it contains any substantially fallacious or unethical reasoning, but rather the problem of obtaining the data for implementing the system.

An ideal implementation system would be computerized at the three stages of data gathering, retrieval, and processing. With regard to data retrieval, a business firm could compile data from questionnaires and docket records on thousands of damage cases across the country. For each case, the following information would be noted: (1) billable hours by the plaintiff's attorney, (2) billable hours by the defendant's attorney, (3) damages awarded, (4) nature of the accident in which the injury occurred, (5) nature of the injuries, (6) characteristics of the plaintiff and defendant, (7) date when and place where the case was decided, and (8) other characteristics of the case that may be relevant to establishing the relation between hours allocated and damages awarded.

If that data set could be made accessible by a computer terminal, an attorney could request all cases that have whatever combination of character-

17. On alternative methods for paying lawyers to represent indigent clients or defendants, and how those methods affect the behavior of lawyers, see A. BERNEY, J. GOLDBERG, J. DOOLEY, D. CARROLL, *LEGAL PROBLEMS OF THE POOR: CASES AND MATERIALS* 499-588 (1975); L. SILVERSTEIN, *DEFENSE OF THE POOR: THE NATIONAL REPORT* (1965); and Nagel, *Effects of Alternative Types of Counsel on Criminal Procedure Treatment*, 48 *INDIANA L.J.* 404 (1973).

istics interests him. An attorney, for example, could ask for those cases that involve intersection collisions with a whiplash injury to a woman plaintiff. If the attorney gives too much detail in specifying the case characteristics, he will receive too few cases and should redefine his request. In other words, the system could work similarly to the computerized Lexis or Westlaw subscription services for retrieving case citations. Here, however, the attorney does not want citations, but rather wants to specify the subset of cases to be analyzed. This data set would also involve trial cases rather than appellate cases, which is more similar to data compiled by the Jury Verdict Research Corporation. An important difference from its data set, though, would be that the allocation data would indicate billable hours for each side, information not currently compiled by the Jury Verdict service.¹⁸

After retrieving a subset of cases, the same computer system could algebraically or graphically determine the relation between billable hours and fees received in those cases.¹⁹ The result could be a graph like Figure 2 if the system includes a computer terminal that provides for graphical output. The time cost line can be superimposed on the graph if the attorney informs the computer how much he considers his hours to be worth in terms of personal cost. If the system merely gives printed output, the attorney could be provided with such information as (1) general optimum number of hours corresponding to point B on Figure 2, (2) damages likely to be awarded at that optimum number of hours, (3) the range of hours within which a profit is likely to be made corresponding to points A to C in Figure 2, and (4) other statistical information such as the equation for the curve and a measure of how well the curve fits the dots. If the computerized system allows for interaction between the attorney and the computer as do Lexis and Westlaw, the attorney can vary the characteristics of the case and thereby vary the subset of data analyzed. Doing so would enable him to see how such variations affect the optimum number of hours and the damages likely to be awarded.

Until a business firm is willing to supply the above-mentioned computerized service or at least a looseleaf binder service, individual attorneys and law firms can try the analysis using their own cases and a graphic eyeballing approach, rather than the more mathematical approach of a computer. Such a do-it-yourself approach might use index cards to record the kind of data-gathering information mentioned above for each case that will be part of the data set. The attorney can then retrieve any subset of those index cards corresponding to the type of case in which he is interested. Retrieving the subset will be easier if the index cards have some kind of edge notches or

18. On the computerized data gathering and retrieval systems of Lexis, Westlaw, and related systems, see ABA LAW AND TECHNOLOGY COMMITTEE, *AUTOMATED LAW RESEARCH* (1973); and McCabe, *Automated Legal Research: A Discussion of Current Effectiveness and Future Development*, 54 *JUDICATURE* 283 (1971). On the Jury Verdict Research Corporation system, see *JURY VERDICT EXPECTANCIES SERVICE* (since 1962); *VALUATION HANDBOOK SERVICE* (since 1962); and Nagel, *Statistical Prediction of Verdicts and Awards*, in *MODERN USES OF LOGIC IN LAW* 135 (1963).

19. See note 3 *supra*, on how a computer can fit a curve to a set of data using damages awarded and billable hours for a set of cases.

colored flags indicating the characteristics of each case. With that subset of index cards, the attorney could plot dots on a pair of axes like that shown in Figure 2. Each dot would correspond to a case. Its horizontal position on the graph would indicate the number of billable hours, and the dot's vertical position would indicate the fee received. He can then fit an S-shaped curve to the dots, trying to provide as good a fit as possible by sight. This curve would reveal the predicted profitability of cases of that subset-type by the way the fee received curve relates to a pre-dawn time-cost line reflecting how much per hour the attorney's time is worth. Such a system can be used for a variety of case types and should provide insights to practicing lawyers regarding the relative profitability of each.

SOME CONCLUSIONS

The essence of the allocation model presented is simply to try within each case to maximize the positive difference between the fee received and the expenses incurred, while operating within ethical and other constraints. That strategy involves allocating as little time as possible per case when a flat fee or a fixed salary is involved, and as much time as possible when an hourly rate is involved. In contingency fee cases, that strategy requires allocating a quantity of hours between the minimum and maximum possible. The exact quantity depends on the relation between billable hours and damages awarded (which indirectly determines the fee received), as indicated by analyzing a set of cases similar to the case under consideration. Such an analysis can be implemented by a computerized system of case data gathering, retrieval and processing, or by a do-it-yourself non-computerized system. The recommended optimum hours from the analysis allows for aggravating and extenuating circumstances. Comparing those optimums across cases can provide insights as to what clients to encourage or accept, as well as how one can improve the allocations of time to cases that are accepted.

A few years ago, lawyers considered the idea of computerized legal searches for case citations to border on science fiction, but it has now become a widespread reality. The next step is for those computerized data-gathering and retrieval systems to process the information. A useful first step for such subscription services might be to attempt to relate results to hours allocated. The same systems could also relate results to other case characteristics, but attorneys generally have more control over their hours than over the characteristics of their cases. It is hoped that this article may inspire some experimentation along the lines suggested so that law practices may benefit from some of the management science developments which have been so helpful to business firms in allocating their scarce resources. Computerized citation retrieval has lessened some of the drudgery of legal research. Computerized case management has the potential for further expanding the rational use of attorney time.