AN AFTERWORD: SCIENCE AND THE JUDICIAL PROCESS

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Science must proceed by abstraction. It cannot deal with everything at once. To achieve its objectives it must isolate — experimentally or conceptually — a limited number of interacting phenomena from the larger field in which they commonly operate.

The necessity to work with, and to think in terms of, simplified models is as much a necessity in the social sciences as it is in physics. The difference is, however, that it is hard to define in the social sciences just what is being abstracted and therefore difficult to know what corrections to make when formal theories are applied to real life. There is little danger that the physicist who calculates what would happen in the absence of friction will suppose, when he turns to man-made machinery, that it also operates without friction. In the social sciences the transition from abstract models to the actualities of social living is not so simple. Though it is probably safe to say that in the social sciences the degree of abstraction exceeds by far anything normally encountered in the physical sciences, the very bulk and complexity of this abstraction makes it difficult to state plainly just what has been left out. This has the unfortunate result that as the potential damage done by misapplications of theory increases, the likelihood that such misapplications will occur also increases. Sometimes, accordingly, the only safe course is to disregard theories derived from abstract models when one is confronted with the problems of actual human existence.

It certainly cannot be said that the contributors to this symposium are unaware of the pitfalls just suggested. On the contrary, each of them is at pains to warn his readers that in one way or another he has dealt with the judicial process in terms that are artificially simplified. However, I am not sure that all of the contributors have made clear the full measure of the abstractions on which their conclusions rest. And even if the scattered concessions made by the five contributors were, in combination, |[1605] sufficient to cover the field, there would still be some utility in putting them into a more systematic form. At any rate this is what I shall attempt in the first part of my commentary.

I

At the outset it will be well to set off the articles of Murphy and Krislov against those of Grossman, Kort, and Tanenhaus. The first two writers are essentially concerned with analyzing processes of collegial decision. They seek a better understanding of what goes on when judges confer, exchange views, and finally make some disposition of the case, whether it be by a unanimous decision or by the majority vote of a divided court. Murphy and Krislov are concerned with the prediction of the decision of future cases only as a by-product of understanding.

Grossman, Kort, and Tanenhaus, on the other hand, are directly concerned with attaining what has been called "predictive knowledge." They begin by making certain assumptions about the influences that may shape judicial decisions and about the particular ways in which those influences may operate. These

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assumptions are then tested by asking whether, had they been used to predict later decisions, the predictions thus made would have been accurate in a significant number of the decisions actually reached. The term "postdiction" has been suggested as an apt designation for this testing of assumptions by a retrospective use of them to "predict" decisions already reached.[1] Naturally it is hoped that if the assumptions prove themselves effective in this imaginary employment they will be equally useful in predicting decisions that actually lie in the future.

In turning now to a more detailed analysis of the individual papers, let me begin with that of Professor Murphy. For insight into the ways in which collective judicial decisions are reached Murphy turns to the results of what is called small-group research. This branch of sociology (or, if you will, of social psychology) probably involves the most extensive application of the experimental method ever made in the social sciences. The technique is essentially simple. Small experimental groups (usually of students) are brought together and given problems to solve |[1606] or are asked to reach certain kinds of decisions. A record is kept, step by step, of the group's progress toward its goal. Various elements in the situation may be manipulated by the experimenter. For example, in one case, communication within the group may be artificially limited or may be subjected to formal rules. In another case, the group may be left to devise its own forms of internal communication, the object being to see how the participants will themselves shape these forms to the demands of the task assigned.

The method is scientifically unpretentious and is generally innocent of mathematical complexities. Murphy not only makes clear what insights useful for an understanding of judicial decisions may be derived from small-group research but also is at pains to show the limitations of this source of help. The abstractions and simplifications demanded by the method are, in any event, sufficiently obvious not to require detailed analysis here.

Like Murphy, Krislov is primarily interested in understanding collegial processes of decision. Instead of drawing on small-group research, however, he turns chiefly to what is called game theory. This subject can perhaps best be described as a branch of mathematical economics. Its most fruitful (or at least its most uncomplicated) application is to what are called zero-sum games, "games" being understood in this context as running all the way from matching pennies to shooting to kill at high noon. Zerosum games are games in which the opposition of interests is complete, so that one man's gain must be the other man's loss. (The sum involved is an algebraic sum, so that plus four combined with minus four produces a sum of zero.) Even in zero-sum games the theory does not purport to offer a strategy for total victory, but only principles by which to establish a kind of base line of comparative safety against whatever form of attack may come from the other side. In cooperative games, such as relationships of exchange, where it is possible for both parties to gain. the teachings of game theory are less clear. Theoretically it can be directed toward maximizing gains on both sides. The social implications of this possibility so moved one British philosopher that he ends his book with the hopeful conjecture:[2] "Perhaps in |[1607] another three hundred years' time economic and political and other branches of moral philosophy will bask in radiation from a source — theory of games of strategy — whose prototype was kindled round the poker tables of Princeton."

At the more modest level on which Krislov pitches his suggestions, what contribution can game theory make to an understanding of collegial judicial decisions? Plainly no matter how acute hostilities within a

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[1] See Nagel, *Predicting Court Cases Quantitatively*, 63 MICH. L. REV. 1411, 1422 (1965).

[2] Braithwaite, *Theory Of Games As A Tool For The Moral Philosopher* 55 (1963). It might be observed that the methods of what is called welfare economics are also directed toward a maximization of private advantage. See Musgrave, *The Public Interest: Efficiency in the Creation and Maintenance of Material Welfare*, 5 MOMOS 107 (1962).

court may become, it is unlikely that judges will often be reduced to playing zero-sum games with one another. Can that part of game theory which deals with cooperative games help us to understand the judicial process? Offhand one might be inclined to suppose that the strategy of judges toward one another is too transparent an activity to profit from sophisticated mathematical analysis. But it is a fact that we often play more subtle and complex games with one another than we realize. Mutually advantageous relations of reciprocity are often not fully perceived by the parties who enter into them and profit from them. If game theory can bring to consciousness the intuitive calculations from which such relationships arise, it may enrich our understanding of judicial ploys and counterploys.

The chief danger in any application of game theory to judicial decision-making lies in the fact that it is essentially a theory of satisfactions that are, broadly speaking, "economic" in nature, that is, are atomistic and individual. It is concerned with the "pay-off" and not with the rewards of the game itself. As Krislov points out, men play poker not simply to win money, but also for the pleasure of gambling. So judges may derive rewards from collaborative efforts that transcend individual "pay-offs."

There is, however, a more fundamental danger in attempting to analyze judicial behavior in terms of an economic calculus. To see what this danger is we need only recall that what a judge may want (some of us are naïve enough to hope that this is what he will always want) is a decision that is just, proper, and workable. When this driving motor of the judicial process is left out of account, the simplifying distortions of game theory become dangerous in ways not explicitly recognized by Krislov. For surely we cannot give a true account of collaborative judging if we assume that it consists entirely of one-upmanship toward one's colleagues, tempered by a sense of togetherness.

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II

The studies reported by Grossman are not concerned with providing any new insight into the process of collegial decision. Instead, they abstract from that process and concentrate on the judicial votes that emerge from it. Their chief concern seems to be to determine to what extent judicial votes reflect dispositions or "values" brought to the bench from the world outside. They ask such questions as whether Republican judges are more likely to vote to nullify the actions of administrative agencies than are their Democratic counterparts. Questions such as these are then subjected to an elaborate testing that may involve Guttman scaling, Boolean algebra, and other mathematical and statistical techniques.

In constructing a program for research of this kind the social scientist confronts the necessity for making three major determinations: (1) He must select the factors to be tested for possible influence on judicial decisions. (2) He must decide how to interpret particular decisions — for example, shall a vote to strike down some administrative regulation of business activity be interpreted as expressing a tendency toward "economic conservatism"? (3) He must choose some appropriate mathematical method for bringing the hypothecated predispositions into relation with the actual judicial behavior of the subject under study.

It should not be supposed that these three determinations are independent of one another or that they would be reached chronologically in the order in which I have stated them. In the total design of the project they will inevitably interact. In determining what extracurial influences to select for study, for example, the researcher will have to ask himself whether a given influence can be converted into terms that are manageable mathematically. On the other hand, in selecting among alternative mathematical procedures he will be likely to select the procedure that seems most congruent with the normal workings of human motivation.

Let us examine in turn each of the major decisions that are involved in research design. The first relates to the choice of the extracurial influences to be studied for their possible influence on judicial decisions. Here one is struck by the conservatism of the researchers. They do not ask whether the judge is for or against vivisection, cremation, nominalism, or organic farming. They do not inquire whether his preferred

drink is rye with ginger ale |[1609] or a vodka martini with a discreet slice of lemon peel. Instead they ask such unimaginative questions as whether he is a Republican or a Democrat, whether he grew up in the city or in the country, and the like.

Things have not always been so, at least in academic legend. In the 'thirties there was much talk of a projected study of the influences affecting decisions at the trial level. The usual trite variables were, of course, to be included — the judge's family background, the nature of his practice before his appointment to the bench, and other like matters. But the program also called for a determination of the manner in which the American flag was displayed in the courtroom and whether the electric wiring of the courthouse carried alternating or direct current. One may rejoice that the days of such blatant pretension to scientific open-mindedness are over. But certainly a finding that direct current is clearly associated with a much higher percentage of acquittals than is alternating current would be more exciting to the imagination than a solemn finding that Republican judges prove themselves on the bench less favorable to labor unions than do their Democratic colleagues.

I shall have occasion later to return to this problem of picking the "independent variables." For the time being I should like merely to record an impression that the attitudes and predispositions selected for study tend to be: (1) not those that fall into complex patterns but those that are thought to fall along a continuum, preferably running from "left" to "right," and (2) those that are "political" in nature in the sense that they may well have influenced the election or appointment of the judge. If this impression is correct, it has an important bearing on the relative success of these studies in uncovering significant associations between extracurial predispositions and judicial "votes." For our appraisal of these studies cannot be realistic if we fail to take account of the possibility that the apparent "success" they achieve is built into the design of the research itself.

When we reach the stage of determining what shall be treated as an "outcome" of the judicial process, to be matched against the judge's "personal values and attitudes,"[3] the necessity for simplification and abstraction becomes drastic indeed. In the first place, as Grossman points out, unanimous decisions must be entirely disregarded. The researchers in this field are interested in judicial |[1610] divergences, and these must be overtly expressed before they can be taken into account.[4]

In estimating how much is left out when unanimous decisions are excluded from study, one must recall that the impression of solidarity conveyed by such decisions can be quite specious. One of the most perceptive of our state judges once attempted to describe how unanimous decisions look to those who reach them. With his own court, he said, some of these decisions were rated as 90-10, while others might be rated as 51-49, in the second class it having been touch-and-go as to how they would finally be decided. The 90-10 decisions furnish a firm foundation for future development; the principle implicit in them is likely to be extended broadly by analogy. Cases of the second class will be likely to meet an opposite fate. The 51-49 decisions do not necessarily represent any division of opinion among the court; all the judges may have felt

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[3] See pp. 1551-52 *supra*.

[4] Murphy suggests that investigators in Switzerland might enjoy an advantage in comparison with their American counterparts because court deliberations in their country are required to take place in public. See Murphy, ms. on file at Harvard Law Review, p. 5.

He might have added that in Mexico the deliberations of the Supreme Court are also open to the public. Calamandrei, *Procedure And Democracy* 48-49 (1956). One may doubt, however, whether discussions taking place under the strain of such scrutiny would be a very reliable index to real divergences of opinion and belief.

substantially the same way and all may have been equally pulled just past the point of indecision in finally reaching a unanimous conclusion. When we thus look behind the blank outer wall of unanimity, it becomes apparent how much judicial preference schedules may be falsified (say, on a Guttman scaling) when unanimous decisions are left out of account. And it should be remembered that the reciprocal adjustments and compromises that go into a unanimous decision may have a carry-over effect on the judge who, in a later case, debates whether to file a dissenting opinion.

The chief distortion introduced by the exclusion of unanimous decisions results, not from the fact that a veil is drawn over divergences that may lie behind such decisions, but from the undue weight it lends to dissents. By entering a dissent the judge gains for himself the opportunity to engage in a very special form of literary exercise, the dissenting opinion. Cardozo has some eloquent things to say about the differences between majority and dissenting opinions:[5]

|[1611] Comparatively speaking at least, the dissenter is irresponsible. The spokesman of the court is cautious, timid, fearful of the vivid word, the heightened phrase.... The result is to cramp and paralyze. One fears to say anything when the peril of misunderstanding puts a warning finger to the lips. Not so, however, the dissenter. He has laid aside the role of the hierophant, which he will only be too glad to resume when the chances of war make him again the spokesman of the majority. For the moment, he is the gladiator making the last stand against the lions.

In appraising the significance of a dissenting opinion it should be remembered that judges often, tacitly or openly, use the threat of a dissent to obtain some modification in the majority opinion. In deciding how firmly to hold out, the judge inclined toward dissent would be less than human if he were not influenced by the attractiveness of the role in which a dissent casts him. Let us suppose that his appointment to the bench was heralded by *The National Review* or *The Nation* as bringing a wholesome "conservative" or "liberal" influence to the court. The cases he confronts offer him for a long time no opportunity to demonstrate to those who believe in his judicial philosophy that he has not deserted them. In such situations the opportunity to write a dissenting opinion in an appropriate case becomes especially attractive and he is likely to take full advantage of the occasion. Since he is relieved of any complicity in the decision actually reached, he may in fact be moved to show by words that his "personal values and attitudes" remain what they were when he was just a plain, ordinary citizen. In so doing he will please not only his well-wishers but the researchers as well, for his dissent will help to load the figures in favor of a result that the researcher, if he too is human, cannot but hope will emerge from his labors.

In his report on researches of the kind under discussion, Grossman asserts that "these explorations" will "tend to focus on properties of behavior which are amenable to generalization — for example, on judges' votes rather than on their opinions."[6] But this emphasis will surely be misplaced if, as may very well be the case, the primary motive for casting the dissenting *vote* was to procure the opportunity to write the dissenting *opinion*. And it should be remembered that filing a dissent without opinion can |[1612] often be interpreted as staking out a claim to write a dissenting opinion on a later and perhaps more auspicious occasion.

But how is it decided — with or without the aid of an opinion — whether a judicial "vote" is "for" or "against" labor unions, economic liberalism, or judicial restraint? Who does the scoring and by what standards? What "personal values and attitudes" does *he* bring to *his* job? How deep an insight does he have into the problems that are being resolved by the judges' "voting"?

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[5] Cardozo, *Law And Literature* 34 (1931).

[6] See p. 1552 *supra*.

A judge votes to declare invalid or unlawful some exercise of power by a labor union. Does this prove he is "against" labor unions? It is quite possible that he has a deep faith in the labor movement, but is convinced that the greatest threat to it lies in irresponsible actions by unions. It may even be that his friendliness toward labor has enabled him to obtain an understanding of such problems denied to those who stand at a greater distance from the battle.

Surely life is not so black-and-white as the students of judicial voting behavior often seem to make it. Harry Shulman's famous Holmes Lecture[7] is regarded by many as the most enlightened statement ever made of the arbitrator's role in labor disputes. Yet another arbitrator, of a national reputation fully equal to that of Shulman's, stated to me that he regarded the views expressed in that lecture as fundamentally inconsistent with collective bargaining. The general counsel of a great labor union once remarked to me that he sometimes wondered why any labor union would ask for the closed shop and why any employer would ever hesitate to grant it. What he had in mind, of course, was the soporific effect of security. I did not take his remark as being intended with literal seriousness. It illustrates, however, some of the complexities of the problems of labor relations as seen by those most directly engaged in them. It is well known to experienced labor arbitrators that unions often bring grievances to arbitration hoping to lose them. This may happen when improved machinery, with new automatic controls, makes it possible for the worker to tend, effectively and without strain, a larger number of machines than he has in the past. When management proposes an increase in the assignment of machines, the worker, frightened by the unfamiliarity of the new equipment, concludes in all good faith that management is trying to hoodwink him into accepting a "stretch |[1613] out." The union loyally argues the case for a lower machine assignment. The award, to the satisfaction of everyone but the worker — and ultimately to his satisfaction too — goes in favor of management. In rendering this award should the arbitrator be scored as voting "antilabor"?

Nor are these complexities and ambiguities confined to the labor side of the table. During World War II many representatives of branch factories — on orders from the head office — argued vehemently before the War Labor Board against the inclusion of any maintenance-of-membership clause in their collective bargaining agreements. Often they were considerably relieved when the decision went against this contention.

Admittedly these Janus-faced issues are less likely to come before courts than to be encountered by arbitrators or administrative agencies. But they are often indirectly involved in judicial decisions and when they are one can only hope that the behavioral scientists will understand the game they are scoring.

One of the favorite inquiries in these researches is to ask whether the judge in his decisions betrays a tendency toward economic "liberalism" or "conservatism." A judge votes to strike down the action of a regulatory agency. Shall this be scored as a vote in favor of economic conservatism? The judge may have been convinced of the need for governmental control while being actuated in his decision by a conviction that this control should take the form of enforcing competition rather than supplanting it. In support of this view he might — though it is certainly unlikely that he would — cite the opinion of "progressive" economists in the Communist countries who argue in favor of "market socialism." It is true that the sloganized thinking of the average citizen is blind to such distinctions. But is the judge — who is forced to study complex problems at close range — to be denied the right to rise to a higher level of analysis? And is it always certain that if he does, the social scientist who undertakes to score him will be able to follow him in this ascent?

I am not suggesting, of course, that the researchers into judicial behavior are unaware of this problem. One recent study reports the adoption of a procedure of scoring designed to ensure accuracy and

[7] Shulman, *Reason, Contract, and Law in Labor Relations*, 68 HARV. L. REV. 999 (1955).

objectivity, in this case as applied to what is called "content analysis":[8] "A panel of three judges — two graduate |[1614]students and myself — read and scored independently each opinion for the presence of any of a set of 33 substantive categories.... Any instances of disagreement in scoring were discussed among the panel of judges until a consensual judgment was reached."

The important issue lies, however, not in the utility of precautions that can reduce the risk of misinterpretation but in the difficulties inherent in the scoring task itself. Presumably it is in response — at least in part — to these difficulties that Kort suggests his variation on the research design. He proposes that judicial votes be viewed as reactions to varying combinations of facts. If, for example, we discover that whenever in a criminal case the fact combination *a, b, e*, and *f* is presented to the court a conviction is set aside, while it is affirmed when fact *e* is absent and its place is taken by fact *d*, then we shall be on our way to discerning the essential regularities of judicial behavior. We shall be able to penetrate beneath verbal justifications to the patterns actually implicit in judicial voting. The object of research conducted along these lines would seem to be not so much to measure the influence on his decisions of the judge's personal beliefs and attitudes, but to discover what Ihering called "latent rules,"[9] that is, unexpressed rules that actually govern the judicial process.

There are serious difficulties in Kort's proposed method which would unsuit it for application to any but the simplest contexts of decision, such as may possibly be presented by workmen's compensation cases. It presupposes a clear distinction between findings of fact and conclusions of law that cannot be drawn. Kort suggests as one variable that may be present in criminal cases, "the alleged fact that the defendant had not been advised of his right to remain silent."[10] Now, "being advised" must mean "being adequately advised." Whether a man is deemed adequately advised involves a conclusion of law. Kort recognizes that his method is "not designed to predict doctrinal changes and the adoption of new rules of law."[11] But a "new rule of law" may quietly emerge by the simple process of tightening up the definition of what will justify a factual finding, let us say, that the defendant was *sufficiently* warned of his rights.

A distinction is often taken between "evidential" facts, on the |[1615]one hand, and "dispositive" or "operative" facts, on the other.[12] Thus, in judging whether a will is valid a specified degree of sanity is a dispositive fact. A finding whether this dispositive fact exists may be affected by the circumstance that the testator spoke somewhat incoherently when he signed his will. His incoherent speech is, accordingly, an evidential fact. Now plainly Kort is concerned with dispositive facts, and not with the unforeseeable multitude of evidential facts that might tend to prove or disprove particular dispositive facts. Yet when we view the development of the law through time, the distinction between these two kinds of facts often breaks down. What starts as an evidential fact may gradually become, through an explicit or implicit application of presumptions, a dispositive fact.

Generally, the separate elements of a complex set of facts will stand in a relation of interaction among themselves such as to make any merely enumerative treatment impossible. This is well illustrated in cases involving obscenity. The two facts generally considered relevant in such cases are: (1) Is the primary appeal

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[8] See Schubert, *Jackson's Judicial Philosophy: An Exploration in Value Analysis*, 59 AM. POL. SCI. REV. 940, 942 (1965).

[9] Ihering, *I Geist Des Römischen Rechts* § 3, at 29 (7th & 8th ed. 1924).

[10] See p. 1597 *supra.*

[11] See p. 1602 *supra.*

[12] See Corbin, *Legal Analysis and Terminology*, 29 YALE L.J. 163, 164 (1919).

of the book to a prurient interest? (2) Does it have any redeeming social value? These seem on the surface quite distinct from one another. But suppose that the social value of the work, though perceptible to sensitive thinkers, is too obscure to make any impression on the ordinary reader. What then is the rule? Three recent and much discussed decisions of the Supreme Court[13] introduce a new factual variable: Was the book advertised and promoted in such a way as, in effect, to promise the buyer his money's worth in pruriency? How is this fact related to the others? There is some suggestion in one opinion that lurid advertising sets the purchaser's mind toward the book in such a way that for him. at least, its primary appeal will be prurient. Some newspaper editorials have interpreted the decisions as suggesting that when a publisher advertises his book as being salacious an inference is justified that it is in fact salacious. On this interpretation lurid advertising is an evidentiary fact tending to prove the dispositive fact of pruriency. We do not know what the future treatment of these factual variables will be. But as the significance of this or that fact is shifted back and forth we can |[1616]be certain that what are in effect new rules of law will be emerging. All of this can be summed up in the observation that the "findings of fact" Kort's method would feed into the computers will inevitably carry with them a heavy, but essentially unmeasurable, contamination of law.

There remains for consideration the third major decision facing the researcher, the choice of a mathematical or statistical method suited to revealing significant relations between the judge's "personal values and attitudes" and his judicial "votes." My treatment of this problem will be brief, chiefly because my capacity to deal with it is quite limited. I shall venture the suggestion that the guidepost by which this choice is determined can only be some intuitive or common-sense view of the nature of human motivation. A mathematical method cannot intelligently be selected merely because it is "sophisticated" or offers "a powerful tool of analysis." It can only be wisely chosen because it fits the thing it tests, and in this case that means the way judges actually think and decide. There is no mathematics by which to choose the right mathematics; the pump must first be primed by human insight.

This point can be illustrated by a reference to Tanenhaus's discussion of Guttman scaling. Guttman scaling presupposes a kind of stimulus and response picture of human motivation, with a diminishing response as the stimulus declines. Tanenhaus's ultimate conclusion is adverse to the utility of this model for studies of judicial behavior. Let me point to a limitation of the model, however, that Tanenhaus does not mention. For the scaling to fall into the neat picture presented in his Table I,[14] it is essential to abstract the whole analysis from the dimension of time. Even on the most elementary physiological level a response may be activated in part by a stimulus prior in time to that which appears to release the response, while fatigue may block a response that might otherwise occur. Something like this may occur in the judicial process. A judge, let us say, is "for" labor unions; the word "labor" is in his vocabulary what some semanticists used to call a "yes-word." Since he has been on the bench he has had occasion to vote three times in a row "in favor of" labor. A fourth case involving labor's interests comes up for decision. Theoretically it presents a stronger stimulus to a "pro-labor" vote than any of the preceding three. Our judge, however, has become |[1617]worried lest it be thought that he is lacking in the judicial temperament, and may be moved by this concern toward an "anti-labor" vote. Again, suppose the fourth case presents a weaker stimulus than any of the earlier cases, and would normally fall below the breaking point in the judge's support of the "labor position." However, he has written an opinion in each of the preceding cases and finds himself caught up in a web of doctrine that makes it difficult for him to vote "anti-labor" in the fourth case. How such tensions

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[13] *A Book Named "John Cleland's Memoirs of a Woman of Pleasure" v. Massachusetts*, 86 Sup. Ct. 975 (1966); *Mishkin v. New York*, 86 Sup. Ct. 958 (1966); *Ginzburg v. United States*, 86 Sup. Ct. 942 (1966).

[14] See p. 1587 *supra*.

will be resolved we need not conjecture. Their possible existence suggests, however, that the human being cannot be analogized to an electronic machine with a stable and fixed point of response.

My concern here is not to identify any specific defect in Guttman scaling. It is rather to remind the reader of a more general point — namely that the choice of the mathematical procedure to be followed must rest ultimately on a quite unscientific conception of the qualities of human motivation as it operates in judicial decisions.

So much, then, by way of commentary on the problems that must be solved in designing and carrying out a program of research into judicial "voting." This brings us to the question: How shall we appraise the results of this kind of research? One can say in general: a trite finding tells us nothing we did not already know with reasonable assurance, a bizarre finding is intellectually indigestible, a slightly off-beat finding can profitably set our minds to work trying to figure out how to explain it. As illustrations of these three kinds of findings one may mention in order: the common finding that Democratic judges tend more than Republicans to "favor labor," a hypothetical finding that direct current in the walls of the criminal court room produces acquittals, an actual finding that Democratic judges tend to favor the wife "in divorce settlement cases."[15]

We may say then that in any program of research of the sort we have been discussing there are four crucial turning points. We must determine what "personal values and attitudes" our judge has and which of these are likely to influence his judicial voting. We must find some way to determine what his votes as a judge mean in terms of the values and attitudes they express. We must adopt some mathematical procedure appropriate for revealing significant relationships between the judge's voting record and his | [1618] "personal values and attitudes." We must appraise the findings and decide what use we can make of them. At each of these turning points the researcher, I must insist, has nothing more "scientific" to guide him than his own imperfect insight into workings of the human mind and the human will.

III

It is time now to view the application of "predictive science" to judicial behavior from a somewhat broader perspective. In what kinds of situations in general is it possible to make reasonably reliable predictions of future human behavior?

Frank H. Knight[16] offers a comparison that may be useful in giving a partial answer to this question — a partial answer extremely relevant to our present subject. Suppose I observe someone else working on a problem. Now if I have myself previously reached a satisfactory solution for this problem, I may be able within limits to predict the outcome of his attempts to solve it. But if the problem is as much a problem for me as it is for him, plainly I cannot know in advance what is going to emerge from his efforts.

The question then becomes whether the judicial office involves a problem-solving aspect. Certainly lawyers talk all the time as if it did. "That decision was a very good solution for a tough problem." "Judge X certainly messed that one up." "An opinion supporting that conclusion, I found when I tried it, just wouldn't write." "That's a decision we can live with."

As a judge or arbitrator sitting in the case of *A. v. B.* I may think I intuitively perceive that justice lies on the side of *B.* But if I cannot bring to articulation the reasons for this perception, I shall be unable to state a clear rule that will give meaningful guidance to those compelled to shape their conduct by my decision. If I

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[15] See p. 1557 *supra.*

[16] See Knight, *The Ethics Of Competition And Other Essays* 340 n.b1 (1951).

must fit an apt decision of the case into an existing body of precedent my perplexities are compounded. I must avoid the opposing perils of a wooden literalness and an unprincipled manipulation of the sense of existing doctrine. Knowing that my decision will in turn become a precedent, I must find an apt decision of the case before me without compromising the decision of cases yet to come and as yet unforeseeable.

|[1619] The great judges of the past are not celebrated because they displayed in their judicial "votes" dispositions congenial to later generations. Rather their fame rests on their ability to devise apt, just, and understandable rules of law; they are held up as models because they were able to bring to clear expression thoughts that in lesser minds would have remained too vague and confused to serve as adequate guideposts for human conduct. Thus one recent writer says of certain of the great chancellors of England: "…one is struck by the power which these judges showed to subsume complicated commercial situations under the comparatively simple rules of equity so as to arrive at a result which satisfies one's sense of justice."[17]

It would be foolish to assert that when judges are engaged in solving problems all of their personal attitudes and values become dissipated in a bright glow of objectivity. The final solution may well be skewed in one direction or another by something that may be termed a personal or collegial predilection. But plainly this does not mean that the predictive social scientist will be able to anticipate the outcome; indeed, he will not even be able to identify the skew until the structure subject to it stands before him and he is able to comprehend its meaning. Furthermore, there are cases — and they are by no means rare — where the judge may be able to devise a solution that will reconcile and bring into harmony interests that were previously in conflict. Such a solution offers no handles at all to the social scientist who draws his premises from an assumption of ineluctable conflict.

The studies reported in Grossman's paper are the work of scholars who are by profession political scientists. Grossman recognizes that they bring a distinct point of view to their researches:[18]

They rely on methods of inquiry which assume that a useful way to examine judicial behavior is to consider the judge not as *sui generis*, but rather as a variety of *homo politicus*. Such a perspective is not to be confused with the exaggerated notion that judges are *no* different from other political actors. It has the advantage, however, of permitting observations about judicial behavior to be integrated into broader-based studies of human behavior and legal-political institutions.

|[1620] If the broader perspective thus offered leads us to think of judicial "voting" as being fundamentally like the casting of his ballot by an ordinary citizen, it will certainly serve no purpose but obfuscation. The *homo politicus* nearest in function to the judge is, perhaps, the elected representative in a legislative assembly. Like the judge he not only votes for or against legal measures but also participates in their construction. Unlike the judge he performs these two functions separately; the one takes place "on the floor," the other in committee. The struggle of interests and viewpoints that comes to open expression on the floor is by no means absent in the committee. A bill may be killed or mutilated in the drafting stage by the pressure of powerful political interests. On the other hand, laws are sometimes proposed that seem certain of wide support, that promise an end to partisan strife — until someone tries to draft them. Tax exemptions in certain situations of hardship that sound very good on paper ("off-paper" would be a better expression) sometimes prove themselves undraftable in any way that would not cause confusion and damaging uncertainty.

With the judge the drafting and voting stages are not clearly differentiated and commonly proceed in parallel. This difference easily leads to a misunderstanding of the judicial process. For example, a dissenting

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[17] Kahn-Freund, *Comparative Law as an Academic Subject*, 82 L.Q. REV. 40, 46 (1966).

[18] See p. 1552 *supra* (footnote omitted).

opinion is not necessarily a vote "against" the majority view. In legislative parlance it may be more like an expression of the opinion that the decision is not yet ready to be reported out of committee.

None of this is intended to deny that the judicial office can bring to expression both capacities for problem-solving and individual differences in fundamental values. One may, indeed, distinguish in the judicial process two aspects, the one consisting of what may be called signpost-setting, the other of constructing roadways to the destinations indicated by the signs. Just as there are legislators who are magnificent on the floor and weak in committee, so there are judges who are very adept in setting signposts but less effective in road construction. One sometimes has the uncomfortable feeling that these are the favorites of the predictors. Certainly such judges offer more tractable material for their researches.

In one of the most significant actions of the Supreme Court in this century we have had the unusual experience of seeing the signpost-setting and the roadbuilding aspects of the judicial office |[1621] neatly separated. *Baker v. Carr*[19] set the signpost; *Reynolds v. Sims*[20] took up the work of constructing the roadway. The route is far from being completely charted; much of the terrain that lies ahead has hardly been scanned. Difficult problems remain to be solved.

Interestingly enough, certain political scientists are now hard at work attempting to solve these problems in some acceptably objective way. As one of their number has observed: "The difficulties are not only political; some of them are technical."[21] The most difficult problem is to find some formula for redrafting the boundaries of election districts in ways that will not produce bizarre configurations and yet avoid the evil of inconspicuous gerrymandering. To that end there have been developed what are called the Weaver-Hess program and the Nagel program. These programs, which involve the use of computers, are projected against a body of learning that includes the Dauer-Kelsay and Gini indexes and the Schutz coefficient. One may wish these scientists Godspeed in their labors. Of one thing we can be reasonably sure, however: it is unlikely that their colleagues, the predictors, will attempt at this stage to forecast the ultimate results of their efforts at problem solving. In the case of Stuart Nagel, himself an eminent predictor, this would have involved predicting from the beginning the outcome of his own efforts as a problem solver.

Throughout this article we have been concerned to identify the abstractions and simplifications implicit in the design of research devoted to the prediction of judicial behavior. We have listed: (1) a selection of the factors to be tested for their influence on judicial behavior; (2) a definition of "outcomes" which excludes unanimous decisions and gives a heavy weighting to dissents and dissenting opinions; (3) a determination of what particular judicial "votes" shall be taken to mean in terms of objectives pursued in the research; and (4) the choice of a mathematical method for bringing into significant relationship the influences that may sway a judge and the decisions he actually makes. We may now add: (5) an exclusion from study of the problem-solving aspect of the judicial process.

|[1622] In apology for the unexciting findings of these researches it is often claimed for them that they at least serve to confirm by scientific methods what we previously knew only intuitively. This claim is not, I believe, justified. The success achieved in proving the intuitively obvious is built into the design of the research itself.

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[19] 369 U.S. 186 (1962).

[20] 377 U.S. 533 (1964).

[21] Silva, *Reapportionment and Redistricting*, Scientific American, Nov. 1965, pp. 20-27. The summary of the work now going on, presented in the text above, is based on this article.

IV

We now reach the most fundamental question of all: What are the ultimate aims of research of the kind we have been discussing? What philosophy animates it? What imparted sense of mission enables it to attract to itself so many man hours and such extensive facilities?

Not much by way of practical utility has been claimed for it. In an article addressed to lawyers Stuart Nagel attempts to outline briefly the kind of practical guidance that might be obtained from the conclusions of predictive research:[22]

Knowing the rough probability of victory in cases before the Supreme Court might be helpful in rationing scarce resources or revising the briefs of a law firm, a pressure group, or the solicitor general's office, although even if one has a case that falls into the [unpromising] extreme intervals in Table 2, it may still be worth participating in an appeal if the gain to be achieved in case of victory is enough to offset the low probability of victory, or if there is some special characteristic present that indicates the probability of victory is much higher than calculated (*e.g.*, the other side had no standing to sue).

One might add, as a reason for taking the long-shot case, that if the Court has fallen into predictably routine patterns of decision it might be in the public interest for a good lawyer to step in and shake them loose from their bureaucratic rigidities. But even as thus expanded the claim of practical utility remains a modest one. Indeed, an unkind critic might turn Nagel's reference to "rationing scarce resources" against a scientific enterprise that seems to return so little from so much.

Another possible gain from researches of this kind lies in the realm of serendipity. A puzzling correlation that violates normal anticipations may set our minds going along new paths and yield unexpected insights. If it is true that computers have the capacity |[1623] to think only to the extent that thinkers build that capacity into them, it is also true that much of what we call thinking is not thinking at all. It might better be called scanning; we force our brains to survey a long list of possibilities on the off-chance that some significant relationship will turn up. This disagreeable labor the computers can take over for us and perform with superhuman speed and precision. The trouble here is that our predictors of judicial behavior draw up such timid and conservative lists of factors to be tested. Perhaps if their minds could be made bolder, and the new spirit communicated to the inner offices of the foundations, some hitherto unsuspected aspects of judicial motivation might be opened up for investigation. But the hope for any such development must lie in the future.

As matters now stand, it seems obvious that the real driving force back of these researches lies in the faith, or the hope, that they will ultimately make some as yet unspecifiable contribution to a General Science of Human Behavior. This faith, or hope, comes to clear expression in Grossman's article:[23]

All research must be understood and interpreted in the light of the organizing principles to which it subscribes. The ultimate goals of social science involve the construction of sophisticated theories of human behavior, in which judicial processes occupy a small but important part. Such theories emphasize systematic formulations of empirical data and place a high premium on generalization and prediction. It may be, as Schubert suggests, that "the power of any science lies in its capacity to make successful predictions." But successful prediction alone is not what distinguishes scientific endeavor. Scholars and ordinary people are constantly making predictions — some with greater success than others. The scientist seeks prediction based objectively on the measurement of relationships of observed data; to most people, and often to

[22] Nagel, *supra* note 1, at 1421.

[23] P. 1553 *supra* (footnotes omitted).

scientists as well, prediction is intuitive and based on less than complete data. It is this goal of more objectivity and increased reliability of prediction and inference which supplies the major motivation for much of the work described below.

In these words — which will bear careful reading — there lies implicit a whole philosophy of scientific method. I believe this philosophy to be mistaken. In what follows I shall try to show why I believe this.

There may be said to exist two philosophies of science. The one |[1624] sees the aim of science as *understanding*; the other as *prediction*. The first regards prediction as a by-product of understanding; we acquire the ability to predict events as our minds penetrate into the causes that underlie the happenings of nature. The adherents of the opposed theory see "understanding" as an illusory, metaphysical trapping superfluously tacked on the essential goal of acquiring predictive knowledge.

It may be said of the great scientists of history that they generally pursued their goals of discovery without imposing on themselves preconceived limitations of method. Insofar as they had a philosophy of method it would probably resemble, if brought to articulation, that which I have described as attributing to science the aim of understanding.

The adherents of the predictive theory have always been more self-conscious about their beliefs and at times have formed something like a cult. The basic elements of their faith can be traced through Bacon, Comte, Mach, Poincaré, Pearson, and many others, including Holmes and his celebrated "predictive theory of law." In modern times the chief adherents of this view have been social scientists and certain philosophers of science. It has never had much attraction for those actively engaged in the physical sciences.

Let me first state the chief arguments for the predictive theory. It is recalled that the whole history of science is a graveyard of abandoned theories that were once thought to yield "explanations." In ancient times explanatory power was attributed to the principle that "nature abhors a vacuum." At a later time the imaginary substance *phlogiston* was once as real in the thinking of chemists as oxygen is today. What persisted through these shifts of fashion in explanation was a steadily increasing knowledge of invariant sequences: when *a* occurs then *b* follows. This, it is said, is the bedrock of scientific knowledge. This conception of the scientific enterprise has in recent times become attractive because of its pragmatic flavor. It is now sometimes stated as a view that sees the essence of science in prediction *and control*. In any event, it emphasizes action, not passive contemplation.

A general answer from the opposing side would run along these lines. Prediction presupposes understanding. In the sequence — when *a* occurs *b* follows — often we cannot even identify *a* or *b* except by some perceived structure or causal connection which unites them. The acquisition of significant scientific insight does |[1625]not necessarily increase our capacity to predict. One of the most revolutionary developments in the history of science — Darwin's theory of natural selection — did not yield predictions. That the constructs on which men once relied in explaining what they observed have often been abandoned later in no sense refutes the theory that science seeks understanding. Many tools that were once the best available have been supplanted by more effective ones; this does not mean that the supplanted tools were not useful in their time. The predictive theory gives no guidance to scientific research. One who took it seriously would not know where to direct his inquiries. When the scientist seeks understanding, on the other hand, he starts with what he understands, or thinks he understands, and builds out from this into the unknown.

Certain modern philosophers have had occasion to refine and perfect the predictive theory of science. In defending that theory against its critics, they have clarified its claims and its limits. I think it is not generally realized by social scientists what the results of this process of clarification have been. The most significant of these is the conclusion that *the predictive theory offers no guidance whatsoever to the process of discovery*.

Carl C. Hempel is one of the most famous of those philosophers of science whose work falls generally within what may be called the predictive school. The logician Ernest Nagel thus summarizes the aims of

Hempel's efforts:[24] "Hempel's main objective is to analyse the *logical structure* of scientific explanation rather than to examine the *process* of scientific discovery or the *development* of scientific ideas."

Another member of the same school of thought, Hans Reichenbach, has this to say of his own objectives:[25]

> The act of discovery escapes logical analysis; there are no logical rules in terms of which a "discovery machine" could be constructed that would take over the creative function of the genius. But it is not the logician's task to account for scientific discoveries; all he can do is to analyze the relation between given facts and a theory presented to him with the claim that it explains these facts. In other words. logic is concerned only with the context of justification.

Much of the popularity that the predictive conception now enjoys among social scientists can be attributed to the attractive |[1626] aura of scientific objectivity surrounding Holmes's "predictive theory of law." Yet Holmes never gave any significant indication as to how anyone would actually go about making the predictions which occupy so central a position in his theory. The only advice he offers cannot be said to suffer from an excess of imagination: "Read the reports, treatises, and statutes."[26]

What in fact has given direction to the researches of the great scientists of the past? I think it can be said that they usually started by trying to place in order what in their times seemed already well established and clearly understood. In this process of putting together the materials of familiar knowledge they would be likely to encounter conflicts and discordances. "We know from the Bible that God created the different kinds of animals, giving to each its special stamp. Yet we also know that stock breeders bring new kinds of animals into existence. How can this be?" Again: "We know of course that when a material like wood burns it releases a substance that passes off into the air in the form of flames. Yet when we gather together and weigh all the products of combustion we find they are heavier than the wood was before it went up in flames. How can this be explained?" Guided then by a defect in existing knowledge, the nature of which he could not yet define, the scientist went on to discover a solution, the nature of which he could not anticipate.

Are there in our present subject any unresolved perplexities concealed in the interstices of what we take to be commonplace knowledge? There are indeed. The most obvious and central of these lies in our received conceptions of the means-end relation as it enters into processes of decision.

Let me set forth a series of propositions about means and ends that have, in whole or in part, some chance of being accepted as truisms: The first thing to do in reaching any decision is to determine what end you wish to achieve. This end must be clearly defined, for otherwise it will be impossible to select intelligently an apt means for attaining it. In setting up objectives or ends rational calculation is itself not enough. In determining what we wish ultimately to achieve we must be guided by some felt need, or by a sense of what is right and just, or simply by personal preference. The choice of means, on the other hand, is a matter of rational calculations. This results in the conclusion that science can help us with means, but not with ends.

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[24] Letter, Scientific American, April 1966, p. 8, col. 2.

[25] Reichenbach, *The Rise Of Scientific Philosophy* 231 (1951). The quotation is taken from a chapter entitled "Predictive Knowledge."

[26] See Holmes, *The Path of the Law*, 10 HARV. L. REV. 457 (1897).

|[1627] Trouble develops, however, when we attempt to apply this conventional wisdom — to borrow a phrase from Kenneth Galbraith — to actual processes of decision. Then we find means and ends moving in circles of reciprocal influence. An end originally selected may be discarded because no means can be found for achieving it that does not entail a disproportionate cost — a "cost" that may itself mean some sacrifice of other ends or the exclusion of means that would be useful in attaining a variety of ends. When in this field of interaction we try to isolate the ends that are "ultimate," we find ourselves in difficulty. The most hackneyed social aims — freedom, equality, security — can hardly be conceived in abstraction from the institutional means essential for achieving them. If we say that the ultimate commitment of a court passing on constitutional issues is to uphold and interpret the constitution, then we must remember that the constitution itself consists largely of a system of prescribed means. The end of the court then becomes that of preserving the integrity of a set of institutional means that must be kept open for the attainment of indeterminate ends. In actual processes of decision an end loosely defined and tentatively held may be more useful than one that seems clear and precise when viewed in abstraction from the reciprocal calculations into which it must eventually enter.

I do not mean to intimate that any discovery — and still less that any "scientific" discovery — lies around the corner that will enable us to straighten out all these tangles of thought. Perhaps the trouble lies not so much in lack of knowledge as in the lack of a language adequate to reflect the complexities of actual decisional processes. But meanwhile when we turn our minds to the process of decision we must not mistake an unreal model of that process for its realities.

In the studies under discussion a simplistic conception of the means-end relation reveals itself. I believe, in the neglect of the problem-solving aspect of the judicial process. The researchers have put an undue emphasis on what I have called signpost-setting as contrasted with road building. This is equivalent to saving that they have concentrated on judicial statements about ends to the neglect of judicial solutions for the problem of means. In judging the significance of this abstraction we must remember that majority and dissenting opinions are often parts of a continuing dialogue in which the signposts on both sides have to be |[1628]readjusted from time to time to reflect the course of the roadway actually being constructed.

In a similar way I believe the researchers have been misled in forming their conception of scientific method. They have assumed that a goal that seems neat and clear, that of prediction, must in the nature of things be more useful than an obscure end like "understanding." They have forgotten that when they lose their way they will have to consult the wobbly needle of the compass called "understanding" to find out where they are.

In conclusion, my advice to the scholars whose work is reported in Grossman's article is that they should not set their sights so firmly on the distant goal of Predictive Science that they neglect the still imperfectly explored terrain that lies about them.