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LEGISLATIVE ADAPTATION OF SCIENTIFIC DISCOVERY*
Frank E. Horack, Jr.†

Law and science have much in common. Both are conditioned by the society in which they exist; neither has purpose except as the demands of society make further inquiry into the nature of the universe meaningful. Likewise, their methodologies are similar. Each depends upon accurate fact-finding; with the facts determined, each must establish the connection and relationships between the facts, and each, with reasonable reliability, must be able to predict future consequences.

Science operates at two levels. One, applied science, is concerned with the improvement of existing techniques. "To build a better mousetrap," to invent a better wheel is its objective. To eradicate mice without traps or find a substitute for the wheel is, not only, not its concern, it is a threat to its existence. Applied science is tied to industry, it must safeguard investments; it may, indeed, must, improve industry's products, but it must not challenge or destroy the existing order.

The other, accurately enough for our purposes, called pure science challenges all existing postulates in the hope that by further testing a "better truth" may replace the existing truths. It has no concern for the existing scientific or economic, or political order. All must be challenged and the consequences are not its responsibility.

Law parallels this dichotomy. The applied scientist finds his counterpart in the officers of our judicial system. Precedent and the nature of the judicial function provide the limits of judicial inquiry. Courts must apply the law; their task is to provide certainty and predictability to the law, with only those exceptions, distinctions, ramifications as are necessary to avoid outrageous consequences. The judicial system can adjust the old rule moderately to the needs of an expanding society—but real change is for the legislature.

To the extent that constitutional limitations permit, the legislature's power to change existing rules, occupies a position similar to pure science. It possesses the creative function in our legal system. Except for the occasional crisis of war or depression,

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however, the creative powers of the legislatures have been sparingly exercised.

And this is understandable. In law, unlike science, experimentation is difficult to control. There are no test tubes, no white mice, on which to experiment first. Society itself must be its own testing ground. And society, like its individuals, must be desperately ill before it accepts an unknown remedy.

Properly understood, scientific data means no more than reliable fact procured by careful investigation and organized by accurate classification—and is this not what every lawyer hopes his "evidence" will be? Thus, in a sense every lawyer whether he researches a question of law or investigates a case is collecting scientific data. Whether he uses the data as a pure or an applied scientist will depend primarily upon his employment.

When we speak of scientific data then, we use it in some special meaning. Generally, it implies either "statistical data" or "non-legal data" which a lawyer is not now using. Perhaps, the emphasis may be laid with benefit on the truly substantial amounts of statistical non-legal data which now are being used in modern practice. The use of expert testimony, depositions, and official reports is common; indeed, so common that perhaps it is not thought of as scientific data. For example, there is hardly an accident case where expert medical testimony is not presented by both parties. The pioneering work of Professor Morris also is pointing the way for a broadened base of relevant scientific data concerning the problem of negligence. In workmen's compensation cases not only medical testimony but accident prevention reports, safety records and evidence concerning compliance or non-compliance with administrative safety standards are commonplace. Mortality tables to an ever-increasing degree find their way into many fields of litigation. The list may be lengthened almost indefinitely.

The use of such data as it relates to the specific circumstance of individual litigation is an accepted fact. What those of us who urge an extended use of social, economic, and industrial data really mean is that the framework of its use is too confined; that is, traditionally lawyers have thought in terms of individual cases isolated in time and circumstance from all other cases factually. Lawyers, of course, recognize and indeed insist upon the association of all similar cases legally in terms of the law of precedence and *stare decisis*. The premise here is simply that the factual circumstances in the individual case bear similar relation to the total factual pattern of all cases; therefore, data concerning the totality of human conduct under similar circumstances is relevant evidence admissible and important to the decision of any particular case.
It is clear that inquiry of this character may be pursued more satisfactorily in those circumstances where action alone is being measured. Where intention of the parties becomes an issue, the application of extrinsic standards is more difficult and yet as the demands of commercial practice have required a greater acceptance of the "objective standard of intention," evidence concerning general business practice has been accepted as pertinent. In contracts and sales, courts accept the existence of such facts, and have applied the test according to what they assume to be the understanding of the commercial world. Here the danger lies. Assuming what the data will show, without finding out what the facts are, is reminiscent of the medicine man's rhetorical question "what would the gods say?"

Failure to make such inquiry is, on the other hand, altogether understandable. If such data is not in existence (as it almost never is) the cost of its procurement for ordinary litigation is prohibitive. Furthermore, if counsel does not know that such material is in existence he will not demand it. And, if counsel is not familiar with the use of such data, he will not recognize its potentialities. Finally, if such data will be excluded on trial as "irrelevant" or if it is viewed by the judge (or opposing counsel in settlement) as "non-legal" and not persuasive, counsel will hesitate to use it. Inasmuch as most of these objections are valid in terms of contemporary practice, it is not surprising that the use of such materials has been largely limited to the fields of specialties, i.e., constitutional litigation, taxation, administrative law, anti-trust, patents, workmen's compensation, and negligence.

II

The lawyer's role in legislation though not as dominant as in litigation still assumes major proportions. In federal legislation with a well-developed committee system, the economist, administrative specialist, the expert in the substantive fields, all participate with the lawyer in constructing new legislation. But on the state level, except for a few, disinterested fact-finding seldom is undertaken, and the lawyer's responsibility hardly exceeds "checking for form" and "constitutionality." True, lawyers participate to a substantial degree in "political" and "policy" judgments at the time bills are moving through the legislative procedure; but for the most part they contribute little factual information either as to the validity of substance or procedure of proposed laws.

In the past most lawyers have considered legislative problems as problems of policy. Most proposed bills, however, do not raise "policy questions"; because a majority of the people do not desire to change the basic character of our society. Thus, legislatures,
like courts, have not challenged the primary objectives of security from external attack, protection of the individual in his property, the enforcement of promises, and the maintenance of law and government. Policy at this level is not controversial. It is only when legislators consider the means of achieving these broad objectives that men begin to differ. Here policy can provide few answers; at best it can only create a framework for inquiry. The answers must come from investigation.

Nevertheless, legislation raises the same kind of questions that are raised in litigation. Is the standard of conduct to be expected of men, a standard which a majority can comply with and will accept as reasonable? This requires that the legislature know what men in fact do and what they can and will do. Secondly, are the sanctions for the enforcement of the standards, sanctions which law enforcing machinery can and will enforce? This requires knowledge of the successes and failures of systems of fine and imprisonment, licensing, publicity, general administrative sanctions, informer's shares, and a host of effective but lesser used authorities.

Generally, legislation involves two types of control—prohibition and regulation. The impact of control usually falls on all members of society generally, or specially on particular groups. Historically, the control of all persons generally came through the procedures of prohibition and the common law of torts and crime was the result. Apprehension, conviction, and punishment offered little difficulty unless the offender became a pilgrim or a pioneer.

In a diverse modern society regulation of special groups is of equal concern. Furthermore, compliance with the standards of the law became more important than punishment for its violation—particularly, in the traditional fields where the community's health and safety was at issue.

But with even a hundred years' experience, little knowledge is available as to when regulation or punishment is most effective. No consideration has been given to the relation of the sanctions used to the character of the standards to be enforced. It is not known whether a high conviction rate and an active prosecutor speaks for good law enforcement or for poor; unfortunately, there is a Puritanical feeling that this must be good. The effect of fine and imprisonment either upon those who violate or those who prospectively might violate the law is not known. The researches in these fields have not been made. That the projects are stupendous in size is self-evident; but it is equally clear that the research difficulties in these areas are no greater than they are in the physical and biological sciences.
For example, the standards for motor vehicle speed were fixed originally in terms of maximum limits. In many places, for many drivers the maximum speed was either much too fast or much too slow. In other words, in particular circumstances, it was unreasonable and law enforcement became difficult, uncertain, and often impossible.

Law enforcement officials pointed out the difficulty and "a speed reasonable under the circumstances" was substituted. Soon it was discovered that this too was unsatisfactory. It places the burden of proof on the arresting officer—a burden difficult to meet. The law enforcement agencies then turned back to support maximum speed limits. Both standards having been proved unsatisfactory, where do we turn, was the fault in the standards or in the enforcing sanctions?

Of this and only this are we certain; the agencies of the law have not produced an enforceable standard. Fine and imprisonment no matter how severe will not create safe drivers. At present every state collects impressive statistics as to the cause of accidents. Admitting their imperfection, they provide a starting point. If research on traffic violations and accidents were cooperatively undertaken by traffic engineers, psychologists and lawyers improved highway safety standards might emerge.

Unfortunately our tradition is against such slow and painstaking inquiry. It is easier to place the blame on mechanical failure, on drunken drivers, or upon reckless youth, than to work for the answers. Highway engineers know that if the angle of curve changes materially in a given stretch of road accidents will increase. Bus and truck companies achieve by training and severe economic sanctions excellent safety records. The auto industry installs better lighting systems and signalling devices but avoids the recording speedometer and governor. Psychologists know a great deal about reaction time, though diversion and return time is unknown. Until all this data and more is coordinated, the law alone will furnish little assistance to the cause of highway safety. And is that not why we enact laws and punish violators?

In these areas involving all members of society, law's repeated failure in individual cases is well known. What is not known and what must be known before improvement can be made is whether the standards themselves are unsound or whether the sanctions for their enforcement are unsatisfactory. Here is the lawyer's job. That he must have assistance from many other specialists is obvious, but it is no complete answer to say that an engineer, or a chemist, or an accountant may find an answer. So long as the problem of standard and sanction is intertwined the lawyer has his own responsibility.
Although torts and criminal law present the greatest difficulty in social control, the law has been nearly as tardy in adjusting its rules in the fields of trade and commerce. In many communities in the financing of automobiles the law of chattel mortgage and conditional sales is ignored. Banks, clearing houses, and the Federal Reserve System can scarcely operate if the N.I.L. is followed literally. The law of contracts is more an explanation of what should have happened than a description of what has happened in the ordinary case.

Only the prodigious efforts and painstaking researches of the staff charged with the preparation of the new Commercial Code could have made possible the adjustment of commercial law to commercial practice in the intelligent way that is now being proposed. Here is dramatic evidence that lawyers can investigate, analyze, and use existing business data and modern commercial usage. It is the demonstration which should convince the skeptical that the legislative process can be creative in an intelligent and reliable fashion.

Legislatures when regulating special business and professional groups have relied upon the knowledge that science and industry produce. They have, however, increasingly recognized their inability to directly establish standards and have delegated the responsibility to administrative agencies. Indeed, the growth of administration has been one of the important phenomena of the 20th century. Its growth has been variously explained—to relieve the court system and to provide machineries for the settlement of disputes inappropriate for judicial determination; to provide experts to deal with complicated and technical matters where legislatures are incompetent to act; and to create machinery to meet unforeseen and changing future conditions.

Even the most casual survey of administrative rulemaking, however, will disclose that administrative rules and standards have not in fact changed more rapidly than the statutes which legislatures enact. In other words, fluctuation in standards was not the reason for the establishment of administrative agencies. It was on the one hand the legislature's own inability to meet the problems with the personnel they possessed; and on the other the belief that the judicial system did not and could not provide a system of rules and standards adequate to the settlement of specialized controversies.

This challenge, transposed into statute in many areas of regulation, presents a fundamental attack on the competence of law and lawyers in our modern society. Although some lawyers have bitterly attacked this administrative trend and many others have discovered that the lawyer still retains a vital place in the admin-
istrative process the challenge remains: can lawyers through courts and legislatures devise acceptable standards for social control and efficient and economical procedures for the settlement of disputes? Unequivocally, lawyers can; but not by ancient arguments or generalized appeals to policy. It must be done through perfectly normal and acceptable channels of investigation, analysis, and conclusion.

III

To build a better legal system—a system for a streamlined society and a production-line economy—is the responsibility of the entire legal profession; but it is obvious that it is a responsibility that cannot be discharged by individual lawyers or even by local, state, or national bar associations. Just as the great researches of medicine have not been made by the family doctor or by the medical societies, neither will improvement in the law come from lawyers individually. Fundamental improvement in our system will come only from long-range, intensive research by specialized groups.

The serious undertaking of such a program involves many obstacles. In the first place the legal profession is without experience in such techniques. The law schools, perhaps the natural place to look for leadership, with but a few exceptions, have had no experience in legal research. Although the bulk of legal periodicals is enormous, their contributions have for the most part been limited to the criticism of appellate opinions and have not provided factual data or sound analysis upon which courts or legislators can build.

There are no legal research institutes supported either by universities, the professions, or the foundations. There are no cooperating groups of lawyers, economists, and social scientists working on basic problems of the legal system. Perhaps the traditions of the law explains, in part, the lack of science in the law. We have placed great stock in logic, are inclined to rely on generalizations, and while we accept delays in litigation, are restless with studies that take years to complete.

These deficiencies in background indicate that modest beginnings are the only practical beginnings in the scientific development of the law through legislation. Certainly the areas of beginnings are less important than the beginning itself. For example, beginnings may be made in either substantive or procedural fields and much might be expected in any of scores of areas of inquiry.

But to be concrete, consider a problem fundamental to the entire legal system—the cost of legal service. The determination of dispute, whether by litigation or settlement, is frequently so
expensive that lawyers fail to net an adequate income and yet clients and potential clients feel that legal service is beyond their economic competence.

Every lawyer who has filled out an income tax return or probated an estate knows a score of business men in his community whose income far exceeds his own. Few lawyers complain of this disparity. What lawyers do complain of is the ever-narrowing margin between his gross and net income. This is a matter of real concern and it should be. Some lawyers solve the problem by specializing so that they handle precisely the same kind of case year in and year out and reduce research costs to a minimum. Others become house lawyers for corporations, or enter government service. Others desert law for the more lucrative field of business.

Those that remain hear the complaint of clients that costs are unreasonable, that lawyer's fees are too high, that the net recovery to the client even if successful is not worth the risk. Lawyers know that many of these complaints are not without foundation. They also know that in the very case which produces the complaint the lawyer not only may not have made an undue profit, but may in fact have handled the case at cost or taken a loss. This is particularly true of the probate of small estates, settlement of small claims, and the conveyancing of small parcels of realty. It is altogether probable that if the average lawyer maintained cost accounting records which an industrial engineer would require, he would seldom show a profit. Raising fees when clients are already restive certainly is not the answer. Fee cutting even if economically possible certainly is not calculated to win friends among fellow lawyers at the bar.

The problem is beyond the ability of any lawyer to solve individually. Basically it is the problem of trying to maintain a craft operation in a production line economy. All lawyers must recognize the necessity of reducing the basic costs of this operation. This means not only the reduction of costs in litigation (for lawyers because of the costs avoid litigation more and more) but the reduction of costs in the processes of settlement, arbitration and compromise.

Reliable data concerning such costs is extremely limited. Recognizing that the price paid for the security which legal advice affords is high, the question, "Is it still too high?" is still a fair one.

The lawyer thus has an immediate and reasonable interest in the reduction of the costs of the legal system. No wand-waving will achieve this. Getting the facts, being willing to face them, being able to analyze them is a prerequisite to action. Is there not
need here for the time and motion study, for the industrial engi-
neer, for the statistician?

Extensive and extremely useful researches have been made in
simplifying the rules of procedure, in speeding and encouraging
settlement without litigation. But this is only a part of the total
legal structure. Lawyers are inclined to exclude from their think-
ing the problems of judicial administration not directly concerned
with the law—the problems of the clerk's office, the sheriff, the
recorder, and auditor; with appraisers, tax sales, inventories,
auctions, etc. Local government administration, fees, legal notices
all add to lawyer's and client's costs and can not be ignored.

The cost of internal law office operation must be analyzed,
even though no generalizations may be drawn. For some offices
the most complete law library may be both a necessity and an
economy. For others, a complete library may be an affectation
and a luxury certain to lead to bankruptcy. So also for secretarial
and clerical staffs, office equipment, and the rest.

Analysis must be made by types of legal work; probate and
administration, reorganizations, bankruptcies, abstracting and con-
veyancing, workmen's compensation, etc. We cannot expect our
craft work techniques to forever escape the impact of the indus-
trial age. If we do not do the streamlining on our own, the day
will come when legislatures will do it for us and do it without
the aid of data that we should collect and use now.

This is an area in which lawyers have special competence and
special knowledge, but even here cooperative aid from accountants,
economists, and public administrators will be invaluable. I chose
this area for illustration not only because it is of prime concern
to every lawyer, but also because this type of scientific inquiry
has been made by practically every profession, trade, and business,
except the law and because a portion of the results can be achieved
within the profession without legislation.

An even more important by-product would emerge. Skill in
data collecting and in its use would come to the researchers. The
techniques would be applicable to the substantive fields of law
where standards and sanctions founded on something more than
"policy" and tradition are badly needed. With such beginnings
can the bench and bar, the schools, and the foundations contribute
to a basic analysis of a single substantive or procedural problem
of law?

Objections to the adaptation of scientific method to the fields
of law are numerous. Many come from apathy, some from satis-
faction with existing conditions, and some from real doubt as to
the usefulness of the results. It certainly is clear that no formula
exists for the easy transference of discovery into action through the channels of law. Nowhere is it more apparent that law is a social science than it is when legal change contemplates alteration of customs and mores as the result of scientific discovery. This is true of lawyer and layman, alike, not to mention law professors themselves.

The largest single obstacle to the use of scientific method in the solution of legal problems is lack of demand by lawyers themselves. Contributing is the lack of initiative by law schools or other scientific groups who could meet such a demand if it was forthcoming. For example, about 20 years ago there was great hue and cry for legal statistics. It attracted much attention and many a county and circuit clerk still patiently collects judicial statistics as a result of that movement. Except for the work of the ill-fated Johns Hopkins Institute of Law most of it was make-shift and half-measure. Had a depression not forced an untimely death upon that Institute, both practice and teaching of law might be substantially different today. But that opportunity has been lost to the profession. Is it not time we rebuild on that experience with our better understanding of the legislative process? The challenge to legal education is more serious than any consideration of teaching method, skills, or curriculum. It is a challenge that may be delayed but not avoided.