

Seymour Pollack,¹ M.D.

Observations on the Adversary System and the Role of the Forensic Scientist: "Scientific Truth" v. "Legal Truth"

At the first plenary session of the 24th Annual Meeting of the American Academy of Forensic Sciences, discussions were directed to the role of the forensic scientist in the adversary system. The morning Plenary Session of Thursday, March 2, 1972 was entitled "The Adversary System and the Role of the Forensic Scientist." The evening Special Seminar on "Truth and Consequences in the Court Room or Open Season on the Expert Witness" was followed by a film on "The Murder of Fred Hampton" in which the approach of the criminalist in accumulating scientific data for legal purposes was detailed. In these sessions, the adversary process was often attacked as interfering with or hiding and distorting scientific truth as provided by the expertise of the forensic scientist, rather than serving to promote scientific truth and enhancing its exposure and meaningful application to legal issues.

These observations are offered as an introduction to the following series of papers which were presented at the morning session. The thrust of these observations is to clarify definitions and, specifically, to distinguish between "scientific truth," as expressed in scientific findings and opinions, and "legal truth," which is scientific finding and opinion applied to a legal issue for a legal end. From this point of view, "legal truth" may differ considerably from "scientific truth." And, in this writer's opinion, "legal truth" is best exposed through the adversary process.

For definitional purposes, the forensic sciences and the forensic subspecialties in medicine, pathology, toxicology, psychiatry, etc., are not social or community sciences except in the broadest sense in that all sciences direct themselves to public good and the welfare of society. For clarity I would limit the term, forensic sciences, to scientific disciplines whose primary thrust is their application to the ends of the law. These disciplines operate in two ways: (1) The application of medical, physical, psychological, and social sciences to legal issues for existing legal ends; and 2) the contributions of these disciplines to scientific information, knowledge, and understanding that help form social policy and influence and direct changes in existing legal concepts and legal objectives.

Forensic science is applied science. In both its applications and contributions, however, it is the relationship of the forensic science to the ends of law that distinguishes this field from the other applications of science. Thus, community medicine, toxicology, medical pathology, or social psychiatry frequently concern themselves with issues that relate to

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¹ Professor of psychiatry, School of Medicine and professor of public administration, University of Southern California, Los Angeles, Calif.

forensic sciences but direct themselves to the ends of medicine, that is, to the goals of health, the prevention and reduction of illness and the treatment of disease. For example, both the medical sciences and the forensic sciences involve themselves with issues of drug addiction and treatment of the drug addict, but only the forensic sciences direct themselves to the identification and treatment of the drug addict for legal objectives, that is, for legal purposes.

The forensic scientist also finds himself applying his material to issues and goals outside the strictly delimited boundaries of the legal system even though all of these issues may eventually be adjudicated through the legal process. For example, he applies himself to social and administrative matters such as causes of death, insurance actions, employment capabilities, social welfare and disability benefits, licensure privileges, safety limits in industry and transportation, and environmental pollution. As an applied scientist, the forensic scientist applies his concepts, materials, findings, and opinions to social (public) objectives: the resolution of issues and disputes by legal and administrative means, in contrast to applying these concepts, etc. to the goals of industry, the objectives of medicine, or to the ends of other institutions or systems in our society.

It is also true that the forensic scientist, such as the forensic pathologist, not only applies his material to the law, but also relates his findings to the goals of medicine; and his conclusions are of value to both systems. But it is important to recognize that the application of scientific material for the ends of law imposes restrictions from the legal system upon these materials. These restrictions encompass the concepts, definitions, and boundaries of these materials; and the adversary system has been proposed as a tool for clarification of these concepts and definitions.

The adversary system was developed as a trial procedure for arriving at the truth of those matters about which information is inadequate, knowledge is incomplete and interpretation is subject to influence from varying sources. It represents a technique for challenging the validity of data about which there could be disagreement; and it is used as a tool for exposing the level of confidence in an opinion that harbors a significant risk of error. In this sense, as expressed by Judge Jerome Frank, "legal facts" are always expressions of opinion and their validity subject to challenge. Within the framework of the trial system, the challenge of "facts" by the adversary process provides the ultimate judgment-maker, the trier of fact, with the opportunity to recognize and evaluate the potential error residing in fact and opinion evidence offered by witnesses, including those expert witnesses who are forensic scientists.

Thus, when scientific evidence is presented on legal issues for legal purposes, these scientific facts and opinions are subject to the same challenge as is applied to all other evidence. This challenge is, nevertheless, most disturbing to some forensic scientists who consider their "facts" and opinions as scientific truths that should be above legal challenge through the adversary process. These scientists fail to distinguish between scientific findings, per se, and the application of these scientific findings to legal ends which turns scientific evidence or "scientific truth" into legal evidence or "legal truth."

For operational purposes I would define "scientific truth" as the most reliable approximation or closest relationships between two sets of data, with one set coming from one or another of the disciplines characterized as science. Those systems designated as scientific disciplines demonstrate gradations along a number of dimensions as we move from the physical sciences through the biological and psychological to the social sciences. Some of the major dimensions can be characterized by the following: 1) The quality of definitiveness or clarity of definition; 2) the quality of hardness of data and its concreteness or objectivity; 3) the quality of precision of measurement; 4) the quality of replicability of

data; 5) the quality of understanding of data; and 6) the quality and degree of control over determinants. Each of the scientific disciplines can be located at varying points on a continuum from 0 to 100 units with respect to each of the above dimensions.

It is readily apparent that significant differences exist in the forensic sciences of pathology, toxicology, criminalistics, questioned documents, psychiatry, odontology, anthropology, etc., with respect to their respective locations on the above dimensions. And it should be equally apparent that in none of the forensic sciences is its location so high on all of the dimensions that there exists minimal or no risk of error in judgment formation. It is this risk of error in scientific opinion making that suffices to justify the application of challenge by the adversary process.

If this postulate of potential risk of error in scientific opinion making be accepted, then the adversary system offers itself as a vehicle for exposure of this risk, particularly as the possibility of error varies from one observation to another and from one forensic science to another. Although, in my opinion, forensic psychiatry, as a forensic science discipline, holds a higher level of risk of error than forensic pathology, nevertheless, it (forensic psychiatry) can contribute scientific data of considerable significance to certain legal issues, scientific data which can be weighed by the trier of fact and integrated with all of the other evidence in his legal decision making. This greater risk of error in forensic psychiatry demonstrates the greater need for adversary challenge to psychiatric evidence and underscores the benefit this challenge holds for the trier of fact.

The forensic scientist may also be unclear about the definition of "scientific truth" for scientific purposes as compared to the conceptual model of "scientific truth" for legal ends. The application of scientific data as "scientific truth," a description of scientifically valid phenomena, to social-legal issues for the ends of the legal system leads to conclusions substantially different from the application of scientific data to the goals of science.

In the sense I am using the term, "truth" is a construct as well as a value; it is arbitrary rather than absolute and is defined by the ends or goals of the system to which it is applied. This "truth" will differ depending upon the differing ends and objectives of the systems in which it operates. In this sense there is "scientific truth," "legal truth," "religious truth," "political truth," etc., each of which may differ from the other, depending upon the goals of the different systems to which it is applied, that is, the different systems of science, law, religion, political science, etc. And what to the scientist is "scientific truth" for scientific purposes may differ from that same "truth" when applied to legal or other ends.

Truth as a value is also defined by the goals of the system in which it operates. In this sense, values, concepts, and definitions, as well as data, in any system are determined by the objectives of that system. The systems of law and medicine hold different objectives and correspondingly hold different values; and when definitions, terms, concepts, and data from one system are applied to another system, they change in that they are now conditioned by the ends of the second system.

The objectives of science are those of understanding natural phenomena and gaining control over the complex determinants related to man's biology, behavior, and his relationships to the world about him. In this system, "scientific truth" holds the highest priority as a positive value.

In the legal system the objective of law is the ordering of society and the resolution of conflict through that arbitrarily devised social procedure called the legal process. This legal process is also defined as legal justice, and this justice, as a value, holds the highest priority as a positive value in the legal system. In the legal system the value of legal justice is primary, not the value of "truth," not even "scientific truth." Truthful evidence, as valid evidence, is important to the legal system as it represents a vehicle to achieve justice,

that is, as a tool to attain the just resolution of conflict under law. Truth is the agent of justice. The adversary process directs itself to exposing and clarifying such "truth" as relates to the specific legal issue at hand. But for legal justice many factors come into play; and justice is not dependent solely upon "scientific truth." In fact, for the purpose of legal justice, social policy concerns may outweigh and override the weight of "scientific truth."

"Truth" for the purpose of legal justice becomes "legal truth" as this is conditioned by justice; and "scientific truth" for legal purposes in this sense is defined by the specific ends of law and conditioned by the forces of social policy implicit in these legal ends. The legal system, therefore, "manipulates" "scientific truth" for the purpose of justice; and, in my opinion, such manipulative influence is inevitable, irrespective of the manner by which "scientific truth" becomes visible as evidence in the legal system. The adversary process, however, provides an excellent tool to increase this visibility and to structure the relationship of "scientific truth" to other legal evidence for the promotion of legal justice.

It is error for the forensic scientist to believe that "legal truth," the legal system's definition of "scientific truth" for legal purposes, is identical to the definition of "scientific truth" for scientific purposes (for example, for medical ends).

The legal system defines "scientific truth" as an evidentiary vehicle to obtain justice. In this sense and to this degree, "legal truth" relies on the foundation of "scientific truth" for its being; but the law extracts, selects, culls, discards, distills, and utilizes what it wants and needs from this fount of "scientific truth" for its own particular ends. When scientific data is introduced into the legal system as legal evidence, the legal system extrapolates from these data those aspects that are most meaningful to it for its own goals, not for the objectives of science. In this sense "scientific truth" is always changed into "legal truth": that subservient to the ends of the system of justice.

It is clear that "scientific truth" and "legal truth" are colored by different criteria and have different definitions. As an example, mental illness is defined differently for medical purposes and for many different legal issues. Definitional criteria will depend upon the specific legal issue and objective; and each of the legal definitions, determined by its legal ends, is colored by criteria substantially different from the medical criteria of mental illness.

Such definitional differences are not limited to forensic psychiatry, but are characteristic of the entire field of forensic science. For example, the biological criteria of life and death are not the same as the legal criteria. Although legal definitions of life and death call upon scientific expertise and "scientific truths," nevertheless, the forensic scientist must accept the premise that legal definitions of life and death take precedence over medical definitions of these conditions when they are judged for legal purposes. The legal definitions of even these clearly visible medical states (life and death) will vary from one legal issue to another as the ends of law, and the social policies related to these ends, vary from issue to issue. For example, a two month old viable fetus may be considered not-yet-a-human being (or defined as legally dead) either for therapeutic abortion purposes, or if killed by willful external trauma (which will prevent criminal-legal action); and yet this same fetus may be defined as legally alive for social welfare purposes or for purposes of a tort action. Or a medically dead person may be defined as legally dead for social purposes but his body recognized as medically alive for purposes of organ transplantation.

Forensic pathology clearly demonstrates the need for the pathologist to differentiate between the scientific concept of causation for medical purposes as against that for legal purposes and the need for the forensic pathologist to accept the primacy of the legal definition. Dr. Milton Helpert and others in forensic pathology have provided examples

from this discipline of the primacy of the legal definition of the cause of death: 1) An elderly nude man who was found dead in a loft in mid-winter, whose death was due to natural causes, that is, generalized arteriosclerosis and coronary occlusion, but whose flat had been burglarized, his clothes stolen, and who had died while trying to climb down from his flat to the street below; 2) a younger man whose death was also caused by his coronary atherosclerosis but who had been overwhelmed by fear during a robbery; 3) a child whose death had been caused by a malignant neoplasm which had been "treated" by a medical quack; and 4) a child whose death was due to malnutrition related to parental neglect.

In all of these cases, although death was by disease, and in that sense from "natural causes," nevertheless, criminal causation could be inferred from the circumstances surrounding each death; and the "legal cause" of death could, therefore, have been criminal. Actually, the circumstances surrounding each of these deaths led to successful prosecutions for murder in all of these cases, thus, indicating that the legal cause of death in each was criminal and not natural even though the biological cause of death was "natural."

These examples clearly indicate that the medical definition of cause of death is different from the legal definition, that is, the legal definition of cause defined as the cause of death for legal purposes. And the adversary process is best suited to explore, expose, and challenge the "scientific facts" of causation as these are applied to legal ends.

No discipline in the forensic sciences is exempt from such basic conceptual problems. Their presence makes the adversary system especially meaningful to the forensic scientist. In spite of this, the adversary challenge to scientific evidence and "scientific truth" has been criticized by many legalists and attacked by an even greater number of forensic scientists. In my opinion, however, this system of obtaining justice through challenging "legal truth" provides the trier of fact with the best opportunity for exploring "legal facts" from opposing points of view, for questioning the absoluteness, fixity, and degree of error of "scientific truth," and for evaluating the significance of these scientific data to the legal issue, when such "scientific truth" is presented as evidence for legal purposes.

In the following articles, representatives from different forensic sciences offer observations on the relationship of their respective disciplines to the adversary system.