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Summary

By Robert B. Yegge

TWO assumptions have been implicit during this conference: 1) that there is a need for external monitoring of science and technology and 2) that the law should play some role in that enterprise.

For a number of reasons, both the judicial and the legislative branches of the law have failed to provide the necessary surveillance; and administrative agencies, as they are now structured, have also been unable to do the job. (Some participants, in any event, expressed considerable misgivings about overreliance on administrative agencies.) We agreed that there is now no adequate "early warning system" to alert us to unanticipated legal consequences of advances in science and technology.

During these discussions, science has been characterized as a poser of questions and the law as a source of solutions. Traditionally, it has been true that scientists and law men do different things and serve different clients. Today, however, the boundaries are less clearcut. As the sociologists have told us, all things are interrelated, albeit some more closely than others. We are in an age of rapid and extensive change, affecting every level of the community, and it is now incumbent on all of us, particularly those of us in the law and the social and physical sciences, to concern ourselves with our future as well as to contemplate our past.

This conference has focused on law — not on science and technology. The center of our attention has been the role of law and its administrators in the process of making decisions about our use of the findings of science and the products of technology. We have been concerned with the problem of how the law, as a formal institution of social control, can best serve as an effective vehicle for assessment and control of developments in science-technology.

Since the specific charge before the conference had to do with legal education, we posed the question: How can the law school meet the challenges of training people who will be called on to make legally based decisions about scientific and technological innovations? A number of interesting general observations were made during these meetings, but I shall limit this summary to those matters which seem to me to be related to the specific question.

When we directed our attention to law schools, several ancillary questions arose:

(1) What law schools are we talking about?

First of all, is the law school the proper place in which to pursue techno-legal problems? (Indeed, is any existing academic unit the proper location for this kind of activity?) If we assume that law schools do provide an appropriate base, do we then assume that all of them are equally well equipped to make the effort? Participants pointed out that there are political and ideological differences, as well as qualitative differences, among law schools and that such differences argue against an across-the-board effort on the part of all institutions of legal education. Programs in science-technology-law, then, at least initially, should be developed at a limited number of law schools.

(2) What faculty would be involved?

Higher education and professional education today are not over-populated with multidisciplinarians. Finding the proper mix of interests and skills for the assessment of science and technology, or teaching in a science-technology-law program is often, if not always, difficult. The actuarial likelihood of instant access to the necessary interests and skills within a particular faculty is very low.

As Chairman Young pointed out, the value systems of people in different disciplines can be a barrier to successful interdisciplinary programs. In addition, there are serious institutional pressures inherent in higher education generally, which hinder the development of multi-disciplinary teachers — *e.g.,* while senior scholars may be secure enough to step across disciplinary boundaries, junior faculty members are frequently anxious to make their reputations in their own fields and reluctant to deviate from what is accepted by their disciplinary peers. The academic world, unfortunately, seldom offers peer recognition for extra-disciplinary accomplishments.

(3) What curriculum would be suited to the task?

We examined a number of possible curricular goals. The law school need not, of course, concern itself with training scientists and engineers. But legal education should strive, in dealing with the problems of science and technology, to produce lawyers who recognize their lack of expertise in those areas and who are prepared to work with experts in the processes of decisionmaking and assessment. Obviously, a basic understanding of scientific methodology will be of great value to future lawyers. But it is essential that they also be aware of their need to consult with scientists and engineers in assessing the consequences of scientific investigation and technological innovations. (One suggestion made on this point was that a kind of technological sensi-

tivity training be provided in the legal curriculum, so that the student would develop an automatic skepticism and a habit of investigation in making assessments.)

Traditional course offerings of law schools already cover some of the clearer interrelations of law and science-technology: patent law, natural resources, and international law. The content of many of those courses may be viewed with suspicion by the scientist or technologist, but, at least, legal education has recognized that the relationship exists.

Like science, law has many facets — law making, interpretation of the law, legal reform, and, for the so-called practicing lawyer, avoidance of the law. The subject matter of these procedures cover the gamut of human problems. If law schools are to attack the issue of the implications of science-technology, for legal process, they must first determine which processes, in what order of priority, will get systematic attention. So there are choices to be made before the curricular goals of any particular law school can be drawn up.

One caveat was noted: It would be easy for the upcoming generation of law-trained people to overreact and overparticipate in the management and assessment of technology. The resulting "legal overkill" could have as disastrous an effect as current legal indifference.

(4) What students would be involved in the new programs?

There has been widespread agreement on the fact that today's law student is substantially different from his predecessors, who are now in practice. In past years, the Phi Beta Kappas were attracted to the scientific disciplines and the law schools got the "Gentlemen C's." But, today we are benefiting from an awakened interest in the law among the most intelligent of the college generation — young men and women deeply aware of, and concerned about, democratic principles.

The new law students recognize the inevitability of change without a concurrent fear of the unsettling effects change has on old habits and expectations. They have an explicit awareness of the persistent ills and imperfections in American society. They are not naively indifferent to the educational enterprise or its relation to the serious goal of attaining justice.

In view of the recent and projected burgeoning of scientific inquiry and technological advances, it becomes extremely important that the scientific ethos is made a part of legal education so that developments in this area will be seen as challenges rather than as frightening or inconsequential events.

It was suggested that no matter how we train law students they will pursue careers randomly, not systematically. But this view over-

looks the fact that there is specialization in legal practice (despite the protestations of the American Bar Association) and today's students are pursuing specialties, sometimes regardless of financial reward.

(5) What legal careers would be involved?

To give any new program a chance of survival, there must be career objectives that students can perceive. The folk notion that all law graduates will enter general practice in, say, a two-man firm in Lamar, Colorado, is patently false. Lawyers do many and diverse things and there is a serious question whether what we are now teaching in our law schools is relevant to the things our graduates actually do. The fact of the matter is that there are career opportunities in government, industry, legal education, and even law firms (yes, even in Lamar) that require some acquaintance with the implications of science and technology for legal process.

In a variety of legal roles, lawyers advise the justice-consuming public on matters concerned with the monitoring and management of science and technology. Judges are lawyers, and when the courts are called upon to protect us against technological assault, they have a specific mediating role in the assessment of technology. The administrative agencies of government are acutely aware of law, either because the administrators are lawyers or because they constantly consult lawyers. Legislators and their assistants and advisors are predominantly lawyers and the information they have about science and technology is critical to legislative action.

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I share Professor Jones's concern that the role of the legal process — and concomitantly the role of the law school — in the assessment of science and technology, was not clarified more systematically at this conference.

It has been suggested that the traditional approach of legal education — deductive reasoning, rule orientation, syllogistic thinking — is not conducive to the development of programs in science-technology-law. Instead, we must find a new approach, and our first step should be a careful definition of the problems and prospective problems precipitated by science and technology.

It also seems desirable that law students be taught (and that legal process recognize) that complex social problems cannot be solved by any single solution. The differential values of individuals and groups affected by the wonders of technology must be taken into account. It is even possible that the law — which is thought to be the embodiment of prevailing social values — should face the fact that it is often arational, though not necessarily irrational.

Many of our speakers and discussants have noted that the problem approach has recently gained favor in some law schools. On one level, this teaching method is in stark contrast to the Langdellian, appellate case-analysis method that has been the exclusive tool of legal education for some time. The problem approach involves a systematic definition of a problem (from more than the legal perspective), followed by an exploration and appraisal of alternative solutions and their consequences. Further sophistication in using this teaching method leads to a clinical experience in assessing a real problem resulting from the introduction of a new technological advance and seeking remedies for it.

Advocacy is, and will rightfully continue to be, important in the assessment function of the law. But we need to know more precisely what the role of advocacy is and how we can most effectively train future advocates to use it wisely in the process of assessment. Perhaps this challenge should engage the first efforts of law schools — an area in which we have some professed, if not real, expertise.

It has been suggested that the products of technology may be useful in teaching law and legal process, analyzing individual and societal legal problems, and finding alternative proposals for reform. However, the use of systems analysis, for example employing elaborate computer hardware, should not serve as a wholesale replacement of the case-study method of teaching or we risk repeating the same fallacy of a monolithic approach to legal education that we have suffered from in the past.

It was also suggested that law schools should redesign their curriculums totally — away from training in the techniques of legal manipulation and toward training in policy analysis. (This approach could, it was pointed out, coexist with traditional training.) The development of policy-analysis centers would necessitate an environment somewhat different from that provided by the current law-school structure. It would call for a flexibility that allows for relationships among interdisciplinary scholars through special allocation of time, special inducements, proximity, effective coordination of efforts, and independence.

Some members of the conference have differentiated between the policy-analysis approach and the multidisciplinary approach, which involves teaching, research, and clinical experience centered on a given problem. I guess that the difference between the two is that the former is exclusive and the latter would be pursued in conjunction with the traditional legal curriculum, as is now being done at a few law schools.

Finally, our discussions touched on that dirty subject, money — as any discussion of establishing new programs in legal education must. From the point of view of the general university administration,

law schools are "cheap" education: They require no expensive equipment other than books; they hold large classes run by a single professor; there is a conspicuous absence of teaching and grading assistants, and so on. To mount any innovative program and to sustain it requires funds from outside the parent institution, at least until the law school can demonstrate that the experiment has been successful and that the program is basic to legal education.

Yet, unless there is some bold action by some law schools, even in the face of these difficulties, the current indifference of the law and its practitioners to the implications of scientific inquiry and technological innovations will persist and legal curriculums will become even more "irrelevant," to borrow from today's parlance. Possibly, institutional timidity is at the root of most of the problems with legal education today.

A great deal of what has been said at this conference can serve as an agenda for the development of programs in science, technology, and the law. Hopefully, this symposium issue of the *Denver Law Journal* recounting our discussions will provide an introductory text for this significant, emerging area of teaching, scholarship, and community concern.