Attachment 10

CURRENT TRENDS IN TECHNOLOGY TRANSFER

Address by Norman J. Latker, Patent Counsel, Department of Health, Education, and Welfare, at Third Annual University/Industry Forum - Technology Exchange - The Pick Congress Hotel, Chicago, Illinois - February 3 - 7, 1975 - Sponsored by Dr. Dvorkovitz & Associates

I should like to call attention to the fact that the views expressed here are my own, and do not necessarily represent those of the Administration or the Department of Health, Education, and Welfare.

With the increase in our economic problems, there is naturally an increase in the media of suggestions on how we might resolve our difficulties. Of course, I, like you, read and listen in the hope that someone really can provide a quick solution.

Henry Kissinger, probably noting our frustrating search, recently said, "America's problem is that it tends to direct its attention to dealing with and solving immediate problems, while the necessity is for discipline and foresight to carry out necessary measures that cannot in advance be proven to be necessary." He went on to say that current problems demand that industrial nations enter "a new era of creativity and cooperation." Now, I am sure Dr. Kissinger meant creativity in its broadest sense, but I'm also certain he did not mean to exclude the kind of creativity that this audience is concerned with. In fact, his theme of "creativity" is clearly identifiable in a number of statements that can be generically described as calls for increased technological investment for the purpose of increasing productivity and defusing inflation. In fact, by definition, inflation is a condition where money exceeds the goods available for purchase. Thus, it seems that each new process, material, or device delivered to the market which satisfies a need not previously filled, or at a cheaper price than previously offered, aids in overcoming inflation.

Dr. Simon Ramo of TRW, echoing Dr. Kissinger, indicated recently that "Technological development is a basic, but not a short-term solution to inflation. To realize the benefits a few years ahead, we should lose no time in creating new conditions favorable for maximum research and development." Nearly invariably, along with statements like Dr. Ramo's, comes a call for Government policies which encourage technological development. Some of the specific policy recommendations, among others, include increased subsidization of research.

Subsidization of research of a more fundamental nature may be especially important in light of evidence that the economic climate has speeded an already existing preference in the industrial sector toward small improvements in existing products. This, of course, is a movement in an opposite direction to that which seems entirely desirable.

If, in fact, the above is correct, then we are led to the conclusion that, more than ever, the most likely source of fundamental innovations would be universities, non-profit, and Government research centers, or independent inventors. Twenty years ago William H. Whyte stated in his popular book, The Organization Man, "It is to be expected that industry should spend far less of its time on fundamental research than the universities, and for the same reason, it is to be expected that the most outstanding men would tend to stay in universities."

Thus, it would appear most likely that the initial work in new fields as dramatically innovative as Xerox, radar, computer memory cores,

lasers, Polaroid, antibiotics, and, more recently, holography, will continue to emerge from sources other than the industrial sector. Whyte explains this by pointing out that every study he had noted indicated that the most dominant characteristic of the outstanding scientist was fierce independence. Noting some of the scars on my colleagues in the audience, I doubt if we're going to get much argument on that. Now, fierce independence is a characteristic that one would not expect to be appreciated by an industrial organization interested in sharpening up existing products, but is still a trait which, whether appreciated or not, has been unsuppressible at our universities.

Leaving, for a moment, the discussion of likely sources of fundamental innovations, I would like to pass on to another group of reports less publicized than the media items mentioned above, but no less important. During the past year there has been an increasing number of reports, both public and private, similar to those we've seen in the past, suggesting the need for increasing the effectiveness of transferring technology from those generating it to those who could make best use of it, or at least the establishment of means to document the flow of research funds into practical results. Probably the most pointed was the following comment made in the Senate Conference Report on DHEW's Appropriation Bill:

> "Throughout this entire report the Committee through its increased funds and report language has shown its strong

support for both basic and applied research programs. The Committee should note however that neither of these research approaches is valid unless the information received from them is properly utilized. . . . . The hearings have been held and the Committee is registering its complete disappointment with the NIH and the Institutes' efforts in disseminating information. In testimony after testimony, the Institute Directors talked of how many new pamphlets had been printed or possibly how many conferences had been attended. This is clearly a very weak effort and the Committee instructs the Director of NIH to develop a specific course of action in helping to improve the situation as it presently exists. All programs within the NIH are to be consulted and a complete action report with recommendations and a plan for implementation is to be given the Committee no later than 4 months following the enactment of this bill.

"Information dissemination is a very high priority of this Committee because it directly affects just how quickly the research findings accomplished by the NIH are actually put into practice. The Committee notes that all of the research supported by NIH is undertaken in the expectation that it will ultimately contribute to the development of better prevention, diagnostic or therapeutic measures. That is and should be the mission of each of the Institutes.

> Until citizens actually receive some type of assistance from the many facets of research carried out by the NIH the total tax dollar has not been effectively utilized."

Though not explicit, little doubt is left as to whether Congress is concerned about technology utilization.

At this point, I think it very important to emphasize the obvious. The groups most in need of making transfers are the same parties that I previously identified as the most likely sources of fundamental innovations -- universities, non-profit, and Government research centers, or independent inventors. It is these sources that must obtain the cooperative aid of industry, the most likely transferee, since they ordinarily do not have the means of delivery to the market. It is true that industry does involve itself in licensing other industrial concerns in order to create a new market for an invention, if outside its field of interest. But this is not the area where the reports perceive problems. The area of concern involves transfers from fundamental innovators to sophisticated industrial developers.

Most of these reports implicitly indicate that inherent to the transfer process is a decision on the part of the industrial entrepreneur on whether the intellectual property rights in the innovation being offered for development are sufficient to protect its interests. Now, we all know that not all transfers include an exchange of intellectual property rights, but it is unpredictable as to which transfers the entrepreneur will consider to require such an exchange. We do

know, however, from experience, that where substantial risk capital is involved, there is a likelihood that transfer will not occur if the entrepreneur isn't afforded some property protection. This was discussed in the context of DHEW research in the 1968 GAO Report, Problem Areas Affecting Usefulness of Results of Government-Sponsored Research in Medicinal Chemistry.

Now, this leads to the obvious, but not yet substantially implemented, conclusion that in order to afford the correct property exchange from the fundamental innovator to the industrial developer at the right time, the innovating group must identify, disclose, and establish rights in more intellectual property than it will exchange through the timely management and intelligent intellectual property policies. Because of this necessary property protection, investigators must be taught to think ahead, since the patent laws are written against those who delay protection. [Cite Mayo case.] This type of management can only be afforded by personnel willing to acquaint themselves with the basic principles of intellectual property protection and the ability to communicate to investigators its importance in the transfer mechanism. Stated another way, it may be said that patent licensing and technology transfer are substantially overlapping mechanisms or near-synonymous terms.

It is axiomatic that if you want to hasten technological solutions to current problems, you not only increase funding of research and

development, but, to my mind, first (and maybe instead), do something to close the identified gap between fundamental innovators and industrial developers. I believe the closing of the gap where further Government development funds are unavailable requires the solution to two not entirely separate problems:

(1) Assurance that the innovating group has the right to convey whatever intellectual property rights are necessary to accomplish a transfer; and

(2) A management focal point in the innovating organization trained to elicit and establish rights in intellectual property on a timely basis.

It would seem that the second problem cannot be finally resolved without the incentive of a solution to the first problem. However, the larger the number of sophisticated patent management groups, the more likely the solution to the rights problem.

In the last year, it is apparent that you have made unprecedented strides toward solution of the rights question. At the beginning of the year, you were faced with a set of patent clauses attached to the Energy Bill reported out of the Interior and Insular Affairs Committee which were entirely inimical to technology transfer. Even after a number of attempts by some of you to explain the problems of transfer, the Committee agreed only to an amendment which recognized some differences between the universities and industry, but

which did not provide the guarantee of rights necessary to accomplish successful technology transfer. It was only after this group was instrumental in precipitating a House floor fight which led to the deletion of the initial patent clauses with its amendments that the Administration gained the bargaining power which enabled negotiation of the finally enacted energy patent clauses. As you know, these clauses, although indicating that the Government will normally retain title to all patentable inventions, do provide in the Administrator the right to waive title to any invention or class of inventions, either at the time of contracting or upon identification, provided he makes certain considerations, as well as including specified march-in rights and conditions deemed necessary in the public interest. In the case of non-profit educational institutions, the Administrator is directed to consider before waiver the extent to which such institution has a technology transfer capability and program approved by the Administrator. Now, the guarantee of rights in the universities and non-profit organizations hoped for has not been provided by the legislation, but more importantly, it also has not been denied, as originally suggested. You are basically left in the position of explaining your needs to the Administrator, who, in my opinion, has all the authority necessary to resolve in ERDA the technology transfer problem as it is affected by patent rights.

Also on the bright side, keep in mind that this legislation, for the first time, weighs the significance of a technology transfer

capability at universities. This carries with it the understanding that the disposition of patent rights generated with Government funds may be different, depending on whether the innovating group is a university or a profit-making organization.

In addition, you should also note that within 12 months after the date of enactment, the Administrator, with the participation of the Attorney General, the Secretary of Commerce, and others designated by the President, is to submit to the President and the appropriate Congressional committees a report on the administration of the patent clauses. If administration of these clauses does not meet the needs of technology transfer, the legislation and the Conference Report invite you to make your feelings known.

You may wish to consider this under any circumstance, since review of the original hearings before the Interior and Insular Subcommittee indicates no explicit attempt to set out the university position, with the exception of some generic coverage by Dr. Ancker-Johnson. Of possible importance is the fact that the required report will not go to the Interior and Insular Committee of the House, but to the Science and Astronautics Committee, which is perceived to have a greater understanding of technology transfer problems on the basis of past experience than Interior and Insular. Further, to the extent that this legislation may serve as the basis for, or the catalyst of, Government-wide patent legislation, it demands your continued attention. (Note availability of Dr. Ancker-Johnson's December 16, 1974, comments.)

Returning to the second problem of closing the gap between the fundamental innovator and the industrial developer, I would point to a National Academy of Engineering report, which recommends the establishment of management focal points for technology transfer, and an NSF grant to Research Corporation for the purpose of crystalizing such activity at eight selected universities. I must, on the negative side, advise that the National Science Foundation's Experimental Research and Development Incentive Program (ERDIP), which funded both the N.A.E. report and the Research Corporation grant, has been abolished.

Returning to the N.A.E. report as it related to technology transfer management, I should first indicate that it appears to have limited its review to transfer from Government laboratories to industry. To the extent that universities and non-profit research centers are similarly isolated from the industrial developer, I believe the following quote from the report is clearly applicable to substantially all universities and non-profit research centers receiving Federal support for research and development:

> "At present there is no overall policy guidance or direction for the transfer and utilization of technology from either the executive or legislative branches of Government to Federal agencies. <u>The single omission commonly noted is the legislative authority and/or budget line item which would support the required</u>

manpower and other costs as well as provide desirable visibility." [Emphasis added.]

The report indicates that of the $17 billion spent during Fiscal Year 1973 on Federally-supported Research and Development, $935 million went into the collection, organization, and dissemination of technical and descriptive information. Only $43 million of that amount -- or .25% of the total $17 billion -- was authorized to encourage technology utilization.

More specifically, the report continues:

"Moreover, there is a lack of personnel slots and no specific Civil Service Commission job descriptions exist for those engaged in technology transfer-utilization activities. This is a factor inhibiting the implementation of programs and the recruitment of expert personnel. Without a Federal policy designed to overcome these constraints, there will continue to be a poor environment in which to accomplish the objectives."

"Therefore, (the report continues) the Committee recommends that the Federal Government:

- Empower appropriate Federal agencies to set up explicit programs as an added part of their missions with specific charter and guidelines for embarking on these secondary or horizontal applications programs.

- Make technology utilization a line item in the budgets of Federal agencies in order to provide appropriate funding.
- Create new Civil Service designations and job descriptions to cover personnel with program skills and expertise. The Civil Service Commission should recognize the profession of technology utilization agent and establish a separate classification series within the General Schedule system from beginning positions to senior executive levels."

Without agreeing entirely with all these recommendations, I believe we can all agree that there has not been adequate attention paid to properly organizing and funding technology transfer functions either within the Government or at universities and non-profit research centers. But most disturbing is the fact that notwithstanding the identification of the problem, the ERDIP program, which appeared responsible for implementing possible worthy recommendations, has been abolished. Without such an organization, it appears that the burden of voicing the needs of technology transfer will be returned to the existing, but fractionalized, technology transfer groups. Successfully arguing such needs may be quite difficult in light of the fact that so many who work on transfer do so on a volunteer basis along with other regularly assigned duties. However, I believe that

these problems are intrinsically tied to the patent rights problem in which you are, by necessity, involved. Accepting involvement in voicing the organization and funding problem should enhance the possibility of early resolution of the patent rights problem.

In conclusion, I think it can be said that at this point in time, technology transfer functions, with some noteworthy exceptions, fall within the "approved but not funded" category. Because of the important service they afford in delivering technology to the public, I believe they are deserving of a higher priority among those seeking available Federal funds.

Source Materials:

1. "I Do Not Accept the Decline of the West" -
   Dr. Henry Kissinger, October 21, 1974, Time Magazine, P. 72
2. "Technological Development is the Prime Counter to Inflation" -
   Dr. Simon Ramo, October 10, 1974, TRW News
3. "The American Mind Can Overcome an Age of Scarcity" -
   Mr. Henry Fairlie, December 22, 1974, Washington Star-News
4. "Making the Most of Our Progress in Technology" -
   Dr. Edward E. David, Jr., Science Advisor to the President, 1970-73, August 4, 1974, Washington Star-News
5. Interview with Jacob Rabinow, noted inventor and Chief of the Office of Inventions and Innovations of the National Bureau of Standards with the U. S. News and World Report
6. "NIH and Leadership" -
   Dr. Charles C. Edwards, Assistant Secretary for Health, U. S. Department of Health, Education, and Welfare, January 1975 - Washington Post
7. "On the Horizon: A New Government Patent Policy for Non-Nuclear Energy Research and Development" -
   Dr. Betsy Ancker-Johnson, Assistant Secretary of Commerce for Science and Technology, December 16, 1974
8. The Committee on Appropriations Report No. 93-1146, accompanying DHEW Appropriation Bill H.R. 15580
9. "Technology Transfer and Utilization: Recommendations for Redirecting the Emphasis and Correcting the Imbalance" -
   National Academy of Engineering, 1974
10. "Legal Incentives and Barriers to Utilizing Technological Innovation" -
    Harbridge House, Inc., 1974

11. President's Message to Congress -

March 16, 1972, on "Science and Technology"

12. Conference Report on S. 1283, Federal Energy Research and Development Program -

December 11, 1974, Congressional Record, P. H-11653

13. "The Organization Man" -

William H. Whyte, 1956