

Strategic Chronicle™

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Tech-Transfer Strategy

Tech-Transfer as an Industry

Since 1980, the transfer of technologies developed at research universities to private industry has become big business in the U.S.

During 2003 alone, tech-transfer revenues approached \$1.3 billion, and more importantly, the economic benefits that were derived from the technologies that were transferred into the private sector are estimated to have exceed \$41 billion in value.

Tech-transfer, as a university enterprise, only came into existence with the passage of the Bayh-Doyle Act in 1980. The Bayh-Doyle legislation created an emerging industry by transferring ownership for any intellectual property that was developed with federal research funding to the developing institution. This transfer of ownership encouraged universities both to focus their research on commercially relevant topics, and granted them the right to

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license or sell their new found intellectual property rights to industry for further development and profitable commercialization. Thus, Bayh-Doyle cleared the way for tech-transfer to become a factor in both driving the U.S. economy and contributing to the greater social good.

Now, twenty-five years later, the fruits of the legislation have become well-established as universities become increasingly adept at developing and transferring their inventions into and for society. For example, prior to 1980, research institutions filed

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fewer than 250 patents per year for their new inventions, while today, nearly 4,000 such patent applications are filed each year by U.S. universities.

Clearly, the concept of taking innovation from academia to the marketplace has now become deeply ingrained in the American research university tech-transfer system.

The Expanding Tech-Transfer Business Model

The basic business model for university tech transfer is to encourage, capture, and commercialize the discoveries, inventions, and technologies that emerge from federally-funded university research, thus providing a constant stream of new technology to the U.S. economy.

Tech-transfer organizations also undertake their activities to generate revenues for their respective institutions, which are then used to fund further beneficial research and the various accelerating costs of higher education.

To date, the gold standard among tech-transfer institutions has been set by Columbia, which generated royalty streams in excess of \$178 million during 2003. By contrast, according to the Association of University Technology Managers, Stanford University, number two in revenues, received \$61 million in annual royalties during 2003.

These institutions, and others like them, have been instrumental in providing industry and society with

many of the technological and scientific aspects of modern life. For so doing, they have enjoyed the financial rewards of their commercial success.

Ground-breaking discoveries at Columbia during the early 1970s by Richard Axel, coupled with those at Stanford by Stanley Cohen, and Herbert Boyer from the University of California, opened the doors to recombinant DNA and the vast biotech industry of today.

A data search algorithm created by Larry Page, one of the later founders of Google, similarly opened the doors to a web search industry that today is worth billions of dollars.

These are classic examples of university tech-transfer. Of course, the majority of the technologies developed each year by universities aren't as visible within the contemporary world, but even the lesser known instances continue to drive the technological critical mass of the U.S. society. Thus, tech-transfer has become increasingly essential to the economy as an incubator for ideas and technologies that may not otherwise have become available.

Consequently, the pressure is intense at university tech-transfer offices to establish and enhance revenue streams with intellectual assets, while simultaneously providing technologies that are necessary to drive economic development.

Adopting an Intellectual Asset Management Approach

Traditionally, the tech-transfer business model has focused upon licensing technologies that are of commercial significance and creating spin-off start-up companies. As this focus remains the most important measure of success for tech-transfer activity, the ability of intellectual asset management strategies to enhance revenues and deliver competitive advantage has inspired many university

tech-transfer offices to adopt a more intellectual asset based approach to shepherding their technology and optimizing their initiatives.

As well, some tech-transfer organization are adopting a more aggressive and "corporate" approach to leveraging these intellectual assets per se to create and develop new ventures from within the university context.

While the focus at tech-transfer offices has been and will remain upon patents and licensing technologies, professional intellectual asset management strategies are broadening the purview of tech-transfer offices to bring greater strategic sophistication to practices and business initiatives.

Intellectual property and technology holdings can often be used to collateralize or securitize innovatives, or to create hybrid financial instruments for financing purposes.

While the tech-transfer business model has been built around patents and the traditional approaches of "carrot," and sometimes "stick" licensing, there are other intellectual assets and business arrangements in the intangible asset portfolio

that tech-transfer organizations could deploy to fulfill their missions.

Technology and Standards Pools

For example, organization that bundle patents and technologies for inclusion in technology pools may open doors to new sources of ongoing revenues and opportunities to participate in paradigm shifting industry opportunities. Such "pools" that accumulate technology related to specific technologies provide opportunities for revenues based on the combined set of holdings that often exceed royalties otherwise available to unbundled patents.

Yale University gained fame for creating a technology pool with a set of patent holdings based on the anti-HIV drug named Zerit. That pool then backed a securitization wherein Yale traded away the right to the annual royalties in the pool for an upfront payment of \$150 million which they then used to fund a new medical complex for the university.

Intellectual property and technology holdings can also often be used to collateralize or securitize innovatives, or to create hybrid financial instruments for financing purposes. For example, patent and trademark sales and license-back arrangements can provide immediate and compounded returns in excess of bare royalty arrangements, or credit enhancements that support non-tech-transfer university financing activities, as demonstrated in the Yale University example.

Such pools also deliver social good, as they may assemble related patents to create standards for industry development that benefit all concerned, and allow the emergence of new industries or technologies that would not otherwise be possible. In a case where technology has become locked up with cross-licenses preventing further meaningful development, technology pools can open the doors to industry growth, for once a standard is adopted, all of the patents within the pool increase in value.

Currency for Strategic Alliances

Technological holdings can also be used as currency in a strategic alliance much as it is presently used as the founding know-how for spin-off startup companies. Start-up companies are a very significant aspect of the tech-transfer process in America. The Association of University Technology Managers reports that during 2003, 374 startup companies were formed with university technology, bringing the total number of startups formed since 1980 to 4,081 companies, with 59% of the companies still operational today. Quite a record.

Because startups rarely have positive cash flow, often for years, equity is the only currency that startup companies have to offer the licensor organization.

University Brand-Building

Tech-transfer organizations that view their holdings more broadly than as being patents and technology, and are shifting their gestalt to “intellectual property,” “intellectual assets,” or even “intellectual capital,” are opening themselves to optimizing a wider range of knowledge-based university assets.

Trademarks and copyrights offer opportunities for branding and unbundling and re-bundling university assets sets. Corporate social responsibility, increasingly the brand strategy *de rigueur* in Corporate America, when understood as institu-

tional or “university social responsibility,” can represent a tremendous opportunity to create brand equities which may result in greater institutional recognition, higher levels of enrollment, a greater role in regional economic development, and increased inflows of outside philanthropy.

Deploying knowledge per se, represents a powerful new approach to building institutional goodwill, while simultaneously benefiting society. MIT, and to a lesser extent Carnegie Mellon, have embarked upon an “open sourcing” approach to providing many university courses at no cost to interested parties through online resources.

Operating under a creative commons approach, and with the espoused purpose of “intellectual philanthropy,” MIT had made 1,000 of its 1,800 university courses available online, in varying media, and for free. While rationalizing their activity publicly as in fulfillment of their university mission of disseminating knowledge and providing education, it has reportedly improved the reputation of the university, greatly enhanced collaboration between their existing faculty and the faculty of other institutions of higher learning, favorably influenced the

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decision of many new students to enroll at MIT, and driven increased philanthropy, indicative of the broad financial and knowledge management benefits that are possible to innovative thinkers within the world of tech-transfer that think about knowledge management and brand-building strategies.

In Summary

Whatever strategies tech-transfer organizations adopt to fulfill their charters within the modern university world, strategies like building the brands of tech-transfer offices is a recognition that not all tech-transfer organizations are equal, that some excel in their financial performance or technological domain, and that as more players enter the market for technology the players need to differentiate themselves and begin to compete with one another in the technology marketplace to increase their opportunities for success.

“The Ethical Crisis in America” – A Status Report

In America, the bursting of the so-called “dot-com bubble,” led to an unfolding ethical crisis that has expanded to become multi-national, and now, global in its occurrence.

Corporations Were At Fault

At the beginning, in America, corporations were blamed both for their lack of ethical culture and for their failure to police themselves and their executives.

Today, most American corporations have significantly rectified their shortcomings by installing ethical and compliance officers, creating new procedures for controlling improper behavior, establishing ongoing ethical training programs for managerial employees, improving their corporate governance practices, and embarking upon corporate social responsibility initiatives.

As corporations build upon these successes and adjust to the contemporary regulatory environment wherein criminal indictments, stiff monetary penalties, extensive jail time, and the collapse of entire

businesses have become commonplace, many traditional business practices are being reversed. For example, in the past corporations were quick both to resist regulatory or judicial investigation, and to provide legal defense for their executives as

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functionaries of the organization when they were accused of crimes.

Now that has all changed. Today companies actively cooperate with the authorities to avoid the certain destruction that often accompanies a government indictment.

Directors, are doubly cooperative in their efforts to not be seen as defending any sort of impropriety, and in their desire to protect themselves against claims on their personal finances. Thus, organizations distance themselves from the illegal or unethical activities of their executives, and act to shift blame for misconduct from the organization to the individuals under suspicion, leaving them to handle their own defense.

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Regulatory Agencies Were Also to Blame

As well, after the dot-com burst, the U.S. regulatory infrastructure was blamed for insufficient “checks and balances” and a failure to adequately scrutinize business activities.

Today, U.S. regulatory agencies are armed with enhanced budgetary support and the teeth of new legislation (e.g. Sarbanes-Oxley, U.S. Securities and Exchange Commission governance rules, stock exchange rules, and stiffer U.S. Sentencing Guidelines). The SEC and the Department of Justice have aggressively moved forward to police and punish white-collar crime on a massive scale. The Wall Street Journal reports that the Justice Department has charged more than 900 individuals in over 400 corporate fraud cases during the last four years, and that 500 of those defendants have been convicted during that time.

In their pursuit of wrong-doing, the terms of engagement between regulatory authorities and corporations have changed. In times past, prosecutors may have often avoided pursuing white-collar crime because it was either too complex or too time-consuming. But that is no longer the case, as prosecutors have worked on more white-collar cases they have acquired the skills and knowledge that are necessary to seek justice even in complex business and securities law proceedings.

The Deferred Prosecution Agreement

Most significantly, the SEC has adopted a new tool known as the “deferred prosecution agreement.” Since the demise of the accounting firm of Arthur Andersen in 2002, the SEC has learned that an action brought against a company can destroy its brand and public credibility, often leading to the collapse of the respective business and serious economic fallout for displaced clients, innocent

employees, shareholders, and the economy. Arthur Andersen, one of the top five accounting firms in 2001, was dealt a death blow that put the entire organization out of business, leaving thousands unemployed and all with greatly tarnished reputations.

Now regulators and prosecuting attorneys, realizing the potential impact on the economy of putting a giant out of business, have developed the “deferred prosecution agreement,” hoping to punish only the guilty parties, preserving the company to continue doing business. Hence, regulators are slower to bring charges, and more thoughtful about the strategy that will result in justice and serve the ends of society.

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In a deferred prosecution agreement, a company agrees not to contest a list of alleged violations in return for a deferred or suspended prosecution, and the appointment of an independent monitor to supervise the company’s rehabilitation. If the company is able to reform itself, the agreed upon charges are dropped after a certain period of time.

It is believed that this approach stops short of destroying the company, while still allowing individual executives to face criminal charges and stand trial before the law.

Deferred prosecution agreements have been developed in an effort to head off ultimately unnecessary business and economic disruption, and are for use in instances where corporate reform is likely once the bad apples have been removed.

Recent examples include KPMG for their promotion of allegedly abusive tax shelters, Bristol-Meyers Squibb Company for “channel stuffing,” and Royal Dutch/Shell Group for overstating energy reserves, all of which have received deferred prosecution agreements in deference to the severe

and unintended disproportionate economic impact that comes with corporate indictments.

In Summary

These, and other developments, evidence continuing proactivity and increasing sophistication on the parts of both corporations and regulatory authorities as they grapple with instilling a higher ethical standard within the world of business.

The legal and regulatory framework provide a system for detecting and preventing problems, and for making the lessons systematic. As this becomes more commonplace in large corporations, their executives are internalizing the economic benefits of a corporate ethical culture.

More organizations are adopting a higher ethical standard, and, as organizations become more transparent and accountable, the government is going after executives for conduct that prior to the bursting of the dot.com bubble might not have gone unnoticed.

American capitalism is certainly not beyond improvement, but substantial strides are being made. Increased enforcement and higher standards are working more effectively to increase the ethical culture in the U.S. Our evidence of the successes being achieved in the world of business and within our society is that, as a higher standards becomes normal, a lower standard is no longer tolerated.

Excerpted from an invitational speech under the same title, delivered during July 2005 by Dr. Lindsay Moore at the 2nd Annual Teaching Business Ethics Conference, held at the Leeds School of Business, University of Colorado, Boulder, Colorado, U.S.A.

Strategic Monitor

Strategy and Time

Any thinking about strategy is by necessity also thinking about time - the past, and its lessons; the present, and its realities; and the future, and its possibilities.

All strategies undertaken presuppose some view or prediction about the future and the causal capability of some one or another strategy to determine a future state of affairs.

Mapping the Global Future, prepared by the National Intelligence Council, and recently released, analyzes the major trends shaping the future, and provides various scenario plans of how the trends may interact to create the future in 2010 and 2015

The study is vast and addresses globalization, the rise of India and China, the role of American, weapons of mass destruction, terrorism, and global religions.

The study is impressive and a valuable study for strategists focussed on understanding the longer-term future. The study is available at: www.cia.gov/nic/NIC_globaltrend2020.html.

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