

Social Contingent Liabilities and Synthetic Derivative Options

Benefits and Costs of the Global Patent Paradigm

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Dr. David E. Martin, CEO, M·CAM Inc.

Fellow, Batten Institute, Darden Graduate School of Business Administration, University of Virginia

Voltaire said of Shakespeare, "After two hundred years most of the outlandish and monstrous ideas of his have acquired the right to be considered sublime, and almost all modern authors have copied him." Moore's Law is working - it's only taken 20.

The "cold war" of the knowledge economy began well before United States Congress' passage of the 1980 Stevenson-Wydler Technology Innovation Act of 1980. In fact, the post-war Allied reparations, which included the confiscation of Axis patents and their progenitors and their reassignment to the victors, may very well have set in motion the "crisis" in today's patent system. After all, patents were once supposed to be a social contract between a disclosing creator and a consuming public interest who, imbued with new knowledge could advance the cause of science, technology, and industry. In exchange, the creator received a limited reward for this disclosure. So when fear gripped U.S. and European policy makers that their unquestioned innovation supremacy was being threatened by a former enemy, the response was to formalize intellectual property as a matter of nationalism¹ and set in motion a process which would encourage more patenting of more things to achieve the status of being innovative by fiat. By 1987, the President of the United States issued an Executive Order to "identify areas of research and technology of potential importance to long-term national economic competitiveness."² Policy makers went so far as to allege that "without protection of inventions and creations, there is no motivation to invest in them."³ Centuries of intellectual property law and practice which had been based on society's reward post-event was replaced as the catalyst without which innovation would cease.

In what will one day be the subject of considerable economic reflection, the U.S., Europe and Japan, responded with détente by creating a syndicate in which they became the *de facto* arbiters of the global innovation paradigm processing close to 85% of the world's patent applications.⁴ Rather than warfare, convivial engagement insured that the economic and information control ladder thus created, and who is entitled to climb it, was closely regulated.

At no point did policy or the academy seriously challenge the opening assumption that an IPR paradigm is mandatory to stimulate invention, research, or innovation. The

¹ Small Business Innovation Development Act of 1982

² Executive Order 12591, April 10, 1987

³ European Commission Enterprise Policy, Lisbon, 2000

⁴ Trilateral Co-operation Website, "Historical Background" page accessed May 2007

mantra was simply presumed to be fact. Fortunately, monstrous ideas don't become sublime by recitation. Let us consider several indicators which suggest that two and a half decades of economic theory may have been misinformed by a doctrine devoid of reliable evidence.

Seventy five percent of all Federal and Corporate research and development expenditures in the U.S. goes into computer & electronic products, chemicals, computer-related services, aerospace, and automotive industries, in descending priority order.⁵ Seventeen of the top 20 recipients of U.S. patents are corporations in computer & electronic products. No chemical or aerospace firm is in the top 20 list. No energy company is in the top 20 list.⁶ As a matter of fact, relative to contribution to the GDP, patent holdings are neither correlated to R&D expenditure nor GDP contribution.

Regrettably, those who wish to suggest that patents are anti-social anachronisms simplify and misuse these statistics to conclude that patents do not play a role in economic incentives. This is not a verifiable conclusion supported by this data. However, the data shows an incontrovertible fact: the consequence of patents is different, both in perceived value and behavior, between industries and the system, vis-à-vis the public societal benefit of disclosure for the advancement of science and industry is non-unitary and asymmetric.

Since the early 1980s, the line between invention, innovation, and incrementalism (most often evidenced under the unconstitutional term "defensive patent") has been intentionally blurred as a matter of policy and practice. For the purposes of this discussion, allow the following serve as our lexicon:

- "*Invention*" connotes a creation or enabling discovery, something that is derived *ex nihilo*.
- "*Innovation*" describes the novel advancement of a thing from one state to the next via improvement or modernization.
- "*Incrementalism*" is the subtle optimization of a thing for specific use and refers to change in definable steps.⁷

By progressive ambiguity around non-obviousness or anticipation and with the growth of defensive patent thickets, the distinction of invention has largely been compromised by increasingly trivial modifications being considered patentable.

Industry performs about 70% of all of the funded research and development in the United States with universities and colleges contributing 14%, the Federal government contributing 8%, and other sources (including non-profits) rounding out the remaining 8%. However, when one considers the source of funds for this research, industry pays for 64%, the Federal government 30% and all other sources contribute 6%. Upon closer examination, 61.8% of the funding for basic research from which discoveries are made is paid by the Federal government, while industry only contributes 16.4% with the balance

⁵ 2006 NSF Division of Science Resources Statistics

⁶ United States Patent & Trademark Office Statistics, 2005

⁷ Robert F. Bruner, Mary Margaret Frank, David Martin, and Paul Simko, "An overview of patent quality: assessment, valuation and financial reporting implications." Darden Publishing, 2007.

coming from all other sources. Similarly, public institutions and non-profits perform over 80% of all basic research with industry contributing a minority to discovery.⁸ In other words, the public – through governmental appropriations – pays for the discoveries that once would have served as the basis for invention and patents. Industrial development (in contrast to research) is the context for the accumulation of vast patent estates covering innovation at best and incrementalism at worst. The conclusion is self-evident. The public, devoid of any patent incentive, pays for most of the grist in the invention mill.

The notion that patents are a necessary incentive engine for the pursuit of all worthy research has led to a malignant corollary – all patents are assets or confer to their holders accretive value. Not only have countless studies established that most patents are not integrated into explicit commercial use (even when allowing restraint of innovation and industrial behavior such as blocking patents) but even those that are used are not necessarily accretive in nature. Acknowledged by all patent granting agencies in their most recent annual reports is the growing number of patents issued around a single product – a phenomenon cited as a contributing factor in the growing pendency in application consideration. Ironically, in the example of the mobile phone industry, the number of patents integrated into phones has gone up by a log scale however the unit cost of a phone has correspondingly dropped. In other words, even when put to use, many patents attenuate the rate of market loss rather than adding accretive value.

Therefore, valuation (in the sense of enterprise, market, or going concern business – as advocated by the American Institute of Appraisers) itself is often a misnomer. Carrying the assumption that patents confer positive value and are, therefore assets has led to many market manipulations. Appraisal and accounting bodies and their practitioners have ignored the fact that actuarial timing and severity of loss of pricing control is of paramount relevance in all cases where enterprise valuation, in contrast, only applies in the presence of some form of executory contract or other intangible asset (a license being the most common UCC-defined intangible property conveying potential asset value). The same professionals who were responsible experts for the recent patent donation tax abuses in the U.S. have carried their valuation practices into modern corporate and equity valuation models. Unfortunately, their methodologies are applicable in isolated, multi-variant correlated observations but cannot be substantiated across all industries or participant groups. In fact, most recently, one such group has shown the distribution of companies where they believe patents are value accretive in a Dow Jones Industrial Average-like stock index.⁹ What they do not point out is that the “within sector” variability around their own index components illustrates that other intangibles (not merely the presence of patents) are what is required to support their value assertions. In other words, they have developed elegant models that allow certain companies and their patent holdings to regress to an ideal condition. However, outside

⁸ National Science Foundation, Division of Science Resources Statistics, “National Patterns of R&D Resources.” Science and Engineering Indicators, 2006.

⁹ www.oceantomo.com

of these selective occurrences of “best fit”, the evidence points to countless more enterprises where they same criteria do not indicate value accretion at all.

One needs only to look at the risk finance market to reinforce this fact. In the long-anticipated market attempts at patent insurance, the only profitable line of commercial IP insurance has managed to operate by the exclusion of adverse risk (in other words, rejecting as uninsurable) found in most patents and patent holders.¹⁰

While patent offices and the OECD repeatedly report the growth of patent filings and seek to laud this as evidence of greater gross innovative output of the industries and individuals that support the economy, a stark realization has becoming increasingly evidenced in the financial markets. There is no dispute that privately financed small and medium sized enterprises (SMEs) are the single largest employment base in modern economies and contribute significantly to the overall GDP growth. However, since 1997, seed capital to launch and sustain these enterprises has become increasingly scarce. In the U.S. equity market, \$1.98 billion was aggregated and deployed for seed stage capital in 1997. However, during the past 6 years of the same period, over \$8 trillion has been aggregated for M&A and hedge funds. These massive private investment funds have created an environment in which acquisition and consolidation is the primary exit for new business ventures. So, despite the constant upward march of patent filings, the money to support their deployment in new markets is simply not there.

The compression of private equity capital availability has altered the cost of capital dynamics as well. During the peak of the equity markets in 2000, venture capital and seed investors stated that they needed to fund 10 deals to have one profitable exit. While internal rates of return (IRR) expectations were typically reported to be 30-40%, this IRR did not take into account the actual cost of capital to the successful entity. For a limited partnership fund to achieve an IRR of 40%, its successful portfolio investment needed to evidence over 360% IRR to cover the shortfalls from the majority of charge-offs. With the exception of M·CAM, we know of no other firm, agency, or entity which actually monitored the widows, orphans, and casualties from this period. Vast patent estates (even from successfully acquired companies) were abandoned in the 1998 – 2001 period rendering the markets to which they applied permanently devoid of downstream market protection due to excessive abandoned patents. In several teaching cases written for the Darden Graduate School of Business Administration at the University of Virginia, we document post-M&A abandonment of patents ranging from 30-50%.¹¹

While the actual cost of capital for acquiring patents through M&A exceeds the private equity IRR of 40%, the true market cost of patent acquisition is quite a bit higher. The U.S. Small Business Administration has lamented for years that its SBIR programs, designed to stimulate nationally-relevant research, are plagued with the “valley of death” which is a term used to describe the inability to commercialize virtually all the research

¹⁰ Internal corporate documents – M·CAM.

¹¹ <http://ssrn.com/abstract=840065>; <http://ssrn.com/abstract=840084>; <http://ssrn.com/abstract=840088>

that is funded.¹² With the business valuation services industry, regulators, policy-makers, economists and others focusing their efforts on the history written by the victors, the actual capital cost for unsuccessful, patented enterprise activities falls silently into the mist thereby reinforcing the collective myth.

The frequently touted and unsubstantiated assumption that patents, writ large, are value accretive has recently been carefully scrutinized by a team of researchers from University of California at Berkeley. In their report, they demonstrate that patent weakness is highly variable across industries and that there is a growing trend for patent weakness to co-vary with increased litigation.¹³ For over 6 years, M-CAM has been providing the empirical basis for the growing trend in regulated equities markets to test intangibles for impairment (including providing pivotal evidence to the Financial Accounting Standards Board prior to the promulgation of FAS 141 and 142). Additionally, Bank of New York's independent research arm reported that the patent weakness evidence, provided by the same methodology, outperformed conventional equity analysts on stocks that were selectively promoting IP as a chief differentiator in their business proposition. During the volatile public equity markets of 2000 and 2001, M-CAM's negative ratings (allowing for hedge positions) on poor patent quality lead it to achieve the number one ranking in "Performance Rank in Stock" creating an annualized equity return of over 40% in market conditions which were filled with adversity.¹⁴

Across industry sectors, the past 5 years have seen a collapse in new enterprise funding and a significant growth in M&A market activity. Large corporations from all sectors have adopted Large Systems Integrator (LSI) business models encouraged, in large part, by public and private sector consumers who wish to streamline acquisitions of goods and services through prime contractors. Plagued with budgetary constraints, government procurement practices are drawing increasing scrutiny as LSI models appear to be costing more and delivering far less than expected. LSI models were adopted in the 1990s due to a decrease in technical acquisition competency but lead to rampant cost overruns.¹⁵ Whether you consider filling pharmaceutical companies' drug pipelines, delivering energy or defense infrastructure, or responding to emerging market opportunities, incumbent firms typically find themselves awarded contracts or seeking market diversification which require technology developed by third parties. On rare occasions, firms will acquire key-component suppliers in anticipation of contract awards but, more often, they await a contract award before concluding the acquisition. This behavior creates a perversion of market dynamics.

Consider the following. A recent U.S. Department of Defense procurement contract was awarded in the amount of an estimated \$160 billion. While over a dozen "prime

¹² Proceedings of: "Innovative Transitions 2006" Virginia's 12th Annual SBIR Conference, December 4-5, 2006.

¹³S.N. Boettiger; B. Wright, D. Zilberman, B. Hall. "Weak Patents, Open Source Patenting, and Implications for the Bayh-Dole Act in Developing Countries." Dissertation, University of California, Berkeley. 2007.

¹⁴ Investars.com Performance Rank in Stock Rating on Rambus (RMBS); ICOS Corp. (ICOS); Abgenix (ABGX); Avigen (AVGN); and Conexant Systems Inc (CNXT). M-CAM's *Performance Rank in Stock* for these five companies exceeded that of every firm Investars' measures, including Morgan Stanley, Lehman Brothers, CSFB, Merrill Lynch, Bear Stearns, Goldman Sachs, Salomon Smith Barney, UBS Painewebber, and AG Edwards. Reported by Jaywalk Incorporated, March 8, 2002.

¹⁵ Demetri Sevastopulo. "Pentagon defends weapons-buying strategy." *Financial Times*. May 15, 2007.

contractors” were identified, on one component alone, over 70 SMEs were acquired by the prime contractors.¹⁶ These acquisitions are not done in a distressed market condition. Rather, knowing that the prime must negotiate with, or acquire, the SME, the market price for the component supply requires the payment of a premium as the prime contractor has an obligation to deliver. Realizing this anti-competitive pricing conundrum, several government agencies have followed the Central Intelligence Agency’s In-Q-Tel model and have formed their own venture capital funds to own equity in their prospective vendors. The public, once again, is paying twice – once in the private equity investment with its attendant return requirement, and again in the procurement.

Patents were supposed to be an incentive, granted by the public, for the initiative of scientist, inventor, or industrialist. Ironically, given the changing market conditions, they have become a public tax in many instances. And future trends indicate that the foundations of the illusion are starting to show cracks.

First, the largest flows of capital are now in derivatives. Over \$1.5 trillion per day are transacted by one market player alone.¹⁷ In a week, more value than the GDP’s of most of the world’s economies changes hands based on carefully engineered spot market perturbations. Until recently, these products have entirely ignored intangible property backed finance. Two factors are beginning to change this dynamic.

First, traditional asset backed finance collateralizations (CMO and CDO products chief among them) are losing their arbitrage attraction as more market participants increasingly compete for capitulated deal volume. Therefore, natural market forces will lead to integrating non-traditional products including intangible property products. Second, with the dawn of Basel II banking regulations regarding loss reserve allocations, international corresponding banks are going to be required to gain visibility into the underlying actuarial value of their debtors as well as their requirement to substantiate the liquidity of their loss reserves – much of which are held in derivative products. While, in the short term, no regulatory authority in the world has clearly articulated the standards that will be used to report intangible property value or actuarial conditions, IP-associated market volatility will increasingly strain the limits of capital regulators. Basel II goes into effect on January 1, 2008, and by recent reports, banks in Trilateral Co-operation countries are least prepared while many banks in the “lesser developed countries” (as defined by WTO and World Bank) are well on their way to compliance. Could this be a tipping point?

Maybe or maybe not, in the short term but, quite certainly in the longer term. The OECD has forecast that the public sector will be unable to finance public infrastructure projects between today and 2030. They project that 2.5% to 3.5% of global GDP will be required to support modernization of telecommunications, transportation, energy and water infrastructure with the greatest immediacy of shortfalls occurring in the rapidly

¹⁶ Future Combat Systems, U.S. Department of Defense.

¹⁷ www.icap.com

expanding economies of China, India and Brazil.¹⁸ These countries have traditionally been consumers of technology from transnational corporations (TNCs) and have borne the cost of capital associated with TNC business models. These TNCs also happen to enjoy relationships with Basel II reporting banks as a major source of working liquidity. With increasing financial pressures, it is reasonable to expect that market conditions will foster innovation in these markets to become increasingly self-sufficient in the technical solutions to their domestic infrastructure issues. In short, both innovation origination and the financing thereof is likely to undergo significant alterations while the current incumbent markets are struggling to rationalize loss reserves in capital markets based on asset class business that are not well understood.

The inefficient procurement models of paying private equity premiums to LSI will inevitably alter market conditions. Given that the Western central banks and economies are entirely dependent on the derivatives markets which emerged over the past 30 years, one thing is certain – the compression of GDP in the incumbent leaders and the GDP expansion in the emerging markets is going to change the global cost of capital. This compounded with the addition of high levels of innovation coming from technical competence in emerging markets will add considerable volatility to structured finance products. Accountability for assumptions regarding market dominance and the intrinsic value of the Trilateral’s innovation pre-eminence will be challenged and will open the door for reconsideration of the costs and benefits of the current IPR regime.

¹⁸ “Infrastructure to 2030”. OECD 2007.