



Intellectual property rights: mothering innovations to markets [☆]

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Abstract

This paper examines innovation and knowledge generation processes and the supporting role of intellectual property rights (IPR) both for systematized investigative science and traditional community led activities. Options for protection of traditional knowledge and life materials and processes are suggested. It is suggested that the systematic and logical merging of ideas from conventions like TRIPs, convention of biodiversity (CBD), and union pour la protection des obtentitons vegetales (UPOV) can lead to the creation of harmonized provisions that could satisfy basic and minimum standards of IPR and societal ethics. The need for the unambiguous definition of discovery and invention in the granting of patents for biotechnological investigations is explored, as well as the issues of the establishment of prior art from unstructured traditional knowledge, identifying legal owners of traditional knowledge and evaluating prior art in this domain. The imperative task of creating a structured knowledge database of traditional practices and linking them through global networks is highlighted. The author also points to the fact that rigorous examination and search of patents in biotechnology is demanding ever greater levels of technical expertise and ultrahigh speed computing.

Four case studies are presented to illustrate issues related to:

- the erroneous granting of a patent and the role of documented community prior art in its revocation,
- equitable sharing of benefits with indigenous tribes,
- sharing of benefits with the community and
- integrating indigenous knowledge, modern science and reciprocity into novel drug discovery. © 2000 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Cumulative learning integrated with creative exploitation of intelligence is a trait organic to any living entity. The human race however has a unique ability to anticipate the future, proactively innovate and create an array of options for survival in a changing environment. The continual demand for food, shelter and the coupled urge to reproduce nucleated communities with residential ties to particular localities. Geographic mobility, cooperation and competition catalyzed cross-diffusion of diverse communities to form interdependent cultures. After slow beginnings human ability to invent grew exponentially and it is well accepted that all modern

technology has developed in less than 1/2500th of the total time it has taken culture to reach its present state. Throughout the course of human history, trade served as a strong binding force and distinctive competitive economic performance resulted in inter/intra stratification of societies. What evolved were norms and sanctions for societal governance.

The knowledge and skill base in ethnocentric societies were vertically transmitted and confined within families. Cross-cultural diffusion of knowledge was poor and transfer of knowledge within the communities was mostly executed through “training on the job”. Subsequent generations introduced fresh innovations based on emerging needs or discovery of new raw material sources. Protection of community knowledge as understood in today’s concepts of “intellectual property rights” was not considered a necessity. The main driver of innovation was better utilization of natural resources and community survival. However the insular nature of community knowledge also set in the undesired “inbreeding characteristics” resulting in the slow genera-

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tion and propagation of innovations across various cultures. Documentation of accumulated and transferred knowledge is scanty.

In contrast modern management of science and technology established formal processes for innovations, value creation, sharing of knowledge within communities for its rapid realization in the market place. Enhanced diffusion of knowledge aided the rate of growth of new ideas and applications.

Formal frameworks were set up for recognition to the innovator by protection of the innovation via instruments of intellectual property rights, rules for rewards to the inventor, conditions for legal use of the protected innovation and deterrents/measures to discourage copying (Fig. 1). It was expected to offer a conducive and transparent legal system for fair sharing of benefits and also protect the interests of the consumer and society at large.

Intellectual property rights (IPR) have been in transition trying to keep up with the pace of change in technology and social demand [1]. The dominating role of technology in every field of human activity is now an accepted reality. However the phase lag between progress in science and technology vis-à-vis legal frameworks in IPR continue to widen. Today competitiveness is determined by ones ability to integrate IPR into project management by protecting innovations from the moment of conception of an idea, through birth and further to realization of its full potential value in the market place [2]. The pace of converting ideas into innovations with appropriate IPR protection and further ensuring value creation will decide future winners from losers. The blurring of boundaries between disciplines, formalized frameworks for ownership of the developed knowledge and benefit sharing between partners to create niche domains are issues that society will have to cope with. The emerging scene in future will need to seek positive linkages between enhancing competition in society on the one hand and establishing legal ownership

of innovations (with enforcement of acquired rights) on the other. Societal, moral and ethical issues are getting intertwined into technology management, ownership of innovations and business processes.

The nurturing and formal mothering of innovations especially in fields touching human health, food, and shelter raise contentious issue in IPR. The future lies in enhanced understanding of diverse national IPR laws, global/national licensing issues and utilization of all possible resources with speed and cost-effectiveness.

The challenge is to arrive at meaningful, internationally acceptable and enforceable IPR laws that are compatible with technology options and encourage innovations to meet societal needs, ethics and commitments.

This paper examines the innovation process, its interface with IPR and the emerging issues especially with respect to activities involving biotechnology and life processes.

2. Innovation processes and IPR [3]

Over the years, research processes have undergone considerable metamorphosis. Starting from typically compartmentalized up-stream (basic) and down-stream (applied) management of research it has now evolved into a complex set of operations involving *optimized use of global knowledge* base comprising intra-enterprise and extra-enterprise resources. This includes formally documented sources, as well as traditional community beliefs, practices and knowledge. As soon as ideas are conceived, the process of IPR sets in even at the incubation stage. A detailed knowledge search is normally initiated to establish what the public already knows at large in the form of reasonably authentic documentation.

Research strategies are constructed and merged with business planning. As the project progresses and innovations are made, IPRs are acquired at specific critical stages before the findings of the project are made public. Licensing options are worked out fairly early and return on the investments is realized in a planned manner at times even before the project reaches completion. Effective research is no longer a loners paradise. It needs symphony-like teamwork and harmonized networking with diverse groups and organizations. Fig. 2 illustrates the processes involved in mothering in the innovation value chain.

As one travels from concepts to products on the “innovation highway”, one is intercepted by several “knowledge check posts” (KCPs) that are well protected by tight patent claims and other forms of intellectual property rights. The key to progress along the highway depends on one’s ability to manage meaningful interactions with these KCPs through mutually beneficial

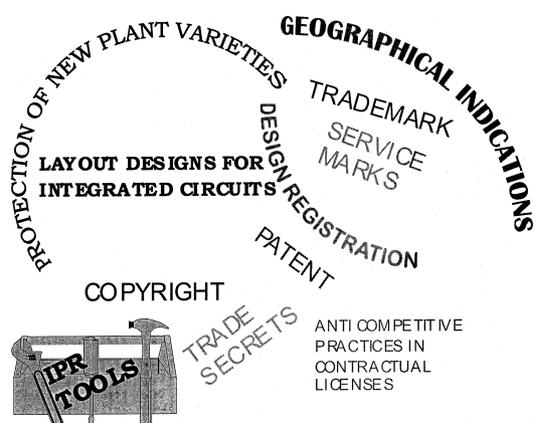


Fig. 1. IPR tools.

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