

The
Smart Manager

Sep-Oct 10 VOL 9 ISSUE 5

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traditional knowledge digital library: an uplifting equalizer

by RA Mashelkar

Received knowledge from the 'laboratories of life' is as valid as knowledge gained from research and experiments in the laboratories of science. Maintaining a database of traditional knowledge systems can help contest patent claims made by scientists based on recent research. By compiling a Traditional Knowledge Digital Library, India has gone a long way in correcting the bias towards systems based on Intellectual Property by patents offices the world over.

“Why do you want to assume that the knowledge that is generated in the likes of your Harvard University or Cambridge University can only be classified as true knowledge? Why don't you appreciate that the knowledge generated by my ancestors by working in 'laboratories of life' for centuries is also knowledge?”

I was arguing that traditional knowledge systems be given the same status as was given for industrial property systems. The



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year was 1999. The venue was the World Intellectual Property Organization (WIPO) in Geneva. I was chairing the Standing Committee on Information Technology set up by WIPO. In attendance were delegates from over 170 member countries. And my anguish was triggered by the wrong patents on turmeric, neem, etc., that were being granted by US and European Union patent offices. I was articulating the fact that all these were based on the rich traditional knowledge systems of developing countries such as India.

I began this battle almost a decade ago. Let us see where we are exactly ten years after this Geneva meet.

On 23 November 2009, Prime Minister Dr Manmohan Singh and US President Barack Obama met in Washington. Against the backdrop of this meeting, an agreement was signed between India and the United States. Through this agreement, the United States Patent and Trademark Office (USPTO) got access to India's Traditional Knowledge Digital Library (TKDL) comprising around thirty million pages. This landmark event was a tacit recognition of India's traditional knowledge system by the USA. The Indo-US agreement means that the USPTO will be using India's TKDL to do prior

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art research, when claims in a patent application are linked to our traditional knowledge systems.

The first TKDL Access Agreement was signed by India with the European Patent Office (EPO) in February 2009, giving access of the TKDL database to their patent examiners. And the latest one was with the UK patent office in January 2010.

The signing of these agreements can be traced back, strangely enough, to an incident that took place in my house in Pune, when I was the Director of National Chemical Laboratory. Let me recall it here.

The year was 1993. My family and I were sitting on the terrace of our house in Pune in the evening of a hot summer. Suddenly a bird fell in front of us. One of its wings was broken. My mother ran downstairs and brought some turmeric powder, made a paste out of it and applied it to the bird. The poor bird died within a couple of hours. We gave the bird a grand burial in our garden with tearful eyes. That incident remained etched in my memory for ever.

I moved to Delhi as Director General of Council of Scientific & Industrial Research (CSIR) in 1995. The memories of that evening in Pune came back to me in 1997, when I was reading a newspaper report in the *Times of India* written by N Suresh. The news was that the US Patent Office had granted a patent (US patent no. 5,401,5041) on the wound-healing properties of turmeric. I was surprised. A patent is granted only when the conditions of novelty, non-obviousness and usefulness are fulfilled. Whatever is available in public domain as prior art cannot fulfill the first

two criteria. I decided to challenge the patent on the grounds that its use was well known in India.

On the evening of the same day I was delivering the Hussain Zahir memorial lecture in National Physical Laboratory, chaired by the late PN Haksar. At the end of the lecture, I publicly declared that CSIR was going to challenge this patent. I must say that as Secretary to Government of India, protocol demanded that I should have taken prior permission from the government, before making such a public announcement. But my problem is that I think from the heart and not from the head. Reading that morning about this particular claim of a US patent on the wound-healing properties of turmeric, which was known to my mother, and indeed whole generations of Indians, had stirred something within me. I had no time to take permissions. I made this statement instinctively. But the government stood behind me. After following the normal inter-departmental consultations, it was formally decided that CSIR would challenge the patent claim.

CSIR submitted all the evidence to USPTO, including from ancient Sanskrit literature. We showed that the wound-healing properties of turmeric were known to Indians all along. There was nothing new there. After fourteen months, USPTO accepted this evidence and revoked the patent. This created history. This was the first time that the Third World had fought for its legitimate rights to its traditional knowledge and had actually won.

We at CSIR decided to dive deeper into the issue. Was turmeric case an isolated case? Were there other wrong patents also? The expert group at CSIR estimated that about 2,000 patents were being granted every year internationally, which were linked in one way or the other to traditional knowledge systems. And many of these patents, just as in the turmeric case, were simply wrong. Fighting each of these cases was too expensive and too time consuming. How could one get at the root cause of the problem and at the same time prevent the granting of such patents in the first place? That was the big challenge. But every challenge is also accompanied by an opportunity. And that opportunity came very soon.

I got an international platform to champion the cause of Indian traditional knowledge. I was invited to chair the Standing Committee on Information Technology (SCIT) of the World Intellectual Property Organization in Geneva in 1999. I used this opportunity to sensitize 170 plus member countries about the issues on misappropriation of traditional knowledge. Citing the example of turmeric, I stirred a debate there. One thing led to the other and I made a special trip to the USPTO in Washington. We looked at some wrong patents given by the USPTO that were linked to India's traditional knowledge systems. Then we looked up some related Sanskrit verses

where the subject matter of those patents was already covered. We then did the English translation of these Sanskrit verses.

I carried all this material to the USPTO. I showed these officials that what they thought was novel was not in deed novel: it was something that was already available in our old texts. The USPTO officials showed me the way they used electronic databases for searching for prior art. Obviously the knowledge that was in our old texts was not in their databases. So, to them, everything looked new! The challenge for us in India, therefore, was to see that our knowledge from the ancient texts should somehow appear on their screens, and that too in the codified language that their patent examiners understood.

We discussed this challenge on my return to CSIR. Thanks to the visionary thinking of VK Gupta, the idea of creating a Traditional Knowledge Digital Library

was born. CSIR and the Department of Indian System of Medicine and Homeopathy (now Department of AYUSH) worked together to create the TKDL. VK Gupta provided stellar leadership to the team. This team comprised scientists, Sanskrit scholars, Ayurveda experts, information technology experts, intellectual property experts and many others.

While this was happening in India, WIPO in Geneva decided to re-examine the prevailing International Patent Classification (IPC) system. The IPC subdivides the whole

gamut of technology into different subgroups. It is used by national patent offices throughout the world to classify the subject matter contained in patent documents. Each patent document bears one or more IPC codes assigned to it by the respective patent office. WIPO set up

a five-member task force to review the International Patent Classification (IPC) System. The membership comprised USA, Europe, Japan, India and China. Surprisingly, of the nearly 100,000 subgroups in IPC, there was only one subgroup for traditional medicine systems. One can imagine the vastness of the global traditional medicine system. This totally inadequate representation struck the task force as something that needed immediate correction.

Changes to the IPC system started to take place. From just one subgroup, two hundred subgroups on traditional medicinal systems were created. VK Gupta also designed a new scientific classification system for traditional knowledge systems called 'Traditional Knowledge Resource Classification' (TKRC). The WIPO Task Force agreed with this new classification. Then the TKRC was integrated seamlessly with the IPC System. In a sense, TKDL became an effective bridge between an old Sanskrit verse and the PC of a patent examiner in Washington or Munich! TKDL protected a quarter-of-a-million Indian formulations. This library of traditional knowledge was made available in five international languages, namely, English, Japanese, French, German and Spanish.

The challenge was to see that our knowledge from ancient texts should somehow appear on their screens.



TRADITIONAL *knowledge* is now BEGINNING to get the same respect accorded to INDUSTRIAL-PROPERTY based KNOWLEDGE

Patent offices of USA and the European Union and UK now have access to TKDL. And agreements with other international patent offices are on the way. As a result, the traditional knowledge of the developing world is now beginning to get the same respect accorded to industrial-property based knowledge. TKDL access agreements with USA and the European Union have in-built safeguards on non-disclosure to protect India's interest. Under these agreements, the patent examiners at the international patent offices can utilize the TKDL for patent search and examination purposes only and cannot reveal the content to any third party unless it is necessary for citation purposes.

Let us look at the TKDL and the grand challenges on the global issues of misappropriation of traditional knowledge and bio-piracy. These issues have been hotly debated for over three decades now at multilateral levels. These include the Convention on Biological Diversity (CBD), TRIPS Council, World Trade Organization, World Intellectual Property Organization and many others. And there have been no real solutions in sight so far.

Some South American regions have tried legislating against biopiracy but have struggled to implement laws at national or international levels. Still others have tried to use an approach of access and benefit sharing. This means a conditional access to traditional knowledge in return for a fair share of benefits arising from the use of such knowledge. However, no universally accepted model on access and benefit sharing has emerged so far.

Some countries have taken recourse to legal battles whenever traditional knowledge belonging to that country has been misappropriated. Mexico, for instance, was able to get the patent on Enola bean at USPTO revoked in 2009. But this was after ten years of legal battle. Similarly, Monsanto's Soybean patent was revoked in 2007 by the European Patent Office, but it took thirteen years of legal battle! A patent was granted to WR Grace Company and US Department of Agriculture on Neem (EPO patent No.436257) by the European Patent Office. More than dozen organizations had to work together for more than five years to revoke this patent!

As against this, India now has a powerful institutional mechanism in the form of the TKDL, which is able to prevent the grant of wrong patents not only within a few weeks but also at practically zero cost! Here are some examples of the magic of TKDL.

A US Multinational Company, Natreon Inc, had filed a patent application (EP 1906980) in July 2006, for the use of Ashwagandha plant extract for treating or managing anxiety and depression-induced stress. The TKDL team submitted its Third Party Submission in July 2009 with evidence from as far back as the 12th century from the then prevalent practices used in Ayurveda, Unani and Siddha. After looking at the strong TKDL evidence, the applicant withdrew the claims in July 2009.

The EPO decided to grant a patent to Data Medica Padova SPA from Italy in February 2009 for the use of Pista in an anti-cancer drug. TKDL-based evidence going back to the 10th century was filed in July 2009. The EPO, based on this



it is **TIME** to use the TKDL, not just as a
PROTECTIVE tool, but as a **PROMOTIONAL** tool

evidence, set aside its earlier intention to grant the patent in July 2009.

Purimed Co Ltd. from Korea filed a patent application in June 2005 for the treatment of heart diseases using the Indian lotus. Again, TKDL evidence based on the *Sushruta Samhita* and other Ayurveda books was submitted in July 2009. The applicant decided to withdraw its claims in less than a month of the submission of the evidence.

Several companies from Kenya, China, Denmark, Netherlands, USA and, interestingly, even from India, have withdrawn their patents.

So the power of the TKDL is already in evidence.

The TKDL also acts as a scarecrow! Word has gone around about the power of this tool in preventing the granting of wrong patents. A recent study carried out by the TKDL expert team has revealed that there has been a sharp decline (44%) on the filing of patent applications at the EPO concerning Indian systems of medicine, particularly on the generic group of medicinal plants.

Even before I had pleaded the case in Geneva that traditional knowledge systems be treated on par with Intellectual Property based systems, I had alerted the Indian community about the importance of the economics of traditional knowledge.

I had given the 16th CD Deshmukh Memorial Lecture titled 'Economics of

Knowledge' at India International Centre, New Delhi, which was chaired by the late LN Singhvi. I had said, "The issue of economics of traditional knowledge and biodiversity are far more complex. India, with approximately 8% of the world's biodiversity and as one of the greatest storehouses of traditional knowledge, has the potential of becoming a major player in the global trade in herbs-based formulations,

medicines and products.

An estimate by the EXIM Bank puts the international market of medicinal plants related trade at \$60bn per year growing at about 7% annually. India has only 2.5% share of this market."

This lecture was delivered in January 1999. And I am afraid, the situation with respect to our minuscule

share of this huge market has not changed in the decade since I spoke! It is time we started looking at the huge knowledge base of our ancient heritage that is available in TKDL. And then, decide to use the TKDL, not just as a 'protective' and 'preventive' tool, but as a 'promotional' tool, fueling the promotion of new innovations, or may I say, 'Indovations', by leveraging India's vast reserves of traditional knowledge.

The July–August 2010 issue of the *Harvard Business Review* carries my paper 'Innovation's Holy Grail' that I was privileged to co-author with the legendary CK Prahalad; tragically, it turned out to be his last paper. There, we showed how an 'Indovation' on the development of a novel psoriasis drug is made possible by blending Indian traditional medicine, modern medicine and modern science together at a small fraction of the corresponding cost in the western world. We need many such 'Indovations'! There is an opportunity worth billions of dollars of business waiting there, besides having the satisfaction of being able to create medicines that millions of our resource-poor citizens can afford. We must seize this opportunity. ■

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