



News, Events

Information Pasteboard

Weekly reports of meetings at NAL, snippets of R&D activity, conference announcements and other features of popular interest



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The CSIR story

One of the most dramatic turnarounds during the past decade has been the transformation of CSIR, orchestrated by its Director General Dr R A Mashelkar. In his note to greet Dr Mashelkar on his sixtieth birthday, Prof R Narasimha wrote: "Dr Mashelkar's stewardship has brought an unprecedented sense of dynamism to the organization ... he has been one of the finest things that have happened to CSIR in many years!".

Rather curiously, we had never been privileged to hear the story of CSIR's transformation from Dr Mashelkar himself; bits and pieces of such a narrative could be retrieved from his lectures and writings, but CSIR's Director General could apparently never find the time, or the inclination, to tell the whole story in his own words.

We were therefore delighted when Dr Mashelkar chose NAL's twentieth Foundation Day Lecture, on 21 July 2006, to talk of CSIR's transformation -- and its unfinished agenda. "It's going to be a long lecture", he warned. This hardly perturbed the gathering spilling out of the S R Valluri Auditorium, including the many dozen who werestanding along the aisles. There are few greater pleasures today than listening to Raghunath Anant Mashelkar in full flow.



CSIR's eternal optimist (Dr Mashelkar is even called a "dangerous optimist", and seems to quite like this) started with the good news. Of how 2005-06 has been CSIR's best year so far: the highest total earnings, the highest private earnings, the highest number of SCI research publications, the highest impact factor ever achieved...

This isn't an accident, or even just serendipity: CSIR's Director General, and its Directors, have worked for many years to achieve these targets. It's only now that the results are becoming clearly visible; that's why it is easy

to predict that 2006-07 will be even better.

That's also why the accolades are now coming in fast and furious. For example, CSIR has now earned the laurel of being "first class in India" (together with Infosys, Wipro, Hindustan Lever, Reliance, Ranbaxy and others). Prof Jayant Narlikar calls the CSIR transformation to be one of the top ten Indian achievements at the turn of the century. The World Bank recommends the CSIR development model to "harness top quality R&D institutions". Even Prime Minister Dr Manmohan Singh expressed his happiness at seeing "CSIR flying higher and farther". (Always the master of seizing the moment, Dr Mashelkar drew a thunderous applause at NAL when he remarked: "...and we all know which is its lab that makes CSIR fly higher!").



Dr Mashelkar's narrative started at the very beginning in 1995 "when we met all CSIR Directors here at NAL, and when I still had some black hair on my head!". (Looking



back, we now recognize how much that 1995 meeting contributed to CSIR's transformation; historians in the future could well call it "path-breaking". It was at this meeting that CSIR declared its vision "to provide scientific industrial research and development that maximizes the economic, environmental and societal benefit for the people of India").

These days it's routine for every big or tiny organization to proclaim its "vision", but till 1995 CSIR didn't have an explicit vision statement; Dr Mashelkar's vision statement was important for two other reasons that weren't immediately obvious: it deliberately replaced "scientific and industrial research" by just "scientific industrial research", and it also, perhaps for the first time, talked of all the three: economic, environmental and societal benefits ("of course, everyone talks of this triple bottomline now!"). Equally notable was Dr Mashelkar's insistence that it should be a vision for the year 2001, when he would still be CSIR's Director General.



Armed with this vision, Dr Mashelkar got down to serious business. His initial forays were on three fronts: (a) driving market orientation, (b) devising new financial initiatives and (c) protecting India's intellectual property. CSIR achieved great success on all the three fronts, although the many crusades in protecting India's traditional knowledge won CSIR the highest acclaim.

[We will continue this story next week.](#)

[Continuing the CSIR story](#)



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CSIR's "unfinished agenda"



Although the Pokharan-II nuclear tests stole the limelight at the CSIR Directors' Conference, hosted by NAL on 11-12 May 1998, it was still an extraordinarily good meeting. One especially liked the Bangalore Declaration that all CSIR Directors signed: "India matters to us. It is our endeavour that we shall matter to India, more".

SARAS

It was therefore a great pleasure to hear CSIR's Director General, Dr R A Mashelkar, explain in his NAL Foundation Day Lecture on 21 July 2006, how CSIR so admirably adapted itself to fulfil this resolve. Dr Mashelkar's pithy observations were particularly illuminating; for example, "patience and continuous commitment pays" (Dr Mashelkar recounted NAL's own two-decade long journey from the LCRA to the SARAS to highlight this point), or "we must never stop dreaming" (and so CSIR's Director General asked his NAL colleagues to start dreaming of a 100-seater passenger aircraft to fly on 15 August 2020).

Another Challenge

**CSIR is a live organism-
continuous renewal,
rejuvenation & growth
essential!**

In the last part of his lecture Dr Mashelkar listed several "challenges" for CSIR. For instance, the challenge of *continuously re-inventing itself* ("IGIB's evolution has been amazing, and I am so delighted that IICT is now a

RRL(H) - (IICT) - CCMB - CDFD!

IICT a grandmother!

grandmother!"). Or the challenge of *rightsizing* ("we need fewer labs and outreach centres"), of *synergy* between Team CSIR and even Team India (by more intelligent networking, and by instruments such as the NMITLI). Dr Mashelkar also invited his CSIR colleagues to *think big* ("we now have 55 projects valued over Rs 20 crores; a decade ago we didn't have even one; in fact the first time I had to appear before the CCEA was to explain the SARAS project, but now it's almost become a habit!"). Finally, Dr Mashelkar listed the challenges of *freedom to operate* and *greater market orientation*.

Knowledge Alliances

- **Effort to bring Industry even closer to CSIR**
 - Create domain specific excellence through PPP
 - CSIR Laboratory to provide space, technical, intellectual and other inputs in kind while the private entity to bring in financial, managerial and operational expertise

In many cases, Dr Mashelkar indicated CSIR's explicit policy decisions (e.g. "we delegated the approval of foreign travel for most scientists to the CSIR lab director itself, thus giving him greater freedom to operate"), but it was also clear that Dr Mashelkar would like to do much more ("we've moved quite a bit, but there's still a long way to go!").

Some of Dr Mashelkar's thoughts to drive a greater CSIR market orientation were interesting and imaginative: *mobility of scientists between lab-industry-academia*, ("movement is encouraged from both domestic and international organisations")

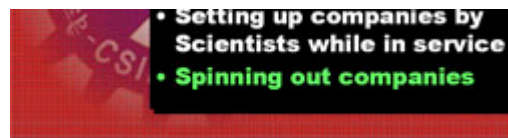
knowledge alliances with industry ("CSIR lab provides the space, technical and intellectual inputs; private entity brings in financial, managerial and operational expertise"), *off shore CSIR business units, interdisciplinary fellowships, technology incubation centres* ("set up start-up companies to develop innovations based on CSIR knowledgebase") *in labs etc..*

There is no doubt that this is the way for CSIR to go, although implementing this unfinished agenda, and steering it through India's bureaucratic maze, could well be Dr Mashelkar's greatest challenge. But every idea in the Mashelkar book is well and truly begging to me implemented: rightsizing CSIR, faster procedures for recruitment and assessment, setting up companies

Unfinished Agenda

- **Right sizing of CSIR**
- **Recruitment and assessment**

by scientists in service, spinning out companies, treating knowledge as equity, dual appointments, deemed university status, realizing full autonomy etc. ... if CSIR is to contribute seriously to making India the next knowledge superpower, this is the only way to go.



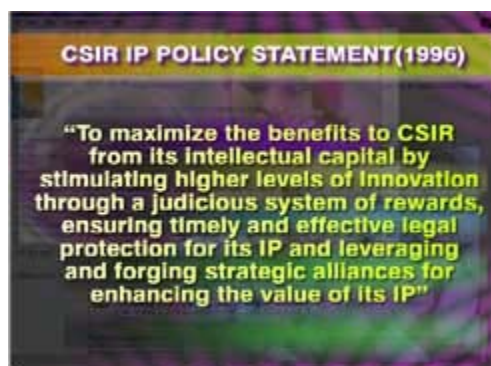
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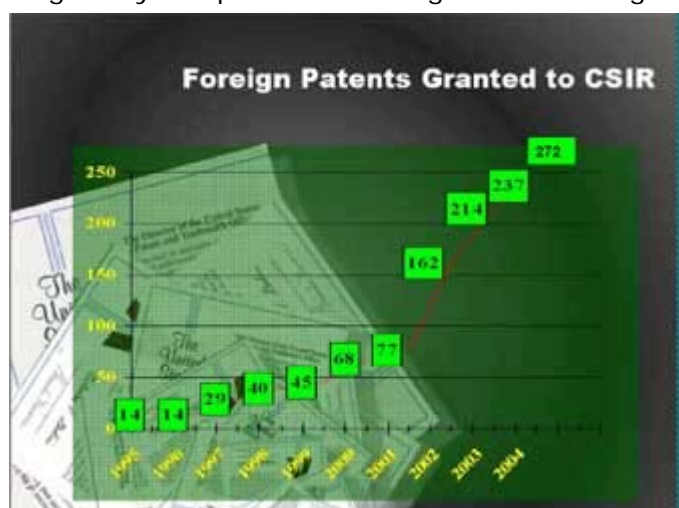
Continuing the CSIR story



In 1996, CSIR and Dr Mashelkar explicitly formulated its intellectual property (IP) policy statement "to maximize the benefits to CSIR from its intellectual capital by stimulating higher levels of innovation through a judicious system of rewards, ensuring timely and effective legal protection from its IP and leveraging and forging strategic alliances for enhancing the value of its IP". (While the formulation and expressed objectives are admirable, one suspects that Dr Mashelkar allowed his legal cell to word the statement; it lacks the customary Mashelkar flair so evident in CSIR's vision statement).

Of course what brought the country great joy was the way CSIR skilfully, and occasionally ruthlessly, implemented this policy. The US patent on the healing quality of turmeric was successfully challenged in 1997. This haldi win was followed by the basmati win in 1999 and the defence of neem. Dr Mashelkar was among the first to recognize that patenting is the only way to be globally competitive. Starting from 14 foreign patents in 1995, CSIR climbed to 272 foreign patents in 2004.

Dr Mashelkar's financial initiatives weren't always visible outside CSIR, but he initiated a series of extremely innovative moves that saw every CSIR establishment vying to be the leader in generating external cash flow (ECF). In his twentieth NAL Foundation Day Lecture on 21 July 2006, Dr Mashelkar indicated that his happiest innovation was the concept of the "lab reserve fund", where every lab got to keep its intellectual fee and savings from its R&D projects for itself.



Dr Mashelkar's third major foray as Director General was to recognize CSIR's traditional weakness in marketing its R&D expertise and intellectual property (even before he took over CSIR's reins, Dr Mashelkar had headed a committee to recommend how CSIR must market its knowledgebase). To correct this, Dr Mashelkar set up technology marketing groups in every lab or institute, encouraged interactions with business development consultants, instituted awards for successful business development and encouraged CSIR scientists to work on the board of directors of the private sector ("when the private sector is represented on CSIR's advisory committees, I can't understand why CSIR persons can't join private boards"). While these moves have been very valuable, one got the impression that Dr Mashelkar would like to do much more. (My personal view is that CSIR is still shy of making a big marketing splash; perhaps this circumspection can be attributed to the aggression of that old-fashioned auditor of public accounts).



For me the highlight of Dr Mashelkar's lecture was his lucid and exhaustive enumeration of CSIR's contributions to public, private, strategic and social good. There's a lot of truly wonderful work that sadly never seems to catch the public eye (it bothers me that the plot of a film called KANK or the highhandedness of a certain gentleman named Hair evokes a much sharper public reaction). The quality and numbers of CSIR's scholarly publications is now rather impressive (Dr Mashelkar issued a stern note shortly after taking over in 1995: "don't publish papers that no one wants to read!" ... a few years later he asked: "lifting averages is fine, but what about the peaks?"... all this seems to have

had a salutary effect). For the private sector, CSIR has developed a very large number of technology processes and products (e.g. an eco-friendly detergent grade zeolite-A plant with >99% whiteness, or a light transport aircraft called SARAS!). For the strategic sector, CSIR has developed a large number of subsystems for the Tejas light combat aircraft, and 40 KV-3 KVA deuterium thyratron units for use in a synchrotron radiation source facility, to mention just two developments. Finally for the welfare of its fellow countrymen, CSIR has developed a suite of solutions: e.g. water desalination plants, sweet water for earthquake victims ("when the country is in trouble, CSIR is always there!"), a wide variety of drugs, tractors, artificial eyes and collagen dressing for burn victims ("after treatment, I saw radiant smiles on the young burn victims of a fire; how does one quantify the value of these smiles?").

Next week we will discuss CSIR's challenges and concerns as outlined by its Director General.

Srinivas Bhogle

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