

STILL OUT OF STEP WITH THE NEEDS OF THE NATION: A NOTE ON THE ABID HUSSAIN COMMITTEE REPORT ON THE CSIR

The Prime Minister in his capacity as the President of the Society of Council of Scientific and Industrial Research (CSIR) appointed, in April 1986, a committee under the chairmanship of Shri Abid Hussain, Member, Planning Commission, to review the functions and structure of the CSIR. This step was, in the opinion of the Committee itself, necessitated by "...the obvious perception that the work of the CSIR was out of step with the needs of the nation". In addition to Shri Hussain, the Committee had six other members - two from private industry, two from public sector industry and two from academic community - and its terms of reference were quite comprehensive. The Abid Hussain Committee, (hereafter referred to simply as the Committee), submitted its report on 31st December 1986, and it contained some 58 recommendations. While it still continues to be totally unclear as to whether the Government proposes to implement all or any of the recommendations, the matter has received a fair amount of attention and has been discussed quite widely.

The Background

The CSIR of India was registered as a Society in 1942 under the Societies' Registration Act of 1860, and its objects as laid down in its Memorandum of Association are very wide and comprehensive. Modelled closely after a similar institution in England, the CSIR has over the years, grown to become the largest employer of S and T manpower in the country; having 39 laboratories that exhaust all topics other than Nuclear Energy and Space Research, over 100 extension centres, 5600 scientists and technologists supported by 12,000 technical personnel, and an annual budget of over Rs.200 crores. Even though it is legally an autonomous body, the CSIR functions practically as a Department of the Central Government. Its funds are voted by the Parliament and the Government of India is answerable to the Parliament for its functioning. Even though the CSIR still operates with the multiplicity of objectives with which it had started, its mandate in independent India has essentially been one of working on import-substitution at various levels and areas. That is, it has been understood widely and repeated frequently that the job of the CSIR is industrial research aimed at evolving indigenous products and processes that will meet the needs of our industry; in other words free our industry from dependence on foreign knowhow, technology and materials.

*Being an 'open system', (unlike the DAE, DRDO, ISRO etc.) the CSIR has been repeatedly probed - the Abid Hussain Committee is the fifth such effort at evaluating the CSIR's functioning and performance. The earlier committees were in 1947, 1954, 1963 and 1968, the last of which, the Sarkar Committee, submitted its report to the then Prime

Minister Smt. Indira Gandhi in August 1977. While all the Review Committees have made definite recommendations, the present Committee has been the boldest and most candid in its criticism of the flaws in the CSIR system. As in the case of the earlier review of our education system as presented in the document "The challenge of Education", this Government does not seem to spare itself any troubles what it comes to reviewing and evaluating the functioning of some of its departments. If this boldness is an indication of the confidence that has been acquired by our elite as regards running the various institutions in the country, then that would of course be a welcome change.

In what follows, we would take a quick look at some details of the Committee's findings.

The Recommendations

While there are 58 recommendations that cover the various aspects of the CSIR system and its interfaces, some of the more important ones are summarised below:

1. CSIR should adopt the "missions" approach. Examples are Technology development and application mission* in areas such as steel, fertilizers, petrochemicals, energy and transportation, as well as "Societal Missions" in areas such as production of cheap health kits, development of low cost nutritious food for children, etc.
2. The CSIR should earn one-third of its annual expenditure from outside sponsored research (as against one-eighth at present).
3. The Governing Body of the CSIR as well as the Research Councils of the individual laboratories should be reconstituted to have a much higher proportion of outside representation. These bodies should be divested of their duties of day-to-day administration and management, and become more of research policy formulating and guiding bodies.
4. The CSIR Head Quarters in Delhi should have three distinct functioning technical groups - Research and Planning Group, Technology Development Group and Human Resources Development Group.
5. Apart from the normal stream of scientists, there should be a special stream for highly talented experts on contract appointment for a fixed duration at a salary 50% higher than that of the normal stream.
6. Continuation of staff in CSIR after 20 years of service or beyond the age of 50 to be made only on the basis of an assessment.
7. The Directors of the Laboratories should be appointed for a non-renewable term of six years.
8. A Central Training Institute should be established in the CSIR for training, retraining and orientation needs of the CSIR personnel.

9. The staff strength of the CSIR laboratories should not be increased any further, and the scientific to non-scientific staff strength ratio to be reduced from the present 1:3 to 1:15.

10. The following changes, among others, need to be made in the structure of the CSIR.

(i) The Regional Research Labs (RRLs) should not be called *Regional* any more but to become central CSIR laboratories in their respective areas of expertise. The RRL Bhopal to be wound up or given over to other agencies.

(ii) The Publications and Information Directorate (PID), New Delhi and Indian National Scientific Documentations Centre (INSDOC), New Delhi should be merged together.

(iii) The National Institute of Oceanography (NIO), Goa, Institute of Microbial Technology (IMT), Chandigarh, Centre for Cellular and Molecular Biology (CCMB), Hyderabad, National Institute of Science Technology and Development Studies (NISTADS), New Delhi and National Environmental Engineering Research Institute (NEERI), Nagpur laboratories belonging to the CSIR should be transferred to the Scientific Departments of the Central Government dealing with the corresponding areas of specialisation.

(iv) All the 100-odd CSIR extension centres should be closed down or given over to other agencies.

11. To encourage industrial R and D in the country, the Government should levy on R and D Cess of 0.75% of the gross output value on all industries. The actual R and D expenditure incurred by the firm would be deducted from this amount.

12. The Government should encourage and reward the use of indigenous technologies by providing appropriate incentives and facilities.

13. In order to assimilate the imported technologies, all firms must be made to invest in in-house R and D an amount equal to what it pays towards the imported technologies.

14. There should be a CSIR scientist on the Board of Directors of all public sector undertakings: similarly all private companies importing foreign technology in a big way would have one Government nominated technologist on the Board of Governors.

Considering the size of the CSIR system as well as the fact that a comprehensive review of this type is taking place after over 15 years, it cannot be said (that the *recommendations such as the above are in any way too drastic or punitive. However, the Committee itself feels that its recommendations "... may, at times, appear somewhat harsh....". What is indeed harsh and devastating are the critical observations, that the Committee makes on the performance of the CSIR.

Observations of the Committee

The following are some of the critical observations that the Committee makes on the performance of the CSIR; while making them the Committee hopes that it would not be \... sowing die seeds of panic and detracting from its achievements...."

1. Much of the CSIR's work has been "___on known processes and known products, akin to reinventing the wheel...". Often it has also been like "solutions looking for problems..."
2. The prevalent ambience in CSIR has been CHIC "...in which science has perished, while a few scientists have flourished¹¹."
3. There has been a large scale failure to "... transform scientific results in the laboratory into technologies for industrial production". The industrial sector believes that the CSIR labs are "incapable of useful and timely research..."
4. The CSIR personnel policy has "treated achievers and non-achievers alike". There is "... little reward for performance, and there is no penalty for non-performance". "Good performance does not confer any additional benefits...."
5. The pursuit of objectives in the CSIR only "... seeks recognition for individuals, rather than successes based on team work".
6. There is a disproportionate emphasis on basic research", aimed at "receiving individual recognition from other scientists in the profession, academic kudos and material reward". Even in basic research, international standards of excellence have been attained only in exceptional cases.'
7. The culture of CSIR even today is "that of a university research department"; "the CSIR labs have become, in effect, post graduate centres in chemistry, classical physics, Biology, Civil and Structural Engineering¹¹."
8. The CSIR has had no well-defined corporate goals or objectives; planning and programming for research has been virtually absent".
9. The CSIR labs have departed from the original purpose for which they were set up..." "Breadth has been achieved at the expense of depth..."
10. The present level of post-laboratory-scale development expenditure (needed to transform the scientific results into commercially viable technologies) is only one-hundredth of what is internationally considered necessary.

For an organisation that is nearing half a century of existence and that is entrusted with the vital job of evolving technologies for our industrial development, the above observations, that too coming from a Committee appointed by the Prime Minister himself, are indeed very severe. In the light of such observations, the recommendations of the Committee if anything, appear to be rather inadequate and feeble to set anything right.

The Committee also takes note of the achievements of the CSIR and does make some laudatory observations. "... there can be no doubt that the CSIR ushered into India, a culture of scientific research and milieu which created talents in science and innovation in ideas. There is now a reservoir of talented scientists in the system which represents an accumulation of human capital. What is more, as the pioneer scientific agency in the country, the CSIR has provided a spring board of ideas and activities in the realm of science and technology. At the same time, it has served as a nursery which has, in the early stages, nurtured the growth of many talented scientists and some excellent institutions...". The CSIR's scientific profile is impressive. It has the largest stock of S and T manpower and the largest number of doctorates among all the S and T agencies in the country. CSIR's performance in science has received adequate recognition. In terms of publication in foreign journals, CSIR ranks second, next only to the publications in University system. Even in terms of membership of national academies, CSIR ranked third after the University and ICAR Groups.

The Committee also lists some "tangible contributions" of the CSIR in recent times. These include supply of "wholly indigenous technology" based on which about 50,000 tractors (valued at Rs 200 crores) have been produced; development of petroleum refining processes and catalysts, modern pesticides with low residual effects, Titanium substrate insoluble anode for chloralkali industry, instrumentation and processing technique for sugar and leather industry, and test facilities for aircraft.

Thus, while there certainly have been some success, the overall picture that emerges is none too flattering for the CSIR system. The Committee however does not put the blame for this entirely on the CSIR itself. For example, it believes that the funding to the CSIR has been too meager compared to other agencies like ISRO, DAE, DRDO etc. The CSIR has been asked to take up a range of activities much wider than any other similar organisation; there has been a failure of the industrial sector in utilising the talents of the CSIR; there has been a failure of the Government in creating a framework of policies conducive to indigenous technology development; and finally the CSIR has been adversely affected, like any other organisation, by the prevalent ethos of our nation as a whole.

In the above, we have only touched upon some of the more serious and unexceptionable observations of this committee. Many observations, unfortunately, are not of such type. An example would be the Committee's remarks on "the greying of CSIR". It believes that the present average age of 42 of the scientists in the CSIR is too high and is partly responsible for its poor performance. If this observation is meant seriously, then it only points to the great depth to which the CSIR system must have fallen so as to make its staff a "old" and non-productive even at the age of 42! Another observation that the Committee makes is that the CSIR has been deprived of talents by other organisations such as the DAE, ISRO, DRDO etc., who lure away all the bright scientists. This is indeed a strange thing to say about the premier S and T organisation of the country!

* F Bhabha had observed in 1966 that a major reason for the weakening of the University system in India was that the CSIR was luring away all the bright scientists!

Another observation that the Committee makes repeatedly, and with more serious implications, is regarding the prevalence of "Government Culture"¹¹ in the CSIR. This Committee of the Government of India, appointed by the Prime Minister, says repeatedly that the CSIR has been disfunctional to the extent it works like a Department of the Government of India! While it is indeed a very good thing to be candid etc., that such observations can be so casually made has rather disturbing implications.

Some of the observations that the Committee makes regarding the CSIR are very perceptive and apply, more or less equally, to the entire Indian S and T scene. In some sense, many of the deeper issues that the Committee touches up on have been rather perennial to the modern S and T set up in India, right from its very inception. And these have been repeatedly pointed out by committee after committee, and the observation by the present Committee are only the latest addition to this long list. We now take a closer look at some of those issues and try to locate where the problems lie.

Some deeper issues

1. The Committee says "... the very concept of CSIR is a myth..." in the sense that it is nearly a collection of 39 laboratories with very little interaction or integration amongst them. It is repeatedly pointed out that this is so even amongst those laboratories that are working on similar problems. The Sarkar Committee earlier had also pointed this out in some detail.* In fact this lack of interaction among scientists working on similar problems within the country is widely prevalent in all areas of S and T in India; and is quite well known to the Indian scientists. While our scientists, particularly the top ones, show great eagerness to cultivate and maintain contacts with scientists working abroad in similar areas, they seem quite indifferent regarding interactions amongst themselves. This perhaps has been a characteristic feature of modern S and T practice in our country right from the beginning. A very eloquent statement of this problem was made as early as 1916 by Thomas Hengy Holland who headed the Indian Industrial Commission. Talking about the lade of interaction and coordination amongst the scientists in the Agricultural Department, Holland observed "... each of these specialists worked in an isolated manner.... The plant pathologist at the Pusa Research Institute tends to be closely linked with German vegetable pathologists than with his colleagues in the Agricultural Department of India...". That as an independent nation, we have so far done little to solve this problem is being highlighted in some recent debates.

* It is partly to overcome this problem that the Sarkar Committee had suggested formation of a co-ordination Councils among the different Laboratories working in the related fields. The Abid Hussain Committee has however now recommended the abolition of these Co-ordination Councils as "they have not served any useful purpose....."

The Committee's observation about the CSIR only points to a much larger problem, viz our failure to evolve an Indian Scientific Community with a distinct national identity. While this observation is quite pertinent, it appears that the Committee is unwilling to go deeper into this issue. Or worse still, it perhaps does not even see the real nature of the problem. For instance, the Committee announces proudly that the CSIR comes second only to the University System when it comes to publications in foreign journals. But what does this imply? After all it has been one of the major responsibilities of the CSIR to bring out high quality, scientific and technological journals in this country, and the poor standard of the CSIR journals is proof enough that it has mostly failed in this responsibility. It is evident that the CSIR journals are poor because the CSIR scientists send all their good papers abroad. Dr AiMMitra, Director General of CSIR, has himself pointed out recently that only 10% of the CSIR Scientists publish into CSIR journals.* In this context, what does it then mean to point out as a major achievement the fact that most CSIR scientists publish abroad? The point is that in this entire exercise of the Committee, while certain pertinent observations are made, there is an inadequate realisation of what the dimensions of the problem are.

2. Another issue that the Committee discusses at some length is that of "basic research" vs "applied research". As mentioned in an earlier section, it points out that the primary objective of the CSIR viz., industrial research, has often been abandoned in favour of pure or basic research. In fact the Sarkar Committee fifteen years ago had elaborately dealt with the same issue. One of its major recommendations read "...the activities of the CSIR should be confined to industrial research, and fundamental research is to be pursued only where it is relevant to industrial research".

This lack of an industrial research culture in the CSIR was dramatically commented upon by P.M.S Blackett in 1963 when he said about NPL "... large part of NPL was literally a University organisation shirking its teaching duties". As a matter of fact, this confusion between "pure" and "applied" research also appears to be quite endemic to modern S and T set up in India. One comes across heated debates on this issue more than a hundred years ago in the context of the running of the Indian Association for Cultivation of Science in Calcutta - Mahendralal Sarkar is even said to have wished that the term "applied science" were not invented at all! There also seems to have been a major controversy between Saha and Visweswarayya as to which should be given priority in our country.

Even in the context of the present Committee, its accusation that most of CSIR's work was of the type of "re-inventing the wheel" is quite puzzling. Now, if the CSIR's major

* That no such community perhaps even exists has also been suspected seriously. See, for example, the Editorial comment of Prof. BJviUdgaonkar in Physics News, Sept. 1987 (reproduced in PPST Bulletin, No. 13 & 14, March 1988).

** For details of the letter of Prof. Mitra, see the Editorial Note in PPST Bulletin, No. 13 & 14, March 1988.

mandate was import substitution, and if our planners, leaders and policy-makers want us to have products and processes similar to what is available in the West, then it is not clear how one can avoid "reinventing the wheel". "Reinventing the Wheel" then is presumably contrasted with originality and creativity. But was the job of CSIR to concentrate on originality or was it to come up with viable, working technologies no matter whether they are re-invented or not?

That this issue of "pure" vs "applied" research has been discussed, almost in identical words, for over a hundred years and more without any clarity or consensus emerging perhaps suggests that irrespective of whatever its nature has been this activity *must* have been quite peripheral to the economic activity of our society as such. Because, if this activity indeed was of great consequence, then we would have by now come to some kind of a decision on what its nature would be etc.

3. Another 'perennial theme' that the Committee takes up is whether the different laboratories should stay in the CSIR or should become parts of the concerned Government Departments. It lists many advantages of the latter arrangement, and in fact recommends, as already stated, handing over some five laboratories to the concerned Government departments. It is interesting to observe that the Sarkar Committee gave equally strong arguments for the other course of action. Much earlier, the Committee appointed by the British Government in 1944 to suggest how the Indian S and T research should be organised (headed by A.V. Hill) had strong views that the research laboratories, even though receiving their funds from the Government, should not be under any government ministry. The point is, this question has been periodically brought up and discussed by various committees without ever coming to a clear cut position on it. That questions like this, apparently of great importance to the working of the laboratories, can be discussed and debated endlessly again gives one an impression that whatever was happening in these laboratories was perhaps of only peripheral interest to the larger society, and it did not quite matter whichever arrangement was eventually effected.

A related question in this context is the Committee's recommendation to close down the 100 - odd Extension Centres, abolish the Coordination Councils, etc. Now, it is perfectly legitimate to dismantle structures and arrangements as soon as they have stopped being functional or have completed their mission. What is the case in the case of say this Extension Centres? Is it the understanding that they have served their purpose and are therefore not required any more? An unlikely proposition, as the CSIR as a whole is observed not to have fulfilled most of its missions. In which case, what are the new arrangements to realise those objectives for which the Extension Centres were originally set up? Or is it understood that those objectives are no longer important or relevant? As long as these issues are not clearly and categorically spelt out, it is likely that the same measures that are now being cancelled would be proposed with much fanfare and expectations at a later period in time, and we would go through the same cycle all over again.

4. One other issue that receives great attention from the Committee is that of manpower training. In fact, as we saw earlier, one of the major achievements of the CSIR for which it is commended is that it has produced a reservoir of highly skilled and trained S and T

manpower. The Sarkar Committee earlier had also spoken of this as a major success area of CSIR. While this fact is perhaps quite undeniable and is in itself quite impressive, the point remains that manpower development was never meant to be the major preoccupation of the CSIR. There are a large number of other institutions and organisations, who have been entrusted with this task as their major preoccupation. The point seems to be that the CSIR is having to point to such incidental outputs as major successes only because it has not been able to make much headway in its major mission, viz. development of indigenous technologies. How serious this trap can be seen from the fact that the Committee has now recommended the setting up of a central man-power training institute within the CSIR! And we can be quite sure that the next review committee of the CSIR would point to the great success that this institute is proving to be!

This issue has a much wider-dimension. That we have managed to produce a reservoir of skilled S and T manpower in our country is repeatedly pointed out as the most important achievement of our modern S and T set up as a whole, and not just within the CSIR. While not belittling the significance of this point, it is quite obvious that creating skills, potential etc. are only a means and not an end in itself. Perhaps it was justified some 10-15 years ago to be happy about this achievement. But in the face of our failure to make any significant use of such skills and potentials, a point is soon reaching where the continuation of this process would begin to be counterproductive and unhealthy. As a matter of fact, the absence of any definite plan or programme has already begun to reduce this reservoir of skilled manpower to mere consumers of foreign products, processes and technologies without delivering anything substantial or significant. The point is, it is high time we stopped pretending to be such novices and beginners in modern S and T as to be pleased with whatever little we are able to accomplish at whatever exorbitant cost. It is time we began tasks more seriously and set bold and challenging tasks that can really utilise the skills and potentials created during all these years.

5. Thus, while the Committee does raise many pertinent issues quite boldly and bluntly, it is still not able to go beyond the 'traition' of similar committees earlier and come to firmer grips with most of the issues involved. Much of what it says have all been said before too. Even then, and given the limited scope of its observations and recommendations, this report can still be made a starting point for some bold experiments on the organisation of modern S and T in India.

The single most important lacuna of the Indian S and T set up appears to be the absence of a Scientific and Technological community with a distinct national identity, outlook and purpose. What the Abid Hussain Committee points out is a similar lacuna within the CSIR itself. Evidently, finding a solution to this problem is an immediate task facing not only the CSIR but also the entire S and T set up in this country. Attempting this at the level of the entire range of S and T activities and organisations in the country is admittedly a formidable task at this stage. What could perhaps be attempted right away is to conduct this experiment at the level of an organisation such as the CSIR.

One of the reasons why some of the laboratories are recommended to be removed from the CSIR system is that, with absence of any cohesion and integration within the CSIR

itself, there is very little benefit they derive from continuing to be a part of it. Such a 'dismemberment*' of the CSIR system could still be avoided if a determined and serious effort can once more be made to transform it into a close-knit Community of scientists who interact closely among themselves with common identity and purpose. Great amount of thought and planning would no doubt be called for in bringing about this transformation. The report of the present Committee, as well as of earlier Committees, can perhaps help as useful starting points in this effort. It would call for drawing up a comprehensive package of rules, regulations, incentives, motivation, targets, inputs and constraints, and putting it forward to the CSIR Community for discussion and suggestions. Once the CSIR community comprehends the significance that this experiment has for the future course of S and T in India, and once they are assured of their vital interests being safeguarded, then it should be possible to enlist their whole hearted support and cooperation for this venture. Like aH experiments in modern science, it is understood that this 'experiment' on the organisation of modern S and T in our country would also require creation of certain special conditions *th&t* might at times appear to be artificial and unnatural. It is also likely that the 'normal' working of the CSIR may be distracted during the process of this 'experiment'. We should however be prepared to accept such temporary losses for the sake of discovering sounder ways of organising our S and T activity. The 'risk' involved in such a venture is however not too large as the areas of 'strategic' importance such as Atomic Energy, Defence Research and Space Research are any way outside of the CSIR system. In fact most of the existing features of the CSIR system (features that are normally considered negative) make it the ideal organisation for conducting such an exciting experiment - these include feature such as its large size, broad range of activities, autonomous status etc. In a way it is only fitting that the premier modern S and T institution of this country also becomes the first to try and chart out a new path in the direction of self-reliant indigenous S and T development.

The report of the Abid Hussain Committee can be a valuable starting point for such an adventurous mission.

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