

Since these COI situations emerge frequently, the question arises as to what safeguards can be put in place. One tempting approach that is followed widely is to formulate rules that are intended to prevent the COI situations. For example, relatives are debarred from being employed in the same institution. This approach can go as far as not hiring both husband and wife in the same institution. But the cure can be worse than the disease. Will not the institution suffer if an outstanding and meritorious relative is denied employment? What about the fundamental rights of the relative who is denied employment in an institution for no fault of his/her, except that he/she is a relative? Where does one stop – relative? or relative's spouse? or relative's spouse's relative? Besides, rules beget rule-breaking.

It is submitted here that COI situations are inevitable and unavoidable, and that it is not the COI that is the problem, but the damage from COI situations. Hence, instead of trying to prevent COI with rules of increasing subtlety and complexity, it would be more effective to try to minimize, if not prevent, damage arising from these COI situations.

This prevention/minimization can be achieved to a large extent by insisting on *full prior disclosure* of a COI situation (perhaps in writing) to peers and/or a higher authority (La Rocco, pers. commun.). Though there is a distinction between an actual COI and one that is perceived to be a COI situation, it may be advisable to insist on full prior disclosure of both actual and perceived COIs. However, this is only a necessary safeguard; it is not sufficient.

In addition, it is essential that decisions involving a COI are not taken by the very individual(s) with the COI, but by an *independent higher authority*.

The basis of the above suggestions is that most of the damage from COI situations originates from the fact that there was not full prior disclosure of the COI and/or that the harmful decisions were taken by the very person with a conflict of interests, rather than by a higher authority. And both the full prior disclosure of the COI and the decision by the higher authority can be encouraged before the decision and verified after the decision.

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## Indian science slows down – II

Many years ago, I argued that Indian science was showing signs of slowing down<sup>1</sup>. This was based on macro-level scientometric indicators for the eighties. From the first half (1980–1984) to the second half (1985–1989) of the decade, India's total contribution to world publication output (as measured by ISI's SCI database) dropped by 17.8%, while the world output increased by 9.7%.

Arunachalam<sup>2</sup> now offers a more detailed study covering two decades (1980–2000). This recent analysis shows the dramatic situation where Chinese science (from 924 papers in 1980 to 22,061 papers in 2000, i.e. rising by a factor of 23) and South Korean science (from 175 papers

in 1980 to 12,013 papers in 2000, i.e. rising by a factor of 68) have been rocketing to great heights. All this while Indian science (from 14,983 papers in 1980 to 12,127 papers in 2000) has actually been dipping down.

These are simple measures based on quantity alone. My fear is that if a quality evaluation is done, India's rank of 15 in 2000 would drop to something very low. Earlier, in 1995, I had cited Braun *et al.*<sup>3</sup> to show that such a quality measure based on citation impact indicated that although India had ranked ten among 173 countries, when the ranking was done using percentage share in the world publication output in 1985–1989, its rank

plummeted to 70 when ranking was done using the mean observed citation rate as a percentage of the world average.

1. Prathap, G., *Curr. Sci.*, 1995, **68**, 983–984.
2. Arunachalam, S., *Curr. Sci.*, 2002, **83**, 107–108.
3. Braun, T., Glanzel, W., Maczelka, H. and Schubert, A., *Scientometrics*, 1994, **29**, 299–334; **31**, 3–30.

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## Palaeontology needs immediate attention

Mukund Sharma (*Curr. Sci.*, 2002, **82**, 913–917) has highlighted the decline of interest in palaeontology, which is an interdisciplinary science requiring the attention of biologists and geologists. Since few workers collaborate in this area in India, the work fails to achieve international standards of research.

India has rich deposits of fossils and if serious workers join palaeontological research, they can obtain valuable information for evolutionary biology, palaeo-environment, stratigraphy, hydrocarbon sources, etc.

As our country lacks the expertise in identifying various groups of fossils for example, benthonic marine algae, we have

to approach European and other American workers for taxonomic and other problems.

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