Standards of science publication

A lot has been written in recent years about the high cost of mathematics books and journals, policies of publishing conglomerates, and the problems of library budgets. The issue of falling standards of editing and refereeing too needs to be discussed more openly.

When research is practised by a large number of persons, there is bound to be a wide spectrum of standards in research publications. Even so, should we have highly priced journals from major publishers whose editors routinely accept papers for which undergraduates at their own universities are likely to be failed? If you think I am exaggerating, read the following first paragraph of a paper in a standard best-selling journal from one of the big publishers:

'Let $A = (a_{ij})$ be an $n \times n$ symmetric matrix with all positive entries. Then the Hadamard inverse of A, given by $A^{\circ(-1)} = (1/a_{ij})^n_{i,j=1}$ is positive semidefinite, and the Hadamard square root by $A^{\circ 1/2} = (a_{ij}^{1/2})^n_{i,j=1}$ [2].'

A good undergraduate student will take a few seconds to 'disprove' the first assertion, and then be left wondering what the last part of the paragraph means.

Let me assure you I did not pick out *one* bad part of *one* bad paper from this journal.

As another example, I reproduce the first paragraph from a book (240 pages, 90 euros) by another major publisher. (The book has been translated into English, and one reason the publishers give for the high price is the 'value addition' they provide through translation, copy-editing, editing, designing, etc.)

'The statistical theory of the linear regression analysis (Borovkov 1984, 1984a, Cox and Hinkley 1974, Draper and Smith 1981, Demidenko 1981) offers the most spread method of parameter estimation. Consequently, naturally rushing to compare results of own researches to the results obtained with the help of the classical theory. It causes to devote the first paragraphs of the given chapter to a summary of the basic part of this theory to accent its merits and demerits, moreover with the purpose to have a possibility to apply some specially obtained outcomes in the further account. The material of the chapter, for brevity, we explain in language of the matrix theory.'

This paragraph is typical of what the book offers. For example, another para in the middle of the book reads:

'Apparently from previous, the problem in such aspect is easy enough for putting, but uniform computing process as in regression model, already is not present. So development of such approach any more so is interesting as does not leading to use of already available program package as it takes place in the regression analysis where can be used the same standard program....'

Here are some questions that these publications raise. Did the editors read these paragraphs and find them worth publishing? What are their responsibilities to their readers and publishers? Customers often return bad products to sellers. Can libraries return such products bought in good faith? What fraction of research publications is of a quality comparable to that of my two examples?

RAJENDRA BHATIA

Indian Statistical Institute,
7, S. J. S. Sansanwal Marg,
New Delhi 110 016, India
e-mail: rbh@isid.ac.in

Hirsch Index: A new measure for assessing scientific productivity of an individual researcher

The Impact Factor (IF) is a quantitative measure based on citation counts. It is used for assessing productivity of an individual researcher and for rating research journals. The recent letters in *Current Science*[1,2] deal with citation counts of papers and IF of research journals from India. For assessing the productivity of an individual researcher, a new measure, known as Hirsch Index (*h*-index) has been formulated by Hirsch[3] of the University of California, San Diego in 2005. The original aim was to quantify an individual's scientific research output. According to Hirsch, 'a researcher with index *h* has *h* papers with at least *h* citations'. In other words, *h* is the highest number of

papers a scientist has, that have each received at least that number of citations. For instance, if a researcher has written 50 papers, 30 of which have achieved 30 or more citations, his or her *h*-index is 30. In order to find the *h*-index, one needs a list of all papers fulfilling the criteria under investigation. This list must be numbered and ranked by decreasing citation counts.

A combination of IF and *h*-index has advantages in assessing research productivity of an individual researcher over the one solely based on IF, in that the combination provides a multidimensional perspective, while the one provided by IF taken alone, remains one-dimensional.

1. Arya, A., *Curr. Sci.*, 2007, **93**, 1468.
2. Menezes, R. G. *et al.*, *Curr. Sci.*, 2007, **93**, 1467.
3. Hirsch, J. E., *Proc. Natl. Acad. Sci. USA*, 2005, **103**, 16569.

S. L. SANGAM[1,*]
R. M. GIRJI[2]

[1]*Department of Library and Information Science, and*
[2]*Department of Anthropology,*
Karnatak University,
Dharwad 580 003, India
*e-mail: slsangam@yahoo.com