A defence for non *SCI* and IF publications

The quality of scientific journals and papers is consistently discussed in *Current Science*. Scientific papers appear in journals, seminar proceedings volumes, commemorative volumes, special theme-based volumes and review volumes, etc. and are published with or without review. Journals could be divided on the basis of periodicity, review procedure of papers, circulation level and printing quality. *Scientific Citation Index* (*SCI*) and Impact Factor (IF) are two prevailing criteria reflecting the standard of publication. Publications in journals of high IF are tough. They are very compact in language but valued very highly, as the submitted papers are based on large data sets generated by sophisticated instruments; the presentation is thorough; they contain good photographs and latest references; free from language errors; and follow a set pattern of interpretation based on certain standard parameters. But they take a long time for publication in hard format. The scrutiny of papers is discouraging for many who cannot fulfil the required standard.

The cost of international journals, increasing in number, is very high. Only a few institutions can afford them, that too, as a part of the field-specific list. Thus, accessibility to these leading journals either in hard or soft copies is restricted to only a small band of workers.

It is also untrue that all papers published in these journals always report new findings or new concepts/principles/ideas, as fundamental discoveries are not being made every day. For example, many journals are exclusively devoted to cancer and diabetes but permanent cure is still elusive despite the fact that research in such fields is lavishly funded. While most of the Indian journals published from India by Indian publishing setups are affordable by libraries as well as interested individuals, only a few find place in the list of *SCI* and IF.

One ethical question arises why those scientific papers which appear in the journals of high IF are valued high? What is the value of those publications which are not printed in the elite club of journals? Ideally, papers should have unpublished, authentic data which are properly interpreted and well presented. Researchers working in disadvantageous setups have to compromise with the situation at every level, right from research initiation to final publication level. Despite the odds, they like to discharge their duty/commitment and to satisfy their intellectual urge.

If one cannot afford costly generation of data and presentation and work in available conditions, does that mean the research is substandard? It is often argued that the presented data may lack authenticity. Frauds and plagiarisms in publications are also exposed time to time at every level of publication. The aim of research should be to encourage the person to pursue the advancement of the subject, not to discourage the person on account of poor data sets and quality of journals. As long as one does acceptable level of work, his/her contribution should be duly recognized considering the existing limitations.

One is also baffled as to why papers published in 'non standard' journals are not considered as papers. A system should be evolved wherein every published work is quantitatively and qualitatively assessed with due weightages to each category of publications and nature of the person's work, be it simply expressions of opinions to review papers to book-writing. Journals/volumes can be rated on agreed criteria. There should be a proper moderation procedure. The combination of these two will give the correct position of a publication. The score achieved by an individual in a block of years will provide that person's contribution in his/her field.

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The decline of the West

Nearly a century ago, Oswald Spengler predicted the decline of western civilization[1]. Data from the recently rolled out 2010 report of Science and Engineering Indicators (SEI) (http://www.nsf.gov/statistics/seind10/) allows us to examine the civilizational condition of various countries, regions and economies using the scientometric and economic data that has been painstakingly compiled in SEI 2010 (http://www.nsf.gov/statistics/seind10/).

Appendix table 5-25 compiles science and engineering articles in all fields, by region/country/economy for the period 1995–2007 using a fractional count basis (http://www.nsf.gov/statistics/seind10/append/c5/at05-25.xls). Appendix table 6-2 arranges the nominal GDP, again by region/country/economy for the period 1992–2007 in terms of billions of current dollars (http://www.nsf.gov/statistics/seind10/append/c6/at06-02.xls). These data can then be collated as shown in Table 1 here (only the period 2001–07 is shown) so that the world share of publications can be plotted against the world share of nominal GDP. It is not entirely unexpected that there is good correlation between these two indicators – the higher the share of GDP, the higher the S&E output and this is captured in Figure 1. The diagonal in Figure 1 (indicated by the red solid line) is the line of perfect slope and correlation between the economic and scientific shares of the respective world output. Borrowing a boxing metaphor, regions, countries or economies can be seen to be punching in the scientific stakes above or below their economic weights.

Figure 1 shows the trajectories of the various regions and countries over the period 1995–2007. USA, EU and Japan are in perceptible decline. The US ascendance reached a tipping point in 2001 when both its economy and scientific output began to decline relative to global output. From 1995 to 2001, while it gained in economic strength relative to the global economy, its share of scien-

Table 1. A compilation for the period 2001–07 from appendix table 5-25 and appendix table 6-2 of science and engineering articles in all fields, and the nominal GDP in terms of billions of current dollars from SEI 2010 (http://www.nsf.gov/statistics/seind10/)

	Region	2001	2002	2003	2004	2005	2006	2007
Nominal GDP, by region, country or economy during 2001–2007	World	31,741.7	32,987.4	37,117.3	41,821.3	45,179.3	48,863.3	54,583.8
	EU	8,509.3	9,295.7	11,323.4	13,023.7	13,586.6	14,490.6	16,691.9
	EU (%)	26.81	28.18	30.51	31.14	30.07	29.66	30.58
	US	10,128.0	10,469.6	10,960.8	11,685.9	12,421.9	13,178.4	13,807.6
	US (%)	31.91	31.74	29.53	27.94	27.49	26.97	25.30
	Japan	4,097.5	3,924.5	4,232.2	4,609.2	4,557.5	4,362.1	4,379.0
	Japan (%)	12.91	11.90	11.40	11.02	10.09	8.93	8.02
	China	1,491.4	1,617.7	1,799.5	2,097.5	2,413.9	2,848.2	3,487.8
	China (%)	4.70	4.90	4.85	5.02	5.34	5.83	6.39
	India	483.0	504.9	591.3	695.0	811.9	915.0	1,139.9
	India (%)	1.52	1.53	1.59	1.66	1.80	1.87	2.09
	Rest	7,032.5	7,175.0	8,210.1	9,710.0	11,387.5	13,069.0	15,077.6
	Rest (%)	22.16	21.75	22.12	23.22	25.21	26.75	27.62
S&E articles in all fields during 2001–2007	World	629,355.0	638,381.0	661,723.6	688,644.0	710,174.0	740,270.0	758,142.0
	EU	220,407.2	221,720.5	224,844.7	230,478.6	235,089.4	242,790.9	245,851.6
	EU (%)	35.02	34.73	33.98	33.47	33.10	32.80	32.43
	US	190,592.6	190,496.1	196,431.6	202,084.3	205,516.3	209,237.2	209,694.7
	US (%)	30.28	29.84	29.68	29.35	28.94	28.26	27.66
	Japan	4,097.5	3,924.5	4,232.2	4,609.2	4,557.5	4,362.1	4,379.0
	Japan (%)	12.91	11.90	11.40	11.02	10.09	8.93	8.02
	China	21,134.1	23,269.1	28,767.9	34,845.6	41,603.6	49,574.6	56,805.8
	China (%)	3.36	3.65	4.35	5.06	5.86	6.70	7.49
	India	10,800.5	11,664.7	12,461.2	13,368.7	14,635.3	16,741.3	18,193.7
	India (%)	1.72	1.83	1.88	1.94	2.06	2.26	2.40
	Rest	130,338.9	134,884.1	141,990.0	151,331.4	157,827.5	167,470.2	174,700.5
	Rest (%)	20.71	21.13	21.46	21.98	22.22	22.62	23.04

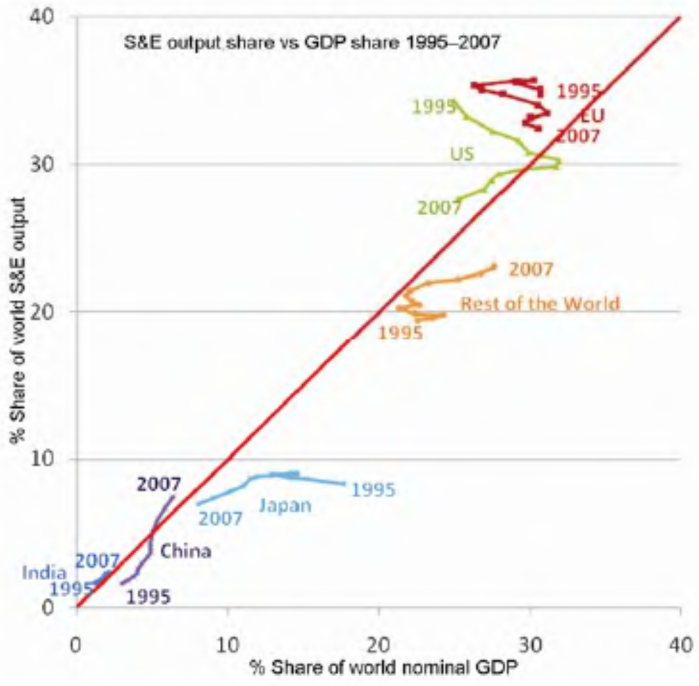

Figure 1. Trajectories of various regions and countries from 1995 to 2007 as world share of publications is plotted against the world share of nominal GDP – there is good correlation between these two indicators – the higher the share of GDP, the higher the S&E output. The diagonal (indicated by the red solid line) is the line of perfect slope and correlation between the economic and scientific shares of the respective world output. Regions, countries or economies can be seen to be punching in the scientific stakes above or below their economic weights.

tific output was declining slowly. From then onwards, both the share of economic output and scientific output has been in decline. Japan seems not to have recovered from the bursting of its economic bubble and has been in inexorable decline since 1995 at both the economic and scientific levels. The EU shows staggering steps in both directions in terms of its economic strength but recently, its share of scientific output has been in slow decline. In contrast, China, India and the rest of the world show steady progress. China continues to soar like a dragon while the Indian elephant stumbles along unhurriedly[2].

1. Spengler, O., *The Decline of the West* (eds Helps, A. and Werner, H.), Trans.: Atkinson, C. F., Oxford University Press, New York, 1991.
2. Prathap, G., *Curr. Sci.*, 2008, **94**, 1113.

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