That situation can change if we pump more funds into the universities and make sure that they are utilized efficiently. An example can be cited from the experience of Allahabad University in the past one year or so. Change of status from a state-funded to Central University has seen a rise in the number of students getting enrolled in the Ph D programme. A Central University has funds for providing stipend to research scholars, to develop good infrastructure and maintain the same. The condition of research is bound to improve in a few years as it has already in BHU and AMU. Government agencies should realize that without funds good research is not possible.

Since research institutes have been created by the Government to further the cause of research, they have to be supported by the Government. This should not be done at the cost of the universities. Just as in the case of reservation for scheduled castes and tribes, the Government would have to support universities without the expectation of any quick results. Research institutes should also be directed to work in harmony with the universities. Their infrastructure should not become the property of the scientists working there. There should be special arrangement of scholarships for research scholars in the universities like in the research institutes.

It would be worthwhile to conclude the discussion with a quote from the editorial in *The Hindu*[1], '... unfortunately in India the growth of research in national laboratories and scientific institutions has, for decades, occurred at the expense of universities. When a university department has the faculty and facilities for sound scientific research, it is usually able to attract the steady stream of good students. Urgent reform and upgradation of Indian universities and colleges, therefore holds the key to the country's ambition of becoming the scientific power house of the future...'.

1. *The Hindu*, Editorial, 8 January 2007, p. 10.

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Scientific productivity and citation of scientific papers: Where do we stand?

A country-based analysis of cited papers by Thomson Scientific, where countries have been rated in terms of citations received by their papers in the *WoS* in 1996–2006 is reported here. (The coverage of *WoS* currently stands at 8500+ journals across all disciplines in science.) The question asked was the following: How many papers authored by scientists of any country are in the top percentile (1%) of a list, where papers are arranged in decreasing order of citations received? (Papers constituting the top 1% of the list of papers arranged in decreasing order of citations received, will hereafter be re-

Table 1. Country ranks in *Web of Science* by percentage of papers in top 1% cited papers

Rank by productivity (papers)		Total papers, 1996–2006	Papers among top 1% most cited	Percentage of country's papers among 'Top Cited'	Rank by percentage of papers in top 1% cited papers
	Country				
1	The United States	2,907,592	54,516	1.87	1
2	Japan	790,510	5,662	0.72	9
3	Germany	742,917	9,427	1.27	4
4	England	660,808	10,090	1.53	2
5	France	535,629	5,967	1.11	6
6	China	422,993	2,189	0.52	10
7	Canada	394,727	5,301	1.34	3
8	Italy	369,138	3,825	1.04	7
9	Spain	263,469	2,155	0.82	8
10	Australia	248,189	2,804	1.13	5
11	India	211,063	694	0.33	13
12	South Korea	180,329	929	0.52	11
13	Taiwan	124,940	550	0.44	12
	Regions				
1	Americas	2,907,592	59,817	1.81	1
2	Europe	2,571,961	31,464	1.22	2
3	Asia	1,729,835	10,024	0.58	4
4	Oceania	248,189	2,804	1.13	3

Source: King, C., *Science Watch*, May/June 2007, 18(3).

ferred to as the 'Top Cited' list.) The results of the analysis are summarized in Table 1. The same countries grouped into regions are also shown in Table 1.

Among the 13 countries selected for the study, the United States published the largest number of papers, and also had the largest number of papers in the top 1% of cited papers, with 1.87% in the 'Top Cited' papers list. Among the countries with more than 1% of their papers in the Top Cited list were England (1.53%), Canada (1.34%), Germany (1.27%), Australia (1.13%), France (1.11%) and Italy (1.04%).

All the Asian countries (including Japan which was ranked second in terms of papers published) had less than 1% of their papers in the Top Cited list. In terms of rank by percentage of their papers in the Top Cited list, the Asian countries were at 9 (Japan), 10 (China), 11 (South Korea), 12 (Taiwan) and 13 (India); whereas their corresponding ranks in terms of papers published were 2 (Japan), 6 (China), 11 (India), 12 (South Korea) and 13 (Taiwan).

From the analysis it appears that language plays a part in citations received. Relatively speaking, more papers from English-speaking countries make it to the Top Cited list. Countries that improved their ranking from the 'papers published' list (Column 1, Table 1) to the 'top cited' list (Column 6, Table 1) by at least two positions were England (two places), Canada (four places) and Australia (five places). European countries whose ranks fell by one position between the two lists were Germany and France, while Italy and Spain improved their ranks by one position each. Ranks of all Asian countries fell by 2–7 positions (if we neglect a change of rank by a single position for Taiwan and South Korea).

India ranked 11th in terms of papers, and 13th in terms of percentage of papers in the Top Cited list among 13 countries. Unfortunately, in spite of the language of higher instruction being English, and practically all publications by Indian authors in the *WoS* likely to be in English, India has the lowest proportion of papers in the top cited list. Some introspection and action are urgently required.

1. King, C., *Science Watch*, May/June 2007, **18**.

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Closing the digital divide under different initial conditions

The recent evidence that the digital divide between rich and poor countries has been declining, was greeted with general enthusiasm by those who are concerned with the potentially negative effects on the latter countries, of lagging continuously behind the former. The emphasis given to these new data by a number of international organizations led to widespread coverage in the media and a sense of optimism about the future, on the part of numerous observers[1]. Indeed, some of them went so far as to argue that 'The most stunning feature of the divide is not about how large it is, but how rapidly it is closing'[2]. In this note by contrast, I view the narrowing digital divide as something that was almost inevitable under the circumstances, rather than as an event of great moment. I suggest furthermore that the pace of the decline is heavily rooted in the extent of the difference in initial conditions between the two groups of countries. In particular, what the existing literature fails to take into account is the bias conferred on countries whose growth in Internet use begins from an extremely low base. The purpose of this note, accordingly, is to correct for the bias and thereby provide a more balanced perspective on how the digital divide has been closing.

Figure 1 shows Internet users per 100 inhabitants for developed and developing countries[3] over the period 1994–2004.

Measured as the ratio of users in the former (rich country) divided by those in the latter (poor country), the digital divide declined from 73 in 1994 to 8 in 2004. Note, however, that the rapid convergence in this sense occurred from a large difference in initial conditions. Whereas, the developed countries began the period from 2.18 users per 100 inhabitants, the corresponding figure for developing countries was only 0.03. When one takes this difference into account, some decline in the digital divide is almost inevitable. For, from that minute initial level, developing countries would only have needed an increase in the number of users to 0.7 per 100 inhabitants in order to achieve the same percentage growth that occurred in the developed countries over the entire ten-year period shown in Figure 1 (that is, an average of 237% per annum). And in judging the speed of the decline (from 27 to 8), one needs again to take into account the major difference in initial conditions between the two groups of countries.

One way of eliminating this difference is to ask how long it took the developed countries to reach the level of 2.18 users per 100 habitants (by 1994) and compare that amount of time with the six years taken by the developing countries to reach the almost identical figure of 2.1 in the year 2000. Evidence for this is unfortunately rather scant, but if one accepts the commonly held view that the Internet began in the early 90s in the rich countries, then these countries took only half the time needed by the poor countries to achieve the use level mentioned above. The growth rate, that is to say, was roughly twice as high in the former than the latter. Logically, the next way of removing the low-base bias is to start at 2000, the year in which developing countries as a whole reached the starting point of 2.18 users per 100 inhabitants in the developed countries. Between 2000 and 2004, the number of users had increased by slightly more than threefold in the developing countries, as against the eightfold increase achieved for the four years, 1994–1998, in the rich countries. Yet another way of looking at the issue is to examine the growth paths of developing countries with Internet use equal (or close) to 2.18, the level which developed countries had reached by 1994. As shown in Table 1, five countries matched this requirement and their Internet use per 100 inhabitants grew from 2.17 in 1999 to 12.8 in 2005. For their part the developed countries had reached the level of 30.7 over the same number of years after 1994 (see Figure 1).

Translated into differences in average growth, the figures are 82 and 218% for developing and developed countries respectively. (Much the same result holds when a different group of five develop-