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Europe as third world: U.S. perceptions of Continental science *

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After considering the relative amounts of money and numbers of people involved in R&D in both Europe and the United States, the paper analyses the contents of those major European scientific publications intended for the general public and the contents of comparable American magazines and newspapers. Both the type of stories covered and the source of information are examined. The comparison shows a discrepancy in the reporting; while there is much emphasis in the European press on U.S.-based stories, many major European projects are ignored by the United States media. The paper attempts to determine the reasons for this disparate coverage.

Science in Europe and in America

What images do Americans have of Europe?

For most of the general public, France is the country of wine, cheese, and croissants, of *grands couturiers* and Renaissance castles. Similarly, Americans are aware of the Chianti, churches, and modern design of Italy. The British are famous for fixing tea and mowing their lawns. Spain conjures up images of bullfighting and castanets. Germany, beer and oompah music. And, sadly, nowadays, Europe is seen as a place plagued by terrorism. But, does the American public ever think of Europe—that funny old continent back East—as a centre for research?

In fact, the amount of research being done in Europe compares quite favourably with that done in the United States.

Figures published at the end of April 1986 by the Organization for Economic Cooperation and Development (OECD) show that the 10 EEC countries—France, United Kingdom, Germany, Italy, Belgium, Ireland, Denmark, Netherlands, Greece, and Luxemburg—together spend on research about two-thirds of the amount spent by the U.S. Moreover, the number of scientists working in these EEC countries also represents two-thirds of the number working in the U.S. In 1983, for example, the U.S. spent about $50 billion for research and development, while the 10 EEC countries spent about $31.2 billion. (If we add the research budgets of European countries that were not part of EEC in 1983—Spain, Sweden, Finland, Austria, Switzerland, and Greece—the total European R&D budget is closer to 80 percent of the U.S. R&D budget.) Also, in 1983, there were approximately 460 000 researchers in the EEC, about two-thirds of the 720 000 scientists in the U.S. during the same year (Table 1).

How good is the research done in Europe compared to that done in the U.S.? Quality is very difficult to measure, of course, but one indication is the number of Nobel Prizes and Fields Medals, the two most prestigious international awards in science, won by scientists in the U.S. and Europe, respectively (Table 2).

Since 1945, American scientists have received 50 percent of the Nobel Prizes in chemistry, medicine, physiology, and physics; European scientists received 41 percent. For Nobel Prizes, then, the award distribution has been about the same order of magnitude on both sides of the Atlantic. On the other hand, European scientists have received more Fields Medals, the awards given every four years for excellence in mathematics.

Analysing international science coverage

A report from the National Science Foundation (*Science Indicators: 1985*) published in January 1986 presented the contradictory finding that American people have high levels of interest in science and technology but that they don't know much about it. Of course, if they don't know much about American science, they probably know nothing about European science. And the main reason is that European science is not very often mentioned in American popular science press.

I first noticed this phenomenon when I was living in the U.S. as the American correspondent for my magazine, but I had no figures to prove it. Thus, I decided to take a closer look at some major science publications, both in the U.S. and in Europe, to get some statistics that would provide quantitative data supporting my qualitative judgment.

In each article of each publication selected for analysis (Table 3), I simply counted how often European science was mentioned as compared with U.S. science and non-U.S./non-European science, e.g., Japan, India, Israel, etc. (When I say 'European science', I mean all the Western European countries, not just members of the EEC.)

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Table 1
Research and development resources: US vs. Europe

	R + D Spending			Scientists		
	% 1975	% 1981	% ($ billions) 1983	% 1975	% 1981	% 1983
USA	47.5	46.3	46.1 ($50)	40.4	41.8	41.0
EEC	30.8	29.6	28.7 ($31)	26.5	25.4	25.3
Japan	13.5	16.1	17.4 ($19)	24.3	24.0	24.8
Others	8.2	7.9	7.8 ($8.5)	8.7	8.8	8.9

(Source: Organization for Economic Cooperation and Development, 1986.)

I divided the stories into three categories: features (articles longer than 2 pages), news (shorter than 1 page), and 'short stories' (between 1 and 2 pages).

Every time the name of a specific researcher or laboratory was mentioned, I counted '1' for the part of the world represented. I counted '0' when the name of a country alone was given, e.g., "In Great Britain, people are working on that problem...". When articles concerned science policy, I counted '1' for every country mentioned. For example, if the article dealt with an agreement between Germany and the U.S., I counted '1' for Europe and '1' for the U.S. Actually, this methodology underestimates the true weight for the United States. For example, an article entitled 'Fuzzy Logic' published in *Discover* (February 1985) mentioned seven American labs and one European lab. In my charts, however, this appears as one for the U.S. and one for Europe. If I had counted 1 per lab and not 1 per country, the results would have been even higher for the United States, and, consequently, the difference between the U.S. and Europe even greater.

The primary results of my analysis were striking, but perhaps not unexpected (Table 4). In American monthly scientific magazines, there is a very strong emphasis on American science, particularly in the 'news' category, where 92 percent of the space is devoted to U.S. science and only 9 percent to European science. In the 'short stories' category, the difference is even greater, only 3 percent of these articles mentioned European science. Only in the longer articles does the percentage improve, with the European share rising to 22 percent.

For U.S. and United Kingdom weekly magazines, the figures are very much the same (Table 5). Again, the discrepancy is most extreme in the 'news' category. U.S. magazines: 93 percent about U.S. science, 9 percent about Europe; U.K.

Table 2
Awards and recognition: U.S. vs. Europe

	USA & Canada	Europe	non-US/non-Europe
Nobel Prizes (1945 - 1985)			
Chemistry	27	30	4
Medicine & Physiology	50	40	4
Physics	39	26	13
Total	116	96	21
Field medals (1936 - 1982)	11	12	4

Table 3
Magazines analysed

	Title	M/W	Size of sample	Circulation
USA	Discover	M	1 year 1985	850000
USA	Science 85	M	1 year 1985	700000
USA	Science News	W	6 months '85	175000
USA	Science	W	6 months '85	160000
USA	NY Times (Tuesday Science Section)	W	4 months '85	963300
France	Science & Vie	M	1 year 1985	400000
France	Ca m'interesse	M	1 year 1985	320000
France	Science & Avenir	M	1 year 1985	150000
Spain	CONOCER	M	1 year 1985	70000
UK	New Scientist	W	6 months '85	70000
UK	Nature	W	6 months '85	32000

M = monthly, W = weekly.

Table 4
Content analysis: U.S. Monthly vs. European Monthlies

	Features (> 2 pp.)	News (< 1 p.)	Short Stories (1-2 pp.)
USA Monthly	183	259	108
USA & Canada	171 93%	238 92%	96 89%
non-USA/non-Europe	21 11%	11 3%	4 4%
Europe	41 22%	23 9%	3 3%
France Monthly	390	659	127
USA & Canada	183 47%	191 29%	40 31%
non-USA/non-Europe	78 20%	114 17%	9 7%
Europe except France	100 26%	75 11%	40 31%
France	300 77%	279 42%	78 61%
France Monthly	136	147	60
USA & Canada	41 31%	34 23%	4 6%
non-USA/non-Europe	20 15%	15 10%	3 5%
Europe except Spain	56 41%	21 14%	7 12%
Spain	43 32%	77 52%	13 22%

Note: Percentages do not total 100%, because U.S. Science is often mentioned in context with that of other countries.

Table 5
Content analysis: U.S. Weekly vs. U.K. Weekly

	Features (> 2 pp.)	News (< 1 p.)	Short Stories (1–2 p.)
U.S. Weekly	79	484	39
USA & Canada	75 95%	452 93%	39 100%
non-USA/non-Europe	10 13%	23 5%	9 23%
Europe	24 30%	44 9%	6 15%
U.K. Weekly	61	918	146
USA & Canada	36 59%	339 37%	75 51%
non-USA/non-Europe	13 21%	168 18%	30 21%
Europe except UK	29 47%	193 21%	38 26%
UK	39 64%	398 43%	83 57%

magazines: 43 percent about U.K., 37 percent about U.S. science. Actually, the British weekly science magazines are comparable to the French and Spanish monthly magazines in their broader coverage of European activities.

The unexpected feature I did discover was that neither U.S. nor European magazines print much about what is happening scientifically elsewhere in the world. American science journalists write almost exclusively about America. European journalists write about their own countries and about the U.S., but little about their European neighbors and even less about Japan, Israel, China, etc. However, the European coverage of other European countries or non-U.S./non-European countries is certainly not as low as that in America. European journalists generally write more about 'foreign science' than do U.S. journalists.

American perceptions of 'foreign' research

Equally interesting perhaps is how U.S. journalists perceive research abroad. European science is mentioned in the U.S. scientific press primarily in five instances:

(1) As an historical reference: Pasteur, Freud, Darwin, Broca, Bohr, Fleming, etc. It seems as if we are considered countries of the past, with all our scientific glory behind us.

(2) When there is a strong competition with the U.S.: Gallo/Montagnier in AIDS research, CERN/Fermi in nuclear physics, and ESA/NASA in space.

(3) When American scientists (or the Administration!) want us to participate in the financing of 'joint' projects. A story about the SSC (Superconducting Super Collider) to be built at Stanford may mention all European machines of a similar kind—the electron-positron collider (LEP) in Geneva, the positron-electron collider in Germany, etc.

(4) When research is done 'jointly' by U.S. and European scientists. Of course, very often, both the names and the affiliations of the American researchers will be mentioned, while the individual European scientists remain anonymous, with only their labs cited.

(5) When there is an international conference *in the U.S.*—where some European scientists might be attending.

Some missed opportunities

This attitude means that many important stories about European science are not reported in the American popular science press. For example, the following are some major stories either ignored or not really well covered in 1985 by the magazines I surveyed.

(1) SPOT: This Earth-observation satellite has a resolution 10 times better than Landsat and its stereoscopic system allows 3-D pictures of the Earth below. SPOT will probably take over a large share of the civilian Earth-observation business, since its pictures are better and it will be functioning during the period from March 1987 to December 1988 when the Landsat program will be interrupted. (Only *Science News* mentioned this programme in 1985.)

(2) TELETEL Programme: Set up by the French Ministry of Telecommunications, this programme is designed to give free videotex terminals to every household in France. Today, more than 1.8 million homes have received terminals and have access to more than 2000 databases. Many of these databases are available without subscription (lists of restaurants, cinemas, exhibitions, etc.), with the only cost that of the time you are connected. During just the first two months of 1986 the TELETEL services received 35 million telephone calls, representing 3.8 million connect-hours. The benefit for the Ministry of Telecommunications, of course, is in the increased use of the telephone lines. Indeed, TELETEL is so successful, the videotex network is sometimes saturated.

(3) KAIKO Project: This Franco-Japanese ocean floor expedition in June and July 1985 had as its goal the exploration of the Earth's crust 6000 metres below sea level. Using the *Nautile* submarine, scientists explored the very sensitive area where the Pacific tectonic plate dives under the Eurasia Plate. They discovered that water full of methane was percolating continuously through the subduction zone; and, by following the path of this water, they were able to trace precisely the rift in the ocean floor. In addition, they discovered three new species of bivalves.

(4) Alvey and ESPRIT Programmes: both the U.K.'s Alvey programme and the EEC's ESPRIT programme are advancing fifth-generation computing, and both are seen as European answers to the Japanese ICOT programme and the host of American projects—SCS (Strategic Computing and Survivability), Dapra, SRC (Semiconductor Research Cooperative), and MCC (Microelectronics and Computers Technology Corporation). The scope of ESPRIT is impressive: In 1985, 263 European companies, 104 universities, and 81 research centres participated.

(5) EUREKA Programme. This series of international collaborations between European countries was launched in July 1985 to produce high technology products. So far, 10 projects have begun and 50 more will have been chosen in June 1986 at the Eureka meeting in London.

(6) JET Programme: The Joint European Torus (JET) Programme on magnetic fusion is equivalent to the Princeton TFTR project and is one of the most powerful machines of its kind in the world. Yet I have read American articles on fusion where this Tokamak was not even mentioned.

The causes of neglect

Obviously, Europeans are pursuing exciting, solid science. Why, then, is European science ignored by U.S. science journalists?

I think there are several reasons, all playing some part and some really predominant.

(1) *The Language*: The main reason is perhaps language. Almost every European science journalist is able to read English, and almost every European science magazine subscribes to American scientific journals. *Science et Vie*, for example, receives magazines ranging from *Time* and *Newsweek* to *Mosaic, Technology Review, Harvard, High Technology, Psychology Today, JAMA, Science, Aviation Week, Chemical Week, Bulletin of Atomic Scientists, Byte*, and so on, for a total of at least 30 American publications. Moreover, at magazines like *Science et Vie*, everybody speaks English and is usually able to read at least one language (German, Italian, Russian, Spanish, etc.). I am not sure this is the case for U.S. journalists. Indeed, I think few U.S. science journalists read the European scientific press, primarily because they are not able to understand the language.

But language is not the only reason. If it were, I would have seen a predominance of news from the United Kingdom, Canada, or Australia in the U.S. magazines. There is a slight preference for such news, but it is not significant.

(2) *Organization of the scientific press*: Many European magazines have correspondents in the U.S. We have one in New York who buys books and photos and orders technical reports and scientific papers. We also have one in Japan.

The *New Scientist* has a correspondent in the U.S.; *Nature* has several in Washington and one in Japan, as well as drawing on the resources of part-time journalists in various countries. Indeed, *Nature* probably does the best job of covering international science. How many U.S. science magazines have European correspondents? Only one—*Science*!

(3) *The 'best in the world' syndrome*: Because the U.S. is the richest and the most powerful nation in the world, it tends to consider what other countries are doing in science as not really worth mentioning. One time, when I accused the editor-in-chief of a major American science magazine of being very chauvinist, he answered: "That's what our readers want". I don't think he was right; people are interested in the increase of knowledge, not where that knowledge came from.

(4) *The techniques of science writing*: In American journalism, people are quoted much more often than they are in the European popular scientific press. Obviously, to quote people, you have to interview them. And, how can you interview people, if you don't speak their language?

(5) *The organization of European scientific public relations*: When I was in the U.S., I admired the organization of universities, research centres, and industrial concerns. The smallest company, the tiniest research centre, had a public relations officer who sent out press releases all over the world. Even today, based in France, I still receive releases, reports, and full blown magazines from NSF, NRC, Stanford University, Los Alamos, Lawrence Livermore Lab, MIT, Caltech, etc. I don't know of any French universities or research centres—even CNRS (National Centre for Scientific Research)—which send press releases to U.S. journalists. Worse yet, most French universities have no public relations office. In Europe, we simply are not public relations oriented. Of course, information about science in any European country is available by calling the Scientific Attachés at the various embassies; but, the journalist must make the move. And, very often, the attaché does not know the answer right away. European countries really must do more to promote their own science.