correspondence

On science and English

In their recent Viewpoint, 'Is there science beyond English?', Rogerio Meneghini and Abel Packer discuss the dominance of English in scientific journals and the language barriers facing non-English-speaking scientists (Meneghini & Packer, 2007). However, if we go back a mere 100 years, the title of the essay could easily have been 'Is there science beyond German?'.

In *Einstein's German World*, historian Fritz Stern wrote, "It was in April 1979 in West Berlin. Raymond Aron and I were walking to an exhibit commemorating the centenary of the births of Einstein, Max von Laue, Otto Hahn, and Lise Meitner. We were passing bombed-out squares and half-decrepit mansions of a once proud capital, our thoughts already at the exhibit, when Aron suddenly stopped at a crossing, turned to me, and said, 'It could have been Germany's Century.' Aron, French scholar and Jew who had studied in Berlin in the early 1930s and had seen German promise turn to nemesis, mused on what might have been" (Stern, 1999).

If there had been no world wars, German scientific achievement might possibly have

continued to flourish in the twentieth century. The names of David Hilbert, Albert Einstein, Max Planck, Emil Fischer, Fritz Haber, Robert Koch and Rudolf Virchow would loom even larger, and German would probably have become the *lingua franca* of science—or rather, *Naturwissenschaft*.

Most of the ground-breaking and classic papers in quantum physics were published in German. During the dawn of quantum physics, almost all non-German-speaking physicists—for example, Hideki Yukawa and Sin-Itiro Tomonaga in Japan, and Lev Landau in Russia—had to master the language to read the original literature. This is also highlighted by an unusual episode between Einstein and Bengali Indian physicist Satyendra Nath Bose, whose name was later honoured in such physics terms as Bose–Einstein statistics, Bose–Einstein condensate and boson. In 1924, Bose sent a manuscript to Einstein and asked for his help in publishing it. Einstein recognized its significance and translated it into German, facilitating its publication in the journal *Zeitschrift für Physik* that year. It is very unlikely that today's scientists would find an Anglo-American colleague to act as a translator as Einstein did for Bose.

Last, but not least, when English became the *lingua franca* of science, it paid a price: it metamorphosed into what Dutch physicist Hendrik Casimir calls "broken English"—"a universal language that is spoken and understood almost everywhere". This is not pidgin English, but rather "the much more general language that is used by waiters in Hawaii, prostitutes in Paris and ambassadors in Washington, by businessmen from Buenos Aires, by scientists at international meetings and by dirty-postcard peddlers in Greece—in short, by honorable people like myself all over the world" (Casimir, 1983).

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doi:10.1038/sj.embor.7400946