Venezuela: the other side of the story

No political campaigning in public institutions, but free speech is manifest in e-mail debate.

Sir — As members of the board of directors of the Venezuelan Institute for Scientific Research (IVIC), we feel obliged to clarify the following points concerning the Correspondence letter "Venezuelan researchers call for international help" (*Nature* **421,** 473; 2003) by members of the Association of Investigators of IVIC (AsoInIVIC).

First, AsoInIVIC is a private scientific association of about 130 IVIC employees. The total number of IVIC researchers is 124, including 19 postdoctoral fellows. There are also 226 professional research associates, 201 postgraduate students, 242 general staff and 310 administrative support staff. Thus, AsoInIVIC members constitute only a small fraction of the approximately 1,100 people working and studying at IVIC. The sentiments expressed in their Correspondence do not represent the official opinion of IVIC, a public institution; rather, they are the exclusive opinion of AsoInIVIC, which is a private association.

Second, freedom of speech in IVIC is manifest, among other activities, by the intense exchange of internal e-mails, covering a vast range of subjects from personal to institutional. The laws and regulations concerning the expression of political ideas in Venezuela's public institutions allow the free expression of political opinions, but restrict political campaigns (proselytism). The distribution of the AsoInIVIC letter within IVIC is a regrettable example of unrestrained political proselytism. Equally regrettable is the lack of scientific spirit manifest in its many inaccuracies concerning both IVIC and some other public institutions, for example the Supreme Court of Justice and the ministries of Science and Technology, Environment, and Energy and Mines.

Third, December and January were months of high political activity in Venezuela. During this period a partial strike, difficult to distinguish from a partial lock-out, took place. As can be expected, this made it difficult to accomplish the scientific research that is usually carried out at IVIC. However, during this time most employees regularly attended and carried out their work.

Finally, it is widely known that the maintenance and development of scientific laboratories of a high international standard represents a considerable cost to our nation. This cost is particularly heavy in the current period of economic difficulty. Under such circumstances, we consider even more deplorable the misuse of our facilities and work time for political propaganda activities.

The board of directors of IVIC comprises seven members, five of whom are signatories of this letter. The other two members (the director and deputy director of IVIC) do not agree with the content, and consequently have not signed.

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Venezuela: crisis puts major institutions at risk

Sir — J. L. Cabrera *et al.* (*Nature* **421,** 786; 2003) and C. Mendoza *et al.* (*Nature* **421,** 473; 2003) present opposing views in their Correspondence letters about the amount that the Venezuelan government spends on promoting research and development. Although Cabrera *et al.* are correct to say this budget was higher last year than it was 10 years ago, their conclusions are based on inaccurate and misleading data.

A much better indicator is percentage of gross national product (GNP) dedicated to R&D. My analysis (see *Interciencia* **28,** 21–28; 2003) reveals a drop from 0.45% in 1990 to an all-time low of 0.26% in 2000, with a comeback to 0.43% in 2001. Going further back, history does not support the claim by Cabrera *et al.* of "continuous growth", but reveals a pernicious cycle.

Indeed, since 1990, there have been no significant increases in the percentage of the national R&D budget assigned to most of the main research areas: on average, 7.5% to the Venezuelan Institute for Scientific Research (IVIC), 18.7% for the research facilities of public universities, 21.5% for the Ministry of Science and Technology, and a small amount for other institutes. Meanwhile, the percentage for Intevep — the technology R&D centre of the state-owned oil company PDVSA — has grown from 30% to an average of 40% and rising: it received 55% in 2001.

Thus, the increase in R&D spending, as a percentage of GNP, to 0.43% — still not up to the 1990 level — is mainly due to increased funding for oil-industry research.

The comment by Cabrera *et al.* that "more than 60% of Venezuela's science budget comes from the government" suggests that the private sector may supply nearly 40%, but this is not the case. All the above organizations are publicly funded and constitute most of Venezuela's R&D.

However, I agree with Cabrera *et al.* that the current crisis will have a negative impact on this year's scientific activity and budget, because institutions have suffered cuts of 13–35%. Currency exchange controls will lead to the collapse of scientific institutions such as IVIC and its cherished library (*Nature* **421,** 682; 2003). And according to the newspaper *Ultimas Noticias* on 21 February 2003, 881 scientists and technologists from a workforce of 985 professionals at Intevep were laid off on 4 February, and its budget was slashed by three-quarters, leaving "only 10% dedicated to research".

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If atomic precision is unfeasible, so is life

Sir — Your Editorial article "Nanotech is not so scary" (*Nature* **421,** 299; 2003) attributes to me the idea of building devices that replicate "by manipulating atoms one at a time", and points out that several leading figures in nanotechnology research argue that this is unfeasible. As well they might. My proposal is, and has always been (see *Proc. Natl Acad. Sci. USA* **78,** 5275–5278; 1981), to build atomically precise structures by using molecular machinery to direct conventional chemical reaction events with sub-nanometre positional control.

If this is fundamentally unfeasible, then so is life. Thus, these critics are mistaking atomic precision for atom-by-atom manipulation, while failing to address the actual concepts analysed in the technical literature. These misdirected arguments have needlessly confused the discussion of genuine long-term safety concerns.

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Contributions, preferably less than 500 words long, may be submitted to **corres@nature.com**.