Nuclear weapons

I am writing this *apropos* Rajasekaran's letter 'Scientists against nuclear weapons', (*Curr. Sci.*, 1998, **75**, 000). While sharing Rajasekaran's concern about the issues raised by nuclear weapons, I would like to point out that when one talks about moral responsibility one is face to face with the ancient problem of values in the world of fact, and of how to prioritize values when the need arises.

Rajasekaran refers to Einstein. Einstein is, however, a good example of how an outstanding personality did not hold on to his values in an absolutist or fundamentalist fashion, and was not averse to prioritizing them. Up to the advent of Nazi power in Germany, Einstein was, as he called himself, 'a militant pacifist'. He was opposed to war as a means of resolving conflicts, and as such a member of several international war resistance movements; he was opposed to military preparedness and compulsory military service, and supported conscientious objection to it. The seizure of power by the Nazis in the heart of Europe, caused Einstein to abandon his support of war resistance and he began to advocate rearmament in the West – a radical departure from his previous views which appeared to him inescapable in the face of the mortal danger confronting the world. '... is one justified in advising a Frenchman or a Belgian to refuse military service in the face of German rearmament?' he asked. Also, '... so long as Germany persists in rearming and systematically doctrinating its citizens in preparation for a war of revenge, the nations of Western Europe depend, unfortunately, on military defence. Indeed, I will go so far as to assert that if they are prudent, they will not wait unarmed, to be attacked. ... they must be adequately prepared'[1] .

For his advocacy of the necessity of military preparedness, Einstein had to face severe attacks from pacifist friends. But Einstein had the moral strength to reverse himself in view of compelling circumstances. However, he never failed to distinguish between strategy and principle. As a matter of principle, he never wavered in his profound abhorrence of war, nor in his conviction that only the creation of a supranational organization would safeguard the peace of the world.

Einstein's role in persuading President Roosevelt, by a letter in 1939, to initiate a programme on atomic bombs, is well-known. Again, the spectre of atomic weapons being first developed and manufactured by Nazi Germany prompted him to take this step. He does not seem to have expressed regrets for this.

Coming nearer home, India for the last fifty years, has taken a large number of initiatives aimed at nuclear disarmament. They have been ignored or rebuffed by the five nuclear-weapon States. The nuclear weapons States have built up huge stockpiles of nuclear weapons, which, even after the reductions contemplated under START-II, will amount to about 20,000 warheads. They retain their Cold War 'weapons of last resort' doctrine that allows the first use of nuclear weapons if deemed necessary to cope with non-nuclear attacks on themselves or their allies, or to safeguard their vital interests anywhere. As recently as June–July 1998, when the statutes of the International Criminal Court were being framed, they opposed India's proposal that the use of nuclear weapons be made a war-crime, and threatened to boycott a court which had such a mandate. They have helped, connived at and encouraged nuclear weapon and missile proliferation in India's neighbourhood. They have refused to agree to any discussion of nuclear disarmament at the Conference on Disarmament (CD) at Geneva, and ignored the advisory opinion of the International Court of Justice in this regard. A move towards nuclear weapon-free world has yet to be accepted by them[2].

In this situation, what is a country like India to do? An individual may face death bravely for his absolute principles. Can a country, or those who have the responsibility for its security, take a purely moralist stand, on behalf of its people, and future generations? That is where the exercise of the nuclear option comes in.

India should continue in its efforts towards a nuclear-weapon-free world with undiminished vigour, while maintaining a minimal deterrence.

1. See, for example, *Einstein on Peace* (eds Otto Nathan and Heinz Norden), Schocken Books, New York, 1968, pp. 230–231.
2. For more details, see Udgaonkar, B. M., *India's Nuclear Capability, her Security Concerns and Recent Tests* (to be published)

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Impact factors

This has reference to the editorial on 'Citation counting and impact factors' (*Curr. Sci.*, 1998, **75**, 175). The writeup depicts clearly the current scene of the Indian science and the status of the Indian journals and is very thought-provoking. It is known fact that many Indian journals do not meet the standard set by SCI. Even those which secure a berth in the SCI category have their impact factors less than 0.5. The question is how are we going to improve this pathetic situation? Unless the impact factor is high, scientists do not wish to publish their work and unless good papers are published the impact factor is not going to go up. Its a catch 22 situation. Two suggestions were outlined: (i) to close down Indian journals, and (ii) compelling researchers to publish in Indian journals. It is also pointed out that 'somewhere,

in between, probably lies a reasonable course of action'. It may be a good idea that instead of taking pride in publishing our work in international journals, probably we can take a solemn oath that we will publish atleast half of our yearly publications (including good ones!) in Indian journals. In addition, inviting periodically leading researchers (from India and abroad) to contribute to a journal would enhance the visibility and creditability of the journal. Otherwise, carrying out special sections on hot topics, following the lines of *Current Science* may be a worthwhile exercise to enhance the impact factor. Unless some drastic measures are taken, there seems to be 'no' light at the end of the tunnel.

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C^{++} in schools

Recently, a friend asked me if I could help his ward with the C^{++} computer programming language. The boy was a student of class 10 + 2, studying in a school that offered Indian Council of Secondary Education course. A principal of a local school (affiliated to Board of Secondary Education) too wanted me to recommend a teacher for C/C^{++}. It was indeed shocking for me to realize that students were being taught a programming language that, in my opinion, was far above their calibre as well as not quite in conformity with their academic background.

What objective could possibly be served by offering such courses at the school level? Are the designers of preuniversity syllabi aware of the prevailing reality in schools and colleges?

When our educational planners introduced computer science courses in schools, they completely ignored the fact that this subject is not as basic as mathematics, physics and other conventional science subjects. A proper understanding of computer science demands an adequate background knowledge of the basic science subjects. In the name of computer literacy, we cannot introduce courses that are better suited to more mature students. Courses involving C/C^{++} are definitely not meant for + 2 students. Should we ignore the fact that these form part of the syllabi of MCA and B Sc/M Sc courses and there too the students often study these relatively late?

It is therefore debatable whether introducing computer science in schools is at all desirable. The fact that computers are finding a place in our everyday life is in itself not a sufficiently convincing argument. In this connection it must be observed that biotechnology and environmental science are equally useful and relevant but cannot be introduced in schools in the same way as they are introduced in universities.

Even if it be conceded that this subject needs to be taught in schools along with other basic sciences, one question remains to be answered. Is C^{++} the right programming language that can help a student to understand the principles of programming languages? Is it not true that the syntax of C^{++} cannot be said to be user-friendly and that even expert programmers admit that debugging for errors is much more difficult in C^{++}. Moreover, can we expect the students to grasp the concepts of data abstraction, concealment, objects and classes on one hand and pointers, dynamic memory allocation, etc. on the other hand?

Another serious practical problem related to this issue is finding adequately trained teachers for recruiting in schools.

Thus, it is up to the academic community of the country to decide whether the introduction of C/C^{++} at the + 2 level is an indicator of the wisdom and vision of our top educationists or whether it is a reflection of their intellectual bankruptcy.

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Facts about plague epidemic, 1994

The letter by P. T. Patel and H. P. Pandya (*Curr. Sci.*, 1998, **75**, 415) provides vital new information on one of the major lacunae in the sequence of events that led to the unfortunate episode of outbreak of pneumonic plague in Surat in 1994.

Yersinia pestis can be easily grown and identified in any standard microbiology laboratory. Therefore it is quite reasonable to accept that Patel and Pandya had indeed isolated and characterized *Y. pestis* from the sputum specimens of several persons with pneumonic symptoms, including the very first case admitted to the New Civil Hospital. Moreover, as stated by them this crucial piece of information corroborates with the report of the Technical Advisory Committee (TAC) which mentioned that stored cultures and sputum specimens were indeed available for investigation[1]. Though microbiologists do not usually store raw specimens, they do often store cultures of isolates according to text book procedures. Thus, Patel and Pandya do have a point about the veracity of the stored sputum samples: it is not difficult to get details on this issue, but it does not seem to me to be very important now. The TAC found the stored cultures to be contaminated and were not pure cultures and it was subculturing of these contaminated cultures which re-