

CORRESPONDENCE

cum, Leptadenia pyrotechnica, Crotalaria burhia, Glossonema varians, Blepharis indica, Caralluma edulis, Tribulus terrestris, Lasiurus indicus, Brachiaria ramosa, Cymbopogon sp. and Cenchrus sp. This oran also provides shelter to the chinkara and godavan (Great Indian Bustard). Hunting, felling of trees and agricultural practices are taboo in the holy land of oran. Minor forest produce such as fallen fruits are collected by local inhabitants. None of these are utilized for commercial purposes. Due to faith and sanctity, oran is free from encroachment and indiscriminate exploitation. There is no formal regulatory authority that imposes any type of legal control over the people of the region, but they

abide by natural laws. As rightly quoted by Luther Burbank, 'Nature's laws affirm instead of prohibit; if you violate her laws, you are your own prosecuting attorney, judge, jury and hangman'.

Orans are an oasis in the desert ecosystem that help in maintaining the fragile ecosystem of the Indian Thar Desert. Traditional approaches of biodiversity conservation should be recognized by the policy-makers. These practices must be integrated in the policies for better management of biodiversity in consultation with the local community.

1. Krishnankutty, N. and Chandrasekaran, S., *Curr. Sci.*, 2007, **92**, 1344–1345.

2. Dash, S. S., *Curr. Sci.*, 2005, **89**, 427–428.
3. Bala Ravi, S. and Parida, A., *Curr. Sci.*, 2007, **92**, 581–584.
4. Section 4(i) of Second Patent (Amendment) Act, 2002 declaring plants and animals and parts thereof as non-patentable subjects.

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Science: An extension of war by other means

Karl von Clausewitz famously defined war as 'an extension of politics by other means'. Amazon.com carries an editorial review of a recent book (*War, Science and Terrorism: From Laboratory to Open Conflict* by J. Richardson, Frank Cass, 2002), which describes the application of research to the evolution of weapons, and asks the question: Has science been allowed to become 'an extension of war by

other means'? In fact, in many countries a large proportion of R&D funding is linked to defence requirements.

In Table 1, I have compared some data of the total armed forces manpower committed to defence of some leading countries of the world, with the number of people who are engaged in R&D activities in the same country. The data for scientific manpower was taken from the

Human Development Report 2004, and is based on their estimate of the number of Full Time Equivalent Researchers per million people. This includes all scientists and not just those engaged in defence research. The strength of the armed forces is taken from an article in *Wikipedia* which gives a list of countries sorted by the total number of active troops where the military manpower of a country is measured by the total amount of active troops within the command of that country (http://en.wikipedia.org/wiki/List_of_countries_by_number_of_active_troops).

Japan is the supreme example of a nation that has turned Clausewitz's maxim on its head: it has realized that investing in scientific and industrial research is a long-term surrogate for war. Israel's place at the end of the table is not surprising, given the political exigencies of that region. However, it is clear that India needs to do a lot to come close to the average for these seventeen nations, a leverage of 0.51: in fact, it has to increase the strength of its scientific workforce fourfold.

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Table 1. Leverage ratio of scientists to armed personnel in some leading countries of the world

Country	Armed forces	Scientists	Leverage
Japan	239,000	680,000	2.85
Canada	62,300	98,000	1.57
Australia	53,572	69,000	1.29
Germany	284,500	260,000	0.91
Britain	187,970	161,000	0.86
USA	1,426,710	1,219,000	0.85
South Africa	55,750	44,000	0.79
France	259,050	165,000	0.64
Russia	1,037,000	500,000	0.48
Argentina	71,800	27,000	0.38
Poland	163,000	57,000	0.35
China	2,255,000	766,000	0.34
Switzerland	126,000	27,000	0.21
Brazil	287,000	60,000	0.21
South Korea	687,000	140,000	0.20
India	1,325,000	171,000	0.13
Israel	168,000	10,000	0.06
Total	8,688,652	4,454,000	0.51