

recently a number of French companies including Thomson, the nationalized electronics company, have gone well into the black through trade in armaments, much of it to the Middle East. Often this trade relies on high technology weapons, such as Exocet, the missile which was so dangerous to British ships in the Falklands conflict. France does not seek a one-way drain of expertise or experts to the United States through premature involvement in the star wars programme.

Thus Dumas is concerned by the position of Britain, where foreign minister Sir Geoffrey Howe has criticized SDI so strongly (on strategic grounds) that France fears Britain may not participate at all. Dumas is slightly happier with West Ger-

many, with which France has increasingly been developing a special relationship in Europe. There, Chancellor Kohl has expressed full support for Eureka but has gone further than the French by agreeing separately with the United States to take part in the SDI research programme. Kohl will send a team of negotiators to Washington to discuss the matter, he has told the Bundestag.

Some united participation in SDI is what France wishes to see. And it is even preparing its public SDI as "star peace", not "star wars", defence minister Charles Hernu claimed on French radio last week. "And France must have its place in this star peace", he proclaimed.

Robert Walgate

Star wars

US pressure on Japan

Tokyo

THE US Strategic Defense Initiative ("star wars") seems to have found a fan in Japan's Prime Minister Yasuhiro Nakasone, who has been extolling its virtues in recent Diet speeches after his meeting with President Ronald Reagan in Los Angeles earlier this year. Pressure for Japan to make its support official is being kept up by a series of visits from US experts. The real issue, however, is how far Japan is prepared to move from its pacifist constitution, which prevents participation in collective military efforts.

At the end of last month, US Defense Secretary Caspar Weinberger formally asked Japan as well as other US allies to inform the United States within 60 days whether it is willing to participate in the US research programme for the Strategic Defense Initiative (SDI). Weinberger's request was immediately followed up by a series of visits to Japan by US military experts and a delegation from the North Atlantic Treaty Organization (NATO) to "explain" SDI and to look for areas of cooperation.

Although the 60-day deadline has subsequently been dropped by the United States as a bureaucratic "error", further teams of US experts are expected in Japan, starting this week.

Japan's space technology is of course still relatively backward and largely developed under US licence. But where Japan has something to offer is in its electronic communications technology, particularly in the use of extremely-high-frequency microwaves to transmit huge quantities of data from satellites to the ground.

Japan's defence agency has, in fact, already completed a study of SDI aimed at assessing the efficiency of both chemical and nuclear-pumped X-ray lasers. Although the study seems to say only that enormous improvements in aiming accuracy would be required to shoot down intercontinental ballistic missiles, that it was carried out at all is an indication of the

extent of Japanese interest.

In theory, Japan should have no military forces at all; Article 9 of the constitution (forced on Japan by the United States at the end of the Second World War) says that "land, sea and air forces, as well as other war potential, will never be maintained". In fact considerable "self defence" forces have been in place for years. But until very recently the Japanese government has regarded supplying military technology to foreign countries as going much too far. In 1983, however, considerable pressure by the United States forced Japan to accept a bilateral agreement allowing the transfer of military technology to the United States — again, US interest lay largely in the communication field.

Star wars would be another step up in Japan's military involvement with the United States, but would be seen as a step onto a slippery slope by opposition socialist parties. Government representatives have already had to resort to semantic juggling to make a possible involvement respectable. Military technology transfer is as yet possible only to the United States, but SDI would probably involve other countries. The Foreign Ministry's Treaties Bureau chief Hisashi Owada sidestepped this issue by saying Japan can help the United States with the research, "even if NATO countries take part in it, so long as military technology supplied to the United States remains there".

If SDI research does go ahead, it will bring closer the day when Japan's giant corporations can go into the military export business. But Nakasone may find there is more opposition to the plan from the general public than he has bargained for. Like other world leaders, he has found it easier to agree with Reagan when having a cosy face-to-face chat than to sell Reagan's ideas back home. Nakasone is scheduled to have his next get-together with Reagan on 2 May, just before the Bonn summit, and star wars is high on the agenda.

David Swinbanks

Spain

Law of Science brings change

Barcelona

SPANISH research institutions are likely in the next few months to face a similar upheaval to that experienced in the universities as a result of the Law for University Reform (see *Nature* 312, 8; 1984).

The Spanish government has now approved the Law of Science (Ley de Fomento y Coordinación General de la Investigación Científica). The bill has been sent to parliament, where the Socialist Party has an absolute majority in both houses, and a vote is expected before the end of the year. Government approval of this law, after months of discussion between different ministries, may represent an important step in the reform of the organization of research in Spain.

The Law of Science aims to establish mechanisms to define research priorities, to programme the resources for research and to coordinate the work of those in universities and research institutes. The bill also aims to redefine the role of the main public bodies concerned with research, which until now have often had overlapping functions because of the accumulation of 50 years of contradictory legislation.

Under the new law, the National Plans for Research will define research priorities and determine how public funds should be distributed. The draft of a National Plan for Research and Development for the next five years has also been presented as an annex to the law. Subjects to which it would give priority include microelectronics, biotechnology, transportation technology and high-energy physics. Fellowships tenable both in Spain and abroad are intended to double the number of researchers in industry and public organizations within five years.

The Law of Science also proposes a new structure for the main public research bodies, including CSIC (Consejo Superior de Investigaciones Científicas) and JEN (Junta de Energía Nuclear), to be called the Centre for Energy, Environment and Technological Research. They will be organized so as to promote the mobility of staff between different institutions.

The need for a change in the regulation of Spanish research has been generally acknowledged. Officials in the Ministry of Education and Science believe the new law may help to break down the barriers between people doing the same work in different departments, to promote interaction between public and private research and to continue the trend towards better scientific control and less bureaucracy in the administration of public resources. If these reforms are coupled with increased public and private spending on research, the law will enhance Spain's contribution to science and technology.

Pedro Puigdomenech