International science (1): NATO

Plain-clothes science

Chris Sherwell, recently at NATO,
looks at the alliance's science programme

WHAT is NATO? To most people it is simply the western alliance, the collection of fifteen nations formed after the Second World War for the purposes of mutual defence. Others see it as much more. For instance, when Jimmy Carter delivered his keynote address at the recent NATO summit in London, he saw the alliance as political and economic as well as military—which of course it is.

Indeed, NATO has always been these things and more. So broad is it that, to the amazement of many western scientists, it stretches as far as a civilian science programme. In the vast concrete labyrinth of buildings and corridors that are NATO's European headquarters in Brussels, there is a handful of offices occupied by a friendly group of what in other continental circles are usually called 'committed Europeans' because of their internationalism. There are just over half a dozen of them, and they discharge responsibilities created almost a decade after the North Atlantic Treaty was signed in 1949.

That treaty, which is most explicit about the threat of war and the resolution of disputes, contains in Article 2 vaguely worded sentiments about a better understanding of the principles upon which free institutions are founded. At the end of 1956 a committee of three foreign ministers—Lester Pearson (Canada), Gaetano Martino (Italy) and Halvard Lange (Norway)—produced a report on non-military cooperation. Like the devil and sin, they were for it; in particular they argued that science and technology was "one area of special importance to the Atlantic community".

From this and further suggestions by these so-called 'Three Wise Men' for recruiting and fostering contact between scientists, was born a Task Force on Scientific and Technical Cooperation. That was in July 1957. Then, fortuitously, came the single most important event to ensure the future of a NATO involvement in civilian science: the launching of the first Soviet Sputnik in October 1957. Two months later the Task Force reported its findings to the heads of government. Its recommendations were predictable.

The future of the West, the Task Force proclaimed, was dependent to an ever-increasing degree on the rate at which science and technology advanced. It was therefore in NATO's

interest to do all it could "to bring about the general conditions which will accelerate the pace of scientific progress"; deficiencies in science and technology should not be allowed to hamper the effort to strengthen NATO members' economies and defences.

Committee plus adviser

That was the reasoning, and it was accepted. Institutionally it produced NATO's Science Committee and a Science Adviser to the NATO Secretary General who was soon called Assistant Secretary General for Scientific Affairs. He is now Professor M. Nimet Özdas from Turkey, a mechanical engineer by training; he has occupied the position since 1973 and is the eighth holder of the post. Among other things, he chairs the Science Committee, on which sits one representative for each country (the SRC head, Sir Sam Edwards, represents Britain, for example); it met for the first time in March 1958 and, unsurprisingly, there are plans afoot for a Commemoration Conference next spring to mark NATO's 20 years in the business. What form that will take remains unclear as yet. What business NATO has been in is available for anyone to see.

One business it is not in with its science programme is defence-related research, save in a most indirect and thus unimportant sense. That activity falls under a separate division of NATO altogether. Because of his position Özdas is aware of work being done, but it has little to do with the nuts and bolts of his science programme. Özdas does say the security of the alliance is important as a purpose behind NATO's science programme, but then he could hardly be expected to say otherwise. The programme's direct impact is confined largely to the scientific community it seeks to help. Indeed, a cursory examination of the work supported and the cushioned impact it has outside scientific circles suggests that NATO's involvement in science is as benign as that of practically any other funding agency.

If there is any keynote, it is collaboration. Next to publication, collaboration is seen as the essential ingredient for the progress in modern research that is NATO's expressed concern. But NATO is anxious that it should do things which aren't already done and that this should happen

without at the same time adulterating in any way the established standards that ensure quality work.

It is admitted that the latter has not always been achieved—that in earlier days mistakes were made and NATO could have acquired a reputation for being a 'soft touch'. But its peer review system has been tightened up in recent years. If charmed circles of researchers who know the system extract money more easily than others, it isn't easy to prove. The system is open to anyone, and the criteria are clear. Where there is abuse, the only sanction at NATO's disposal is to refuse money the next time round.

Altogether, six fragments make up NATO's efforts to stimulate scientific cooperation. A Science Fellowships Programme, coordinated by Bulent Bayraktar, who is from Turkey, consumes the bulk of the Science Committee budget of some \$9 million. In this field Özdas believes that NATO is unique. No other organisation, international or otherwise, is funding the international exchange and foreign training of young postgraduate and postdoctoral students on such a scale (500–600 fellowships a year).

The focus of the second biggest consumer of funds, the Advanced Study Institutes (ASI) Programme, is higher up the academic ladder. Again emphasising international aspects and seeking to do something unique, the programme aims to provide high-level tutorials and seminars on selected topics, usually of an inter-disciplinary character, on the basis that such matters might not otherwise be covered and the people involved in them might not otherwise come together.

NATO funds some 50–60 applicants a year who are themselves responsible for organising the ASI. Each ASI usually lasts up to a couple of weeks and can involve as many as 30 lecturers and 100 participants. The coordinator of the programme from Brussels, Tilo Kester, a German, receives applications each year running into hundreds which must be refereed after initial screening. The \$30,000 or so that each ASI costs goes entirely on travel and living expenses; the direct benefit gained by the organiser is chiefly in the form of a publication.

International collaboration between scientists is further encouraged by the Research Grants Programme. International collaboration, in fact, is the *sine qua non* for participation in the programme, which offers financial aid to joint projects that involve laboratories and institutes in different countries. What NATO tries to do is fill the gaps left in respect of travel by national grants.

Some 75% of the money disbursed goes on living and travel expenses, and

the awards, which are also determined through peer review, are now of the order of \$4,000 where they were once up in the \$30,000 bracket. Demand has increased in recent years, and the programme's coordinator, Mario di Lullo from Italy, insists that the prospect of publishing either one or several papers is not a passport to a successful application, even though publications are expected to have a NATO credit.

Two relatively minor activities funded out of the Science Committee budget are the Senior Scientists Programme, which awards a small number of senior fellowships and visiting professorships each year, and the Science Committee Conference Programme, which, unlike other programmes, is organised directly from Brussels. Less than a dozen of these special conferences on particular topics have been held.

The sixth fragment of NATO's science activity is intentionally the least general but it is no less complex to administer. It breaks down into six parts. Known collectively as Special Science Programmes, they complement the other programmes and are designed to ensure coverage of specific topics. These include marine science, eco-science, air-sea interaction (a meteorology programme ended in 1972), materials science, systems science and behavioural science.

Seventh fragment

Özdas has another important position. This stems from a decision taken at NATO's twentieth anniversary meeting of heads of government in 1969 to create the Committee on the Challenges of Modern Society (CCMS). Özdas chairs this committee, which operates in an interesting way to avoid expensive, secret and centralised direction.

The CCMS has no budget. If any study is to be conducted, there has to be a pilot country or countries to shoulder the responsibility, probably with other countries as 'co-pilots'. They provide the funding, and they do the study. It is carried out on the basis of information readily available, with a short time horizon in mind. And for the most part it is conducted in an open fashion with participation not just by interested organisations within the alliance countries but also by countries outside the alliance—including the USSR and East Europe.

The CCMS proposes, the NATO Council approves. Eight studies have been completed and another eleven are under way. Topics include pollution, disaster assistance, health care, energy and so on.

Özdas is assisted in the discharge of his duties by Dr Philip Hemily, an American. A man sincerely concerned to know current trends in thinking

Table 1 NATO Science Committee budget (Belgian francs $\times 10^6$)¹

	1972	1973	1974	1975	1976	1977	% breakdown
Fellowships	135	137.7	144.0	148.0	160.0	172.0	54.5
Advanced Study Institutes	46.5	50.0	60.0	55.0	61.0	72.0	20.8
Research Grants	30.5	34.5	35.0	36.0	39.0	45.0	13.3
Programme Development Fund	29.5	33.0	28.0	34.0	30.0	31.0	11.4
Total	241.5	255.2	267.0	273.0	290.0	320.0	—

¹£1 = BF 62.4, \$1 = BF 36.3; all figures in current terms.

Table 2 Distribution of funds (%)

	Overall budget	Science fellowships (1960-72)	Research grants (1960-72)
United States	24.20	12.63	10.8
United Kingdom	19.50	13.96	17.2
France	17.10	11.98	6.2
West Germany	16.10	13.43	5.8
Italy	5.96	15.00	18.0
Canada	5.80	4.90	3.9
Belgium	2.86	2.74	3.8
Netherlands	2.85	2.62	3.3
Denmark	1.65	1.60	2.0
Turkey	1.65	9.65	11.0
Norway	1.15	1.57	3.7
Portugal	0.65	4.40	5.1
Greece	0.39	4.20	8.0
Luxembourg	0.09	0.26	0.0
Iceland	0.05	0.25	1.5
NATO (Adm Exp)	—	0.81	—

about contemporary problems, he is realistic enough to know the limits of NATO's capacity to help solve them. Of both the virtues and pitfalls of NATO's involvement in science he and his colleagues are only too aware. But they remain committed to the ideals which inspire scientific research, and see a role for NATO.

Thus, asked the obvious question, "Why NATO?", their immediate response is equally obvious: "Why not?" Pressed further, they steer clear of

arguments about common defence and security, preferring to fall back on another point: that there are no apparent alternatives available. No other international body is apparently working to oil the wheels of scientific research by providing finance to encourage international collaboration. That becomes their most positive argument: in the jargon of the men at NATO, they are 'action oriented'. And there is no doubt in their minds that the action is needed. □