Australia Bids to Reenter the Space Race

Its scientists argue that a new commitment to space research could help reverse the nation's "technological cringe"

Canberra, Australia.

TWENTY years ago, Australia was one of the world's leading nations in space research. This was partly fortuitous, a direct result of the extensive use by both the United States and Britain of the Woomera rocket-launching range. But Australian scientists were also deeply involved in various experimental projects—indeed, in 1967 Australia became the third country to launch a scientific satellite from its own territory. Today, the situation has changed dramatically. The United States has moved its launch activities back home, and the collapse in the early 1970's of the European Launcher Development Organization, which would have used the Woomera facility, has ended Australia's role as a launch center.

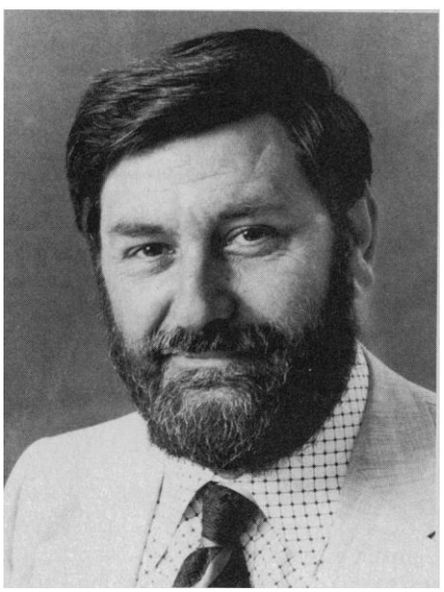
Consequently, space has fallen from political favor. Australia's space budget last year was $5 million, or 0.002 percent of its gross national product, compared to 0.25 percent in the United States. While France spends $10 a year on space activities for each member of the population, Australia spends 33 cents.

The country's space scientists, however, are now fighting back. Many of them have recently been putting their weight behind demands that the government make space research and technology one of the main goals of its industrial policy. They are arguing for the creation of a new, national space authority, the development of a comprehensive space program, and a substantial increase in financial support for all space-related activities.

To back up their claims, the scientists point out that the country's geography, with a vast, resource-rich but undeveloped interior and one of the longest coastlines in the world, puts it in an ideal position to exploit space-based techniques such as remote sensing and telecommunications. "Australia is a country built for the spacecraft," says Ken McCracken, director of the newly created Office of Space Science Applications of the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

In the past, however, rather than use these opportunities to build up a domestic space industry, the government has chosen the cheaper route of buying off-the-shelf from foreign—primarily American—suppliers. Of the $150 million spent on the telecommunications satellite AUSSAT, which was successfully launched in August by the U.S. space shuttle, only $8 million went on work carried out by Australian companies.

"We often talk in this country about a cultural cringe, but I think we also have a strong technological cringe, a feeling that we cannot do things as well as other countries," says McCracken. "This has to change; we must use our industrial opportunities, such as those offered by space, to lift our technological skills."



Science minister Jones

Should space be a sunrise industry?

McCracken, a lively and extrovert advocate who often appears on television programs, spent 8 years in the United States, heading a research group at the University of Texas that worked on various space-based experiments in cosmic ray detection for the National Aeronautics and Space Administration's Explorer and Pioneer missions.

His new office was created last year by the CSIRO, Australia's principal science funding agency, following the recommendation of a study group. McCracken points to the organization's decision both to centralize its space activities and to deliberately encourage closer links with industry as evidence that, after a long period of relative skepticism from both politicians and the public, "things are beginning to change, very rapidly and very permanently."

His pet project at the moment is for Australia to take over responsibility for producing an enhanced version of NASA's Spartan satellite, a reusable spacecraft designed to be deployed into free flight from the space shuttle, then retrieved 40 hours later and returned to Earth for data analysis and subsequent reuse. The project was abandoned by the U.S. agency because of lack of funds, but McCracken argues that it could be turned into a vehicle for carrying scientific payloads, which could eventually orbit close to the manned space station.

The project would be named Mirabooka, the aboriginal name for the Southern Cross. The government has already agreed to fund a feasibility study, and McCracken is proposing that the next step should be to provide $6.5 million toward refurbishing an existing Spartan satellite as a "learning exercise" for Australian industry.

Another enthusiast for an increased Australian space effort is Donald S. Mathewson, director of the Australian National University's Mount Stromlo and Sliding Spring Observatory. Mathewson headed a team that was to have built a large format photon camera—based on technology already developed for use with its ground-based telescopes—for the ill-fated STARLAB, a joint project with Canada and the United States to build an orbiting telescope. The project collapsed in 1984 when Canada withdrew to put its money into projects related to NASA's space station.

Mathewson's current proposal is to use the same detector technology in a new project, known as Fuse-Lyman (named for the far ultraviolet spectroscopic explorer and the physicist Theodore Lyman), which it hopes to carry out with NASA and the European Space Agency. It is being proposed for launch from the space shuttle in 1992. "NASA acknowledges that we are 2 to 3 years ahead of the rest of the world in this technology, and we want to keep it that way," says Mathewson.

Given that, unlike its two partners, Australia has never flown an instruments package, it has booked room on a shuttle "getaway special" in 1987 to test the detector, a project known as Endeavour. Although this will be a relatively small-scale experiment, Mathewson says that it will be given "a high national profile." He adds that it could act as

"the catalyst for starting an Australian space industry."

There are certainly several Australian companies keen to take up the challenge. Many see the potential not only of considerable technology exports to the whole of the Asia/Pacific region, but also of using space to stimulate developments in a number of related fields, ranging from new materials to robotics.

"Basic research is strong in Australia, but we are relatively weak in applying it; space is one very good area where you can develop both at the same time," says Stan Schaetzel, technical director of Hawker de Havilland in Sydney, one of the main companies that hopes to be involved in both the Fuse-Lyman and the Mirabooka projects. Schaetzel argues, however, that reaching the potential will require increased government backing, both financial and political.

There has already been wide endorsement of similar views expressed in a report commissioned last year by the minister of science, Barry O. Jones, from the Australian Academy of Technological Sciences. It was prepared by a committee headed by Sir Russel Madigan, deputy chairman of CRA Ltd.

Claiming that Australia's space potential is currently "fragmented and dispersed," the report suggests that Australia should create a national space authority that has already been informally christened with the fortuitous name ASTRA (Australian Space Technology Research Agency).

It also suggests that the government increase the space budget to $50 million over the next 5 years, leading to an annual expenditure of $30 million. It calls these figures "a modest investment in what could have a significant effect on our whole political and economic future" and compares them to the $250 million a year that the country could be spending on space-related technologies by the middle of the next decade.

There is certainly general agreement in the research community that space policy could be better coordinated. "Many of us would like to see an independent, statutory authority, taking space policy out of the hands of the bureaucracy—but not just leaving it in those of one or two enthusiasts," says John Carver, professor of physics at Australian National University (ANU).

Tensions, for example, have already arisen within the astronomical community over what steps should be taken if—as rumored in London last sumer—Britain decides to cut back on its contribution to the funding of the Anglo-Australian Telescope at Sliding Spring, 400 miles northwest of Sydney, the second largest optical telescope in the Southern Hemisphere.

Britain's Science and Engineering Council wants to reduce its Southern Hemisphere activities as a cost-saving move. And Mathewson suggestd in September that the ANU might take over half of the annual British contribution of $900,000, using special funds that the government regularly allocates to the university for new projects, and turning Sliding Spring into a national astronomy center which would be one of the focal points of a future space program.

However, this proposal was quickly rejected by the telescope's governing board. Carver, its present chairman, says the board is sticking to the formal position that Britain cannot reduce its financial contribution unilaterally since under the terms of an intergovernmental agreement signed in 1971 and which lasts until 1995, contributions can only be changed with Australia's approval.

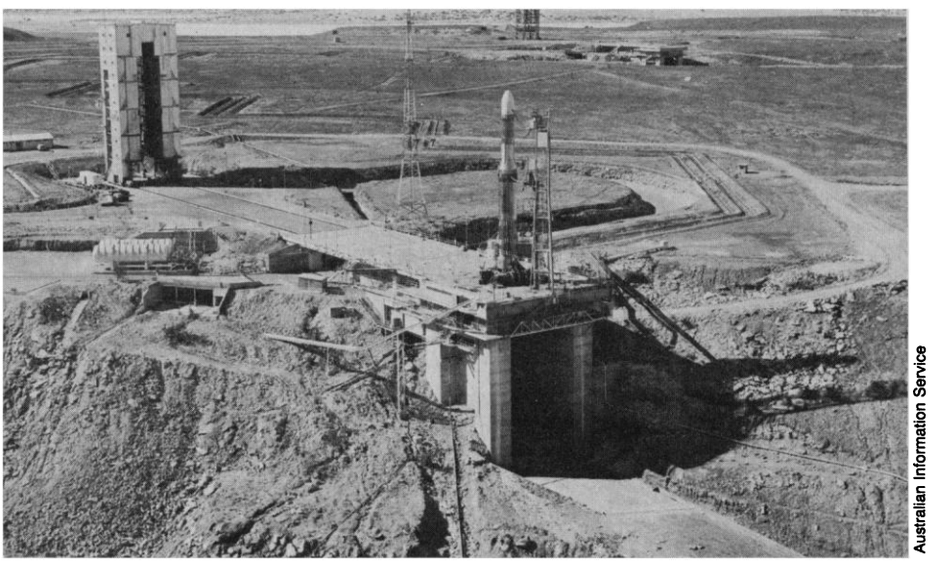
Creation of a national space agency may not avoid such clashes, but it would provide a framework for their resolution. It also has a high political appeal to those concerned about the observation, made in a recent report on Australian research prepared for the Organization for Economic Cooperation and Development, that there appeared to be "a widespread Australian view of technology as in some sense external to national life," a point of view which, the report's authors suggested, has led to a "consistent underevaluation" of national technological achievements and possibilities.

Keen to correct this situation, the creation of an active Australian space effort as one of the "sunrise industries" of the future has received the enthusiastic backing of science minister Jones and, even more important, the minister for industry, commerce and technology, Senator John Button. Demands for increased public spending, however, currently face strong opposition from the Treasury Department, particularly at a time when Australia is facing its worst ever current account and trade deficit.

In addition, there remains a large body of public opinion in Australia which feels that, even if the country wishes to improve its high technology, space is not necessarily the best direction to go in—particularly if it means taking research funds away from other fields such as renewable energy sources.

The government is expected to give its response to the Madigan report in the next few weeks. Government officials in Canberra are already expressing their traditional caution, warning that it may be better to be carefully selective and concentrate support on areas in which Australia has a comparative advantage rather than jumping in with a major new commitment.

The space community is not standing still, however. One company, British Aerospace Australia, has already been awarded a contract for producing the digital processing system for the European Space Agency's European Radar Satellite, due to be launched in 1989. And the CSIRO is forming a consortium with two Australian companies to construct three 18-meter satellite dishes to provide international coverage of next year's defense of the America's Cup. This will be the first wholly Australian satellite reception project, and space enthusiasts are hoping it will have the same effect on Australia's "technological cringe" as winning the cup in the first place proved about Australia's ability to design fast sailing boats. ■ **DAVID DICKSON**



Australian Information Service

The Woomera rocket-launching range

Its use in the 1960's helped make Australia a leading nation in space research.