then to devise a realistic plan for telling how and when the remainder could become free-standing entities. Although CSIRO's presence in about 50 of the existing partnerships (at a total cost over the planned lifetime of about A$350 million) may be taken as a substitute for continuing government support, it is mostly in kind, not cash, and in any case is only half as much as Canberra spends on the CRCs.

On the principle that the best investments are in success, it would be a great misfortune if the government were now to turn its back on CRCs, existing or still gleams in people's eyes. Whatever happens to this brave experiment in Australia, there is every likelihood that it will be widely copied elsewhere. Or it should be.

CSIRO

Another, and the most important, influence nudging Australian research into what the British would call 'wealth creation' is Australia's largest single research organization. Times have changed, at least since CSIRO enjoyed a virtual monopoly of research in Australia say a quarter of a century ago. (Many universities were naturally already active in research, but were often dependent on CSIRO or some other government department for all but routine research expenses.) CSIRO's researchers were then organized into laboratories called 'divisions', too many to be managed coherently. One consequence was that some divisions, notably the Radiophysics Division at Epping, outside Sydney, became too powerful for the good of the organization as a whole. And others (including some of the same) grew complacent.

Something of the old structure remains; the divisions continue. But since a bout of introspection a decade ago, divisions with similar interests have been grouped together into 'institutes' comprising between four and eight divisions each. Until, it seems, just now; last month, CSIRO announced the results of an internal management review whose chief recommendation is that the institute structure should be abolished to remove a whole layer of management. A final decision will await the recruitment of a new chief executive of CSIRO.

The organization's old and avuncularly exercised role as the chief provider of academic research funds too big to be accommodated by university budgets has now been taken over by the Australia Research Council (ARC), which has almost ten times as much to spend each year (about A$300 million) than its predecessor, the Commonwealth Research Grants Council. But CSIRO is still responsible for managing as national (and international) facilities instruments such as the Australia Telescope (see below), a newly completed linear array of radiotelescopes that is the only radio-interferometer in the Southern Hemisphere whose performance is comparable with that of the Very Large Array (VLA) in the United States. It also has Australia's ocean-going research vessel on its books.

Meanwhile, CSIRO has also been constrained by the federal government's requirement that it must raise 30 per cent of its budget from sources other than the parliamentary subvention, as well as by the more pragmatic decision that the government subvention will remain roughly constant from year to year (at A$460 million a year in round numbers). By a blend of user fees (which some academic researchers say are too high for them to be able to afford) and research contracts (often with other government departments) industrial income is rising.

The result is that CSIRO has become an entrepreneurial organization willing to put a commercial price on the practical knowledge and insight at its disposal, but whose interest in basic research, represented by the research interests of those who work for it, are as strong as ever, if more tightly, even carefully, limited. For practical purposes, CSIRO has been operating in this way for only three or four years. There is every reason why it should be given a chance to prove that its new marching orders will accomplish what the government intended by them.

New policies and also the succession of the generations have brought a profound cultural change. As recently as the 1970s, the organization's culture was a product of a least three distinct influences. There was CSIRO's commitment to traditional industries, notably in agriculture and mining. Sheep-farmers, for example, paid a levy on the wool they sold to the Wool Board, in return for which CSIRO did remarkable work on improving the genetics of the Merino sheep. The culture of a high-level agricultural extension service was almost palpable.

Another striking influence was that of the handful of British people who had

An exception that proves the rule

In the land of Ms Germaine Greer, which is not much admired by feminists, the most influential working-scientist is a woman. Dr Adrienne Clarke is professor of botany and head of the School of Botany at the University of Melbourne. She is one of a handful of Australian scientists to have been the recipient of funds for a Special Research Centre from the Australian Research Council, which is worth just under A$1 million a year.

Clarke: chairman twice over.

She has been chairman of CSIRO's board for just under three years, is a non-executive director of two start-up biotechnology companies, of Alcoa Australia and of a large international insurance company based in Australia. As well as that, she belongs to two Collaborative Research Centres in Melbourne, acting as chairman of that for Industrial Plant Biopolymers, as well as being a member of the absorbing Commission on the Constitutional Centenary which is due to recommend options for constitutional change in good time for 2002. (Arrangements for the Republic of Australia are in the front of many members' minds.)

How does one person manage all that? She says she has one unchangeable rule: never miss a pre-arranged lab meeting about research. But she saves time by being quickly decisive, concealing the assertiveness that might suggest by a show of feminine diffidence. Tycoons are all alike, whatever their sex. But Clarke appears to have won the respect of her colleagues everywhere by being right most of the time, and sympathetic to the difficulties decisions always cause.

Her special centre (not to be confused with a collaborative centre, which is not nearly as grand) deals with the molecular basis of self-incompatibility in plants that will not allow their ova to be fertilized by their own pollen (thus undermining much of the advantage of sexual over vegetative propagation). Clarke and her lab-ful of postdocs are looking now for further identification of the RNase gene usually found in the region of the genome coding for the molecular constituents of the stylus. Quite why (and how) the presence of a presumably specific RNase in the stylus of a flower should determine compatibility is an open question, but has provoked a hunt to characterize the constituents of the stylus.

The postdocs are an interesting tale in themselves. In the roster given in the centre's annual report for 1993, nine out of 13 postdocs were from overseas, mostly from Germany, Switzerland and Japan. All five visiting scientists listed were from either the United States or Japan. There could hardly be more vivid proof that the world knows about the Melbourne compatibility lab. □