

# Spanish science reaches a crossroad

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**The prospect of a change of government in Spain is unsettling the country's scientific community. But the growth in scientific activity over the past 13 years of socialist rule is also now showing signs of exhaustion.**

BRIEFLY in eighteenth-century Spain during the reign of King Carlos III, while California was being populated, Spanish science began to follow the European trend. The Royal Botanical Garden opened in Madrid, and groups of scientists flourished throughout Spain and collaborated with those in other countries. But this growth did not survive the change in royal interest, and during the nineteenth century Spanish science fell into decline. Spanish scientists are now worried that history may be repeating itself.

Spain is on the brink of an important political change that could bring into power the conservative Popular Party or a new type of coalition government. This would mean the end of the socialist government led by Felipe González that has ruled since 1982. For science it means the end of a period that has seen an important increase in the quantity and quality of research. Spanish science faces either a socialist programme that has been showing signs of exhaustion during the past five years or a conservative programme that is an unknown entity. Either way, Spanish scientists are worried that radical changes or lack of priority in the scientific system will harm a fragile and young science that still needs consolidation.

During the past 12 years, funding for Spanish science has dramatically increased. From 1980 to 1990, the public spending for research more than doubled (even after correction for inflation), as did the number of positions in universities, and the research staff in CSIC (Consejo Superior de Investigaciones Científicas), the main public research institution, increased by 50 per cent. In the same period, the public system of research and higher education was considerably reorganized. Parliament approved the Law for University Reform (Ley de Reforma Universitaria), which produced greater autonomy for universities, and the Law for Coordination of Research (Ley de la Ciencia), which defined the organization of public science. In particular, the National Plan for Research (Plan Nacional) was designed to coordinate different departments and to orientate research, and the National Agency for Evaluation was established to evaluate all the grants funded by public agencies through a peer review system. The evaluation system has gained a reputation of independence and credibility.

The number of publications in inter-

national journals has grown by 9 per cent a year and the relative impact of publications by Spanish scientists has doubled in the past ten years. Some areas such as clinical sciences, molecular biology, material sciences, theoretical physics and chemistry are cited among the most productive.

But the socialist government carried out most of its policies between 1982 and 1990. Since then, the trend has taken a downward turn. Between 1990 and 1995, four ministers passed through the Ministry of Education and Science, and the budget for research levelled off or even decreased slightly. As a result, the spending for research in relation to gross national product has not even reached the goal proposed for 1991 of 1 per cent (the average spending in the European Union is 1.9 per cent), and the number of scientists per 10,000 inhabitants (26) is still half the average for European Union countries.

At the same time, some of the weaknesses of the system have become apparent. Take personnel. In 1994 there were more than 5,000 graduate students in Spanish laboratories. They make up the main workforce in research groups and are encouraged to train abroad after gaining their PhD. It is difficult to know exactly how many Spanish postdocs are currently working abroad, but Spain has more applicants for postdoctoral European fellowships than any other country. This inevitably gives rise to several problems: only 28 per cent of postdocs work in private companies; public research institutions are only just managing to replace staff going into retirement; and 95 per cent of new positions in universities are filled by departmental candidates. Lack of mobility and permeability between institutions is a handicap for young scientists. A programme of contracts for postdocs has attracted young scientists, yet many of them find out at the end of their three-year appointment that no further opportunities are offered to them.

The situation is particularly bad in CSIC where around 400 postdocs are under contract but only 50 positions are offered this year. This may be due to the hesitations about CSIC itself. Although universities have become directly involved in research, the size of the budget and staff of CSIC, which now represents around 20 per cent of Spanish research activity, has been frozen since 1990. The relationship of CSIC with the universities and with the

autonomous governments (more than half of its budget is still spent in Madrid), the structure of its staff (members have the status of civil servants) and its internal organization (scientific discussion is almost nonexistent), are all areas fraught with questions that still need solutions.

Another emerging question is the participation in Spanish science of the autonomous governments which are now in place in all regions. With the involvement of the central government levelling off since 1990, they have become increasingly important. Control of universities has been transferred to them and in some cases the regional investment in science is comparable to or even higher than that of central government. Nevertheless, a way has to be found to allow different levels of administration to cooperate instead of competing. In some aspects, such as the provision of equipment or the establishment of new institutes, this collaboration, as well as European regional funds, could be decisive: space for laboratories is badly needed in the most active institutes and existing funds cannot meet these needs.

The political uncertainty during the past three years has led to an inability to make decisions. The exception may be the Plan Nacional, which has carried out a large consultation for its new four-year scheme (1995–99), although how it is going to be funded remains unclear. Although the socialists are clearly not interested in addressing the questions that remain open, alternative proposals by the opposition Popular Party have not been encouraging. Although it asserted that research would continue to be a priority under its government, some of the proposals in its programme for the 1993 elections produced commotion in the scientific community. They included replacing the grant and evaluation system with the simple redistribution of funds among universities and research institutions. Additional funds would be left solely to contracts with industry. The Popular Party seems to have belatedly realized that this type of proposal would be unworkable and has started a series of consultations with scientists and industrialists. The road ahead is a long one. □

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