

## A central aspect of the relationship between science and society: women and science

This section outlines some of the issues comprising the complex problem of the professional development of women within the scientific community. European data show that, despite numerous European Commission initiatives to promote gender equality in the area of research and teaching, progress has been very slow. This was also recognised in a recent document (*Women and Science: Excellence and innovation-Gender Equality in Science. European Commission, SEC 2005: 370*). In Spain, the progress of women in education in the last two decades has been spectacular. According to data provided by the *Conferencia de Rectores de Universidades Españolas* (the Conference of Spanish University Rectors) from 71 universities ([www.ujaen.es/serv/gerencia/images/webestudio-crue04/index.htm](http://www.ujaen.es/serv/gerencia/images/webestudio-crue04/index.htm)), women make up 53% of enrolled students and 59% of graduates; Seventy-five percent of the students enrolled in health sciences are women, compared with 65% in the humanities, 63% in social sciences and law, 59% in experimental sciences, and 28% in engineering and technical careers. For the first time in Spain, 51% of doctoral theses were defended by women. However, as women move higher up the teacher-researcher career ladder, they become a minority. Only 35% of permanent teaching staff are women, and they only occupy 13% of professorships or 15% of the equivalent rank in the CSIC.

The gender differences seen today are partly due to clearly discriminatory trends that belong to a Spain from earlier times. They are also the result of the interaction of an extensive series of variables from different domains: from “private” life and the distribution of roles and expectations in the family, to the influence of intangible cultural aspects that still exist in Spanish society and institutions. These aspects converge to give priority to men when high levels of responsibility are assigned (in this case, in research and/or teaching).

In addition to the absence of equal opportunities in past decades, one of the main reasons for the near absence of women at high levels of the R+D system is that they have not been given incentives to be group leaders. This socio-cultural condition is not, of course, specific to scientists – it affects all professions. In research, another significant factor applies: there are many more men than women on panels and evaluation committees. The *Asociación de Mujeres Investigadoras y Tecnólogas*, AMIT (Association of Women Researchers and Technologists) has been fighting for measures to be taken to redress this imbalance. Such measures should be carefully considered by the different agents in the Spanish science and technology system.

To tackle a problem of this complexity, the first and most urgent recommendation is to *encourage more reliable and systematic information to be obtained. This can be used to undertake precise*

*statistical analyses of the source of the current situation of inequality in the Spanish science and higher education systems.* The availability of standardised quantitative indicators and rigorous statistical analyses should help to identify the different variables that contribute to generating a combined effect of inequality. Variables may be from the past and/or the present; private or public; easily supported or intangible. This information would provide more effective tools for correcting inequalities in a decisive and sustained way. At the same time, analyses would help to avoid the undesired effects of measures that are not based on evidence obtained in accordance with the protocols used in the social sciences.

Some measures, several of which were recommended by AMIT, can be applied before these analyses are undertaken. Among them is the recent creation of the *Unidad de Mujer y Ciencia*, UMYC (Women and Science Unit), which is dependent on the Ministry of Education and Science. Other measures do not need further analysis, as it is easy to predict that they will have clearly beneficial effects. These include:

1. Create or strengthen mechanisms to harmonise professional, private, and family life, such as

flexitime, public social services to look after dependents; tax incentives that promote these mechanisms.

2. Encourage non-sexist education at all educational levels, and raise the awareness of the entire society regarding this issue.
3. Communicate European policies that promote equal opportunities for the sexes in the science and technology system.
4. Urge the different administrations and public organisations to unify their criteria for drawing up itemised gender indicators.
5. Publish and disseminate statistics and indicators annually.

In the Nordic countries in particular, numerous initiatives have been put into practice that facilitate researcher mobility and a return to a scientific career or part-time work after periods of maternity leave. Many of these can be transferred to Spain. They would contribute to stemming the loss of women from the fragile Spanish R+D system, and prevent their serious demotivation, caused by the additional barriers they encounter in seeking a competitive career in research excellence. This is clearly a problem that has a detrimental effect on progress in Spain.