Women in Physics in Argentina.

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Three Nobel Prizes in Science have been awarded to Argentines. Still, Argentine society does not have a strong interest in scientific issues, especially those related to the natural sciences. For example, of the three major national newspapers, only one publishes a weekly science supplement (Suplemento Futuro in the newspaper Página 12), while all three have weekly literature supplements. In Argentina there is not a strong connection between scientific research, which is mostly carried on at public institutions, and the development of new technologies. Private industries prefer to buy imported technology rather than to develop their own. Multinational companies import technology developed elsewhere. Although most governments declare that scientific research is a powerful tool for the country's development, the support of scientific institutions is often perceived as an expense rather than as an investment. This situation gets worse during periods of recession, like the current one. Public high school science education is very poor. Most students perceive that following a career in the natural sciences, especially in Physics, can be too difficult. One is not very likely to find a job as a physicist outside a public institution where salaries for research scientists are usually very low. Thus, there are few incentives, other than one's own vocation, to follow a career in Physics. Argentina is a country of only 36 million people, in which the gap between the richest and poorest sectors of the society has increased dramatically over the last ten years, and where about 40% of the population lives below the poverty line. Therefore, the number of people that study Physics is a small fraction of an already small total universe (you can consult the numbers at http://www.df.uba.ar/~silvina/datos_mujeres.html). It is hard to draw conclusions when the statistics is done over a very small universe. In any case, we have observed some trends that we discuss now.

Physics is studied almost exclusively at public universities. The largest universities are located in big cities, with a large proportion of middle class people, a rather dynamic societal organization and where women constitute an important part of the working force. Since the largest universities are located in highly populated areas, most of their students come from the same area. The number of students that move to other places to follow a university career is not very large. The students who do move usually come from small towns. At the largest public university, the University of Buenos Aires, there are about 100 beginning Physics students every year. About 30% of these students are women. Between 30 and 40 students obtain their "Licenciado en Física" degree (a title in between a Bachelor and a Master degree at an American University) every year and, again, around 30% of them are women. Thus, the drop out level is the same among women and men. This same behavior is observed at other universities. It is also interesting to analyze the case of Instituto Balseiro, a unique institution in the country, located in a relatively small town, Bariloche, by the Patagonian Andes.[1] The fraction of women that enter the institute every year is around 8% of the total of accepted applicants, whereas the total proportion of female applicants is on average around 15%. The proportion of female students is smaller than at the major urban universities of Buenos Aires (30%), Córdoba (26%) and Rosario (37%). This might be related to the fact that women are

[1] At this institute students can follow a career in Physics or Nuclear Engineering, after an entry exam with applicants from all over the country. It is required that they have already completed 2 years of related study at another institution. Students at Instituto Balseiro live on campus and are suported by scholarships.

more reluctant to move away from their families to follow their careers. The proportion of female graduate Physics students both at the University of Buenos Aires and Instituto Balseiro is slightly larger than it is for undergraduates (40 and 16% , respectively). We can think of three explanations for this behavior. The first is again related to relocating. Many students go abroad, mainly to the US, for graduate school. We do not have hard numbers on this, but according to our own experience, it is more common for males to go abroad than for females. The second reason is related to the fact that salaries and scholarships for PhD studies are very low (a CONICET [2] scholarship is around US$700/month, while around US$1000 are necessary to cover the basic needs of a family) and women are already used to receiving lower salaries than men. The third reason is related to the fact that it seems to be easier for men than for women to find a job in the private sector once they have finished their undergraduate studies. In many cases, these jobs are computationally oriented, and it is much more common for men than it is for women to be attracted to the computer business.

The situation gets worse when one looks at the numbers of male and female professors or CONICET researchers, the proportion of women decreases considerably as the level of the position increases. For example, at the Physics Department of the School of Exact and Natural Sciences of the University of Buenos Aires, while 34% of the total number of assistant professors are female, there is only one female full professor over a total of 15 (*i.e.*, 7%). The percentage of women at the largest Physics departments is around 21% for assistant professors and 4.5% for full professors. At CONICET, around 43% of the researchers in the two lowest positions are women. At the highest level 1 of 14 scientists is a woman and at the second highest, 2 of 50 are. The percentage of female physicists on review bodies at CONICET is 12%. In 2000, 13% of the projects in Physics had a female director. The situation is different at the Physics and the Material Science Departments of the Atomic Energy Commission in Buenos Aires, where women comprise a fairly large percentage of the total number of employees. Furthermore, the Physics Department has had female directors for many years. One of them also became president of this institution and a member of its Directorate. But in general women's roles in Physics are skewed toward the lower levels and it is unclear if this is a consequence of recent increases in the precentage of women physcists or if it will persist into the future. Our own experience seems to indicate that scientific career advancement is easier for men than for women. Advancement in academic scientific careers, such as in Physics, requires a degree of mobility that, in the case of married people, needs family support. In Argentina the number of research physicists is not very high, so it is important for young researchers to spend some time working abroad. This is more difficult for married women than it is for married men, unless the couple shares similar needs. Couples in which both spouses are scientists are fairly common in which case they typically look for post-docs or permanent jobs at the same place. When this is not the case, women are more likely to give up their own careers, at least temporarily in order to accompany their husbands. Acting in this way undermines a woman's career and it could be the reason behind the smaller number of women in higher level positions of the scientific research community. Many women give higher priority to their families at a cost of a lower performance in their careers. This intuitive observation is supported by the fact that many of those women that managed to achieve the highest current positions are either single or married with no children.

[2] The Argentine National Research Council, the main scientific institution in Argentina