Statistical Education at the National University Of Rosario, Argentina. An Appraisal from the Gender Point of View.

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1. Introduction

The purpose of this communication is to share with the audience my experience in the task of heading the School of Statistics, at the University of Rosario, Argentina.
I hope that from this particular case, we will be able to reflect on the common problems of those that have chosen a non traditional profession as it is that of Statistician, a challenging job as Education is, and have to carry both in the sociological environment framed by our condition of being women.

The School of Statistics is part of a grater one, the Faculty of Economic Sciences and Statistics and embraces two Departments (Mathematics and Statistics Departments) It is responsible for the Career of Statistician that awards the degree of Licentiate in that field, but also, it is in charge of the courses of Statistics and Mathematics for students of Economic Sciences. The staff of the School of Statistics is primarily constituted by women, as table 1 shows.

Table 1. Teachers of the School of Statistics, by career where they teach, Department and gender.

Career	***Dep. of Statistics***			***Dep. of Math.***			***School***		
	W	***M***	***Tot.***	***W***	***M***	***Tot.***	***W***	***M***	***Tot.***
Statistics	***25***	***6***	***31***	***5***	***7***	***12***	***30***	***13***	***43***
Econ. Sc.	***11***	***2***	***13***	***36***	***13***	***49***	***47***	***15***	***62***
Totals	***36***	***8***	***44***	***41***	***20***	***61***	***77***	***28***	***125***

The career of Statistician was founded in 1948, by Professor Carlos Dieulefait. Somehow, the career was a sprig of the ISI, because Prof. Dieulefait was an active member of this institution and in those days, President of the Interamerican Institute of Statistics. The career was the first in Latin-America and in its begginings exported many Statisticians to other countries of the Continent. Also, it has led the basic education in Statistics for around fifty years in Argentina. From its creation to now, 835 students have got a degree in Statistics, out of which, 680 are women and 155 men.
The situation continues the same among the students that are now getting their degree in Statistics, as it is shown below.

Table 2. Advanced Students of the career of Statistics classified by calendar year and gender

Year	***1993***	***1994***	***1995***	***1996***	***1997***	***1998***	***1999***	***2000***	***2001***
Women	***7***	***8***	***7***	***12***	***8***	***14***	***16***	***16***	***14***
Men	***3***	***3***	***4***	***1***	***4***	***4***	***3***	***6***	***10***
Total	***10***	***11***	***11***	***13***	***12***	***18***	***19***	***22***	***24***

When Argentinean Statisticians are classified by sector of activity and gender as in the General Report on Women in Statistics (1999), figures show the tendency of women to be teachers.

2. Why at Rosario Statiticians are primarily women and teachers?

Some could say that it is part of a tradition, but in my opinion the flow of women toward Statistics occured by chance. The rules for admission to the University in those days let direct access, that is to say, without preliminary exams, to the Teachers of Primary School, while for other careers, they had to take an admission test.

As Teachers were mostly women, the former students were also so. And this could be partly, the explanation of why after leaving the University they chose to continue in the Education field.

3. Statistical undergrade education in Agentina.

The School of Rosario has practically offered, at least to the present, the unique career awarding the degree of Licentiate in Statistics in Argentina. In the past, there were in our Country some others, that had a short life , and lately a new Career at the University of Tres de Febrero, has been opened ,with a current enrolement of 13 female and 10 male students, but their most advanced students did not graduate yet..

I feel uncomfortable calling undergraduate courses to those required for becoming a Licentiate, because after finishing High School, students have to study Statistics for five years and to do research work to get their Degree. I think the level of our Degree is between a Bachelor and a Master of the American Universities. The educational system of Argentina is rather anarchical, because it comes from a mixture of European and American models. Licentiates in some fields can do doctoral work without passing through the Master Program, while in other fields, this is not allowed . Besides, Degrees with the same denomination have, in practice, differents levels. The levels depend on the place an the year in which their Programs were established.

4. Statistical grade education in Argentina.

Despite its leadership as regards basic education, Rosario didn't participate with the same strength in Master o Ph. Degree Programs. From the late sixties to the mid seventies there was a Doctor Degree Program at Rosario from which six men and five women graduated. After a pause of 25 years in high level education, a course for Master Degree in Applied Statistics has started at Rosario in the year 2000 .

The first two Programs for Master Degrees started around 1985, thanks to the endevours of an Economist from Tucumán, Dr. Raúl Mentz and a Licentiate from Rosario, Dra Violeta Sonvico, that had Ph. Doctor Degrees from the Stanford and Texas Universities, respectively.

Even though these courses receive graduate students from different fields, they have maintained a certain feminine bias as regards to the gender distribution of the alumni, as it is shown in table 3.

Table 3. Graduated from Master Programs classified by gender.

➢ *Graduated from*	*W*	*M*	*Total*
Master in Statistics, University of Tucumán(*)	***12***	***2***	***14***
Master in Biometry, Univ. of Bs. As./INTA (**)	***22***	***9***	***31***

(*) includes graduated from 1996 on only.
(**) INTA: Nacional Institute of Agicultural Technology

In 1996, a Master in Statistics course opened at the School of Exact Sciences of the University of Buenos Aires .The team of Exact Sciences was organized by Dr. Victor Yohai, a Mathematician that finished his Ph.D. Degree in 1971 at the University of Berkeley . In 1998 , another Master Degree Program was created at the Cordoba University directed by Dr. Raul Martí nez, Ph.D. from the University of Sao Paulo, Brazil, and in 2000, our Program for the Master Degree was set. From the Master Degrees created after 1996 there are almost not graduated. As a whole, the enrolment is of 125 students, 93 women and 25 men

To the list above, has to be added the Doctors in Applied Mathematics of the University of Buenos Aires whose thesis work was on Statistics. Their number is thirteen (eight women and five men). A Doctoral Degree of the University of Rosario was created last year. It is not a disciplinary degree, but six of the candidates (all women) have also chosen as the main suject of their thesis, Statistics

5. If the School of Statistics of Rosario was the first one in the country, why it couldn't keep its leadership in the high level education? What happened to it?

The University of Rosario, as the rest of the country, suffered the consequences of its political instability. From 1930 to 1983, Argentina was shaked by a sequence of military coups and dictatorships, having only brief periods of democratic governments in between.
Education is a long term Program , and with this political background, this project could not thrive.
The teachers of the School of Statistics, despite the general instability, kept the career going, worked hard and with discipline, but because of private reasons (most of them were women) didn't try to leave the country and continue their education abroad .

6. Back to Democracy

From 1983 on, the Public University recovered the autonomy it had lost in times of the dictatorship. Nowadays, there are no fees for undergraduate courses, neither Quotas to limit the admission to the University or tests to pass, and so, the number of students duplicated in ten years. Their orientation moved from Basic Sciences to Social Sciences and Humanities, and Medical Sciences.

The relationship women/men in the Universities also increased drastically, specially in Social and Medical Sciences . Democracy gave freedom to the country, but not economic resources and the efficiency of the educational system is low, as it can be seen trough the number of students per professor (13 to 1), number of registiered per graduated (5 to 1) , as well as the percentage of desertion (40%) and the number of years spent to graduate as regards the theoretical spell of the career (1,61).

7. New orientation at the School of Statistics

Period 1983-1990.

I started as head of the School of Statistics in an enviroment that was a mixture of the mistakes of the past and the later improvisation . The first task was to make a diagnosis of the situation, and in accordance whith that, set up the steps to follow. These were,

i) To state the profile of the Statistician that we wanted to form. ii) To update the Program of the career. iii) To encourage Professors to do graduate work. iv) To break the isolation among courses taught in the career. v) To update the methods of teaching. vi) To set computational facilities (that at that time were none). vii) To strengthen the relationship between research and teaching. viii) To promote interdisciplinary research.

I debated with the Staff about these points looking for consensus. This was difficult to get, due to the weak and unstable institutional frame of the early democracy. .

The first "visible" result of the debate was to get agreement on the profile of the Statistician that was going to be formed. It was,

."An applied Statistician, with solid background in Mathematics, Probability, Mathematical Statistics and Computer Science. Trained to work in an interdisciplinary way with experts in other fields."

Then, the program was adapted to the commitment of these objectives.A second goal was to work in a joint Project with the United Nation Fund for Population Activity (UNFPA). It provided the School with a small Computer Center. This was the pivot of real changes in methods of teaching and research.

To organize the research activity the Institute of Research of the School of Statistics was created later on, and after that, the "Cuadernos", a bulletin to make its work known.

Period 1990 - 2001.

In 1990 the National Ministry of Education established a Fund for Improvement of the Quality of High Level Education (FOMEC), to give grants to groups of professors that presented Projects to that end.

The "women" of the School designed two Projects. Both were approved (only 60% of the Projects of all the Universities were) and the School received 700,000 dollars to develop them. This allowed,

i) To back the expenses of members of the Staff, in order to do graduate work in other Universities of Argentina, and abroad - United States, Canada, Australia and Spain. ii) To establish two new Computer Laboratories. iii) To update the Statistical Section of the Library. iv) To do research on teaching methods for Statistics and Mathematics.

8. The Master Degree in Applied Statistics of The University of Rosario.

The new impulse that graduate work received from the National Ministry of Education, made the Universities react and create more suitable regulations to implement graduate courses. But in the case of Rosario we had two problems: there were almost no Professors with Doctor Degree to teach at Master level,and the students (in the majority members of the staff of our Universities) had to continue lecturing while doing graduate work.

To tackle with the first problem, Doctors from other Universities were invited to teach at Rosario, and for the second, the classes were accumulated during weekends, to let the students and Professors continue their educational tasks at their own places of work.

The number of professors with grade education, finished or in progress, in three calendar years are shown below, classified by gender.

Table 4. Teachers of the School of Statistic classified by grade education

		1984		1998		2001	
Degree		**W**	**M**	**W**	**M**	**W**	**M**
Master	***finished***	-	*1*	-	*1*	*4*	*5*
	in progress	-	-	*4*	*4*	*12*	-
Doctor	***finished***	*1*	-	*1*	-	*1*	-
	in progress	-	-	*1*	*1*	*4*	*1*
Total		*1*	*1*	*6*	*6*	*21*	*6*

The story has not finished. There are several goals not reached yet. But, anyway the School has gone a long way thanks to the work of a group of women that have fought bravely in the middle of an environment institutionally unstable, and sometimes, under a subtle gender discrimination.

9. Interaccion betwen gender and the social and political frame

To be Statistician is percieved as a feminine profession in Argentina. As a consequence, to the "invisibility" of Statistics as a discipline is added the "invisibility" of women in the decision spheres**.**

Despite women are majority, Statisticians with high level education are, at present mostly men. To have to leave the family enviroment to continue their studies in other places has been a barrier for women.

In undergraduate education, teachers of Statistics are primarily women; in their positions, they have the same salaries than men. The University does not discriminate: it rewards them with very poor salaries for both.

How can it be changed the association of being a Statistician, being a wooman, not having grade education and having low salaries? It is not the case of imposing quotas for men!

I think the clue is to encourage high level education for women Statisticians, with methods according to the social characteristics of the country. Long distance courses can help.

Good education brings about ,not only knowledge, but self confidence and a better position to deal with the spheres of power. This causes salaries to raise. Problably, if this hapens in Argentina, more youngters (men and women) will move towards Statistics and will make it more visible to the non statisticians.

That, I hope!

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SUMMARY

This paper outlines the principal steps in the development of the undergraduate and graduate Statistical Education in Argentina, taking into account the political background in which they occured. In Argentina, most of the Statisticians are women. This do not constitute an example of lack of gender discrimination. Otherwise, the profession as a whole, has been affected by the fact of being practiced by women.

RÉSUMÉ

Cet article ébauche les pas principaux dans l'éducation statistique de degré et post-degré en Argentina qui prend en considération le fond politique où ils se sont passés.

En Argentina, la plupart des statistiques sont des femmes. Cela ne représente pas un exemple de manque de la discrimination pour genre. Au contraire, la profession en soi-même a étè affectée par le fait d'etre pratiqué par les femmes.