

"If you like knitting why are you talking about engineering?"

by Luz Maria Martinez, Isis International Communications Program.



Luz Maria Martinez is part of the Isis International-Manila Communications Program team. Luz, a Latina has made Manila her permanent home.

Recently women in the sciences from the Philippines, Vietnam, Malaysia, Indonesia and Thailand came together to share information, to confirm women's roles in the sciences and technology, and as inventors to form alliances with women from South-East Asia. Most importantly, they came together to give strength to the creativity that they all possess.

This sharing took place in Manila from July 13-15th when the ASEAN Symposium on Women Empowerment Through Science and Technology 1994 was held. It was hosted by the Asian Alliance of Appropriate Technology Practitioners, Inc., the University of the Philippines National Science Research Institute, Women Inventors Association of the Philippines (WIAPI), the Women's Association of Scientists in the Philippines (WASP), and Women in Science and Technology Development Foundation, Inc. (WISTDF).

A few months earlier another group of women in the sciences met at the Australian Science Festival in Canberra. They are members of the Women in Science Engineering and Technology Advisory Group (WISSET). At their seminar they examined why the career paths of women in science, engineering and technology are out of phase with their male counterparts.

Common threads weave together the women scientists from South-East Asia and Australia. Data from Asia, Australia, Europe and the United States shows that the sciences

and technical fields are not career paths that are commonly chosen by women, and, that even those who manage to enter the field and maintain a career within it find that their needs are different from those of their male counterparts.

Socio-cultural norms

Socio-cultural expectations appear to be the foremost factors limiting women's access to the sciences. Two engineers, Elizabeth Taylor, Lecturer in Electrical Engineering at the University of Technology, Sydney and, until recently, Convener of the National Women in Engineering Committee, Institution of Engineers Australia and Jennifer Perrin, Project Manager with Australian Construction Services, give credit to their creative ability and interest in sewing and knitting,

"I found that engineering is about being creative with materials, which I found one of the most satisfying aspects. I had always liked sewing, knitting and creative things. It was really important to me that people didn't say, "If you like knitting why are you talking about engineering" states Ms. Taylor.

Deeply held traditional societal values that dictate that women stay home and fulfill the total family and household responsibilities deprive many women from pursuing careers let alone non-traditional professions.

Everyday socio-cultural norms also impact on the kind of education or lack of it, that keep women from entering the sciences. In Asian



explore the reasons for this. It may be that teachers are geared towards social sciences and /or that the school curriculum may focus more on this."

The need to educate parents

However, even when a girl's education system

developing countries, fewer educational opportunities are made available to women due to economics as well as social attitudes, women make up a very small proportion of students in the sciences and technology. For example, in Indonesia, approximately 0.1% reach higher education. According to Ms. Wati Hermawati, researcher at the Center for Analysis of Science and Technology Development at the Indonesian Institute of Sciences in Jakarta, women pursuing the sciences is uncommon,

"While on paper the opportunity for men and women is equal, in reality this is not equal. This inequality stems from the perception that where women are concerned a career in the area of science and technology is too demanding and not practical in combining both family and profession, and also due to Islamic tradition where the entire family, including in-laws, participate in the important decisions of the family. In addition, women must have permission of their husbands in order to work. In research we have conducted we have found that schools also play a major role in focusing women on the more traditional jobs. Schools in general focus more on the social sciences rather than on science and technology, we still need to

encourages her to pursue a career in the sciences, parents may find the area as not feminine enough and consciously or unconsciously discourage their daughters. Professor Anne Street, from the Department of Mathematics, University of Queensland, states that parent education is needed. Parents sometimes advise their daughters 'if it's difficult, just quit'. Dr. Taylor also states that parents must be open-minded and think of the skills base of the profession, rather than saying, 'you'll have to be in overalls and under a car-that's the only way you can be an engineer'.

Mrs. Gan, who currently heads the Publications Unit at the Standards and Industrial Research Institute in Malaysia, credits her parents foresight for her being able to pursue a career in the sciences.

"In Malaysia, especially in my day, it was more or less automatic for good students to go to science classes. So I was swept along into the science stream without being aware of other options and opportunities. Later, my parents sent me to Australia for matriculation and then to the university. I would say my parents were very broad-minded as I was the youngest, and only daughter, among seven children."

Government participation

The type of education available to women in each country also depends on the policies government's establish for promoting students in the sciences. According to the Situation Report in Mainstreaming Women in Science and Technology, published by Approtech-Asia and WISE-Thailand, some governments in Asia are beginning to recognize the need to bring more women into the science and technology fields. Policies, recruitment and incentive programs, projects, seminars, etc. that take women's needs into account and in partnership with women's organizations, could influence society's traditional view on women entering these predominately male professions. In Australia for example, WISET was established by the then Minister Assisting the Prime Minister for Science, to find new ways of encouraging women to enter and remain in the sciences.

In Vietnam, Dr. Bui Thi An, Director of the National Centre for Natural Science and Technology of Vietnam, Institute for Tropical Technology, points out that the Vietnamese government has also initiated efforts to increase the number of women joining the ranks of science.

"We are now going full force in building and developing our country. With good infrastructure we can build and rebuild, roads, bridges, construction, pipelines, etc. As a scientist I am confident that we will be able to offer and settle the corrosion problem [a major problem affecting Vietnam due to tropical atmospheric factors]. The government has identified key areas in the sciences for our future and is bringing in more women scientist to provide research, to offer and settle the corrosion protection [problem]. That is very important now, we are combining more scientific fields such as chemistry, physics, construction, mechanical, metallurgy and microbiology."

Mrs. Gan adds that the Malaysian government is now interested in increasing the area of science for women.

"Malaysia is striving to become an industrialized country by the year 2000. While the number of overall students is increasing, the number of students entering the sciences is decreasing. The government is alarmed at this trend because as an industrialized country there is a large need for people of both sexes to enter professions of science and technology. The government is using and providing incentives to Malaysians living outside the country to return. There are also plans to recruit more women into technical schools. Future projections are that while there are more men now in the technical fields, in the future there will be more women in the technical fields. However, it is difficult for me to assess what impact the women will have in these fields."

The Indonesian government has also seen the need to increase the pool of scientists and technicians and have initiated projects that will promote the sciences. Ms. Hermawati points out that

"In the area of science and technology the government has identified the fields of biotechnology, new materials, micro electronics, oceanology, environment, applied sciences and basic sciences. In order to increase the pool of researchers the government has initiated an integrated competitive research project where men and women are invited to engage in this project to serve as members of research teams between government and universities. Government has initiated the funding with hopes that industry will take over the funding in the future."

Juggling families and science

While there is general agreement that government policies will have a strong impact in making the sciences accessible to women, there also needs to be recognition and change within the field to allow women the opportunity to raise families as well as manage a career. Professor Anne Henderson-Sellers, director of the Climatic Impacts Centre, Macquarie University, Sydney, and chair of WISSET says that

"Many women go into science, engineering and technology, then when they have a career break, often to have children, they somehow don't return to their careers. I'm often told that this is because it's very hard to return to these fields. Yet I know very many women who've gone back to a career in law or accountancy. I don't understand it, why is it harder to return to science or engineering than law?"

In the 14 years Ms. Elizabeth Taylor worked as a civil engineer she found most people extremely supportive until she became pregnant, than everyone told her she'd have to move off site back into the office. For three years she juggled her work and family commitments by working part-time, before taking up a university position. She says that while attitudes are changing, combining parenting with an engineering career still presents a challenge.

Dr. Bui Thi An has personally found few difficulties in her role as a woman scientist but also agrees that women must handle different roles.

"In Vietnam a woman scientist can find a job anytime. I have not found it difficult to be a woman scientist. But I think even without being a scientist, women have the main task of taking care of the family be it mother, sister, or wife, therefore, women need different conditions than men."

Most of the women interviewed agreed that while they may fill key positions in their chosen fields, family responsibility still falls directly on them. One Filipina scientist commented that in the Philippines, because many households can afford domestic help they are relieved of major tasks at home so women can pursue their careers.



Bing Concepcion

Women doing it better

Reports show that women science leaders who have made it to the very top have proven that they are just as capable if not better, than their male colleagues. This was apparent at the Manila Symposium. Women attending this meeting were in key positions in their fields as well as having discovered and created inventions that affect our daily life, from providing ways of increasing the use of bath soap to discoveries useful in protecting the environment.

One such scientist from Thailand is Dr. Jira Porn Sukhumavasi, who is currently Acting Director of the Bio Technology Laboratory at the Thailand Institute of Scientific and Technology Research. One of her accomplishments is to have been the main discoverer of the use of bacteria in protecting the environment during oil spills. This bacteria is now also being used in part for waste management of petroleum residue, for gas pumps, glassware and bearing product factories as well as everyday oil.

So next time you read about another 'man' made disaster involving oil spills, you can be sure that this discovery by an Asian woman is helping to protect our environment and save marine life.

Sources: Women in Science and Technology Development and Transfer International Symposium held on July 13-17, 1992 in Thailand, published by Approtech-ASIA and WISE-Thailand, pp. 40-41.

The Gen, published for the Australian government's Department of Employment, Education, and Training by Susan Munter Communications, Suite 6, George Turner Offices, 11 McKay Gardens, Turner, ACT, Australia 2601.

The Vietnamese Woman in Scientific Creation and Technological Transference

by Hoàng Thi Lich, Vice Director of the Centre for Women Studies, Hanoi.

There is no doubt that women have made extraordinary advances in Vietnam in recent decades in many areas of life. Their achievements are particularly impressive in education and entry to the workforce, especially into non-traditional occupations for women. This is especially so as women have to overcome both historical biases favouring males in education and management positions as well as colonial discrimination that largely denied women an education.

Achievements are seen in the data showing that by 1991 women made up more than half of the labour force in 8 out of the 19 industry / employment sectors (1); more women are employed in computer services, informatics, production and business and in techno-scientific fields.

This article by Hoàng Thi Lich, Vice Director of the Centre for Women Studies, outlines these changes. She highlights the role of women in the sciences while pointing out the effects of continuing traditional gender role stereo-typing on the lives of women in science.

Background to women's achievements.

'While women's participation in education in Vietnam has been outstanding in the past three to four decades, attention has to be paid to our country's reality that

the number of people with education at college or university level is low. One reason is that under the French colonialist domination, 97 percent of Vietnamese women were illiterate, the few who had the opportunity for education only finished secondary education and women who graduated from universities could be counted on our fingers and there was only one doctor.

In the new regime, after the August Revolution of 1945, especially since the restoration of peace in North Vietnam in 1954, the state's policy of compulsory education and exemption from school fees at all levels encouraged women to get an education. For example, in April 1989, 88 percent of the total population were literate as were 84 percent of all women, but women accounted for 70.6 percent of all illiterate people. The changes created favourable conditions for those dedicated to schooling to seek promotion for themselves in the way of science.