FROM CARTHAGE TO VIETNAM:

THE DIVERSITY OF WOMEN'S EXPERIENCES IN MATHEMATICS[1]

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INTRODUCTION

Generally, historians of women in mathematics and the natural sciences tend to be rather "Americo-centric." They expect that the situation for women in science and technology is always best for North American women scientists. The next best situation is presumed to be in northern Europe, and distant last place is supposed to be occupied by women scientists in the countries of the so-called Third World.

It is not wise to assume, however, that the status of women in the sciences in the industrialized countries is necessarily better than the status of women scientists in the Third World. Nor can we presume that the position of women in mathematics is necessarily better at the present time than it was in previous centuries. The picture is much more complicated than that, and, as we shall see, often has elements of contradiction.

FAMOUS WOMEN MATHEMATICIANS

Seven women mathematicians are generally cited in superficial overviews: 1) Hypatia (370?-415? A.D.), who according to legend lived in Alexandria, did work on conic sections, and was martyred by Christians; 2) Emilie du Châtelet (1706-1749), courtier and philosophe, who translated Newton into French and extensively commented on his work; 3) Maria Gaetana Agnesi (1718-1799), of "witch" of Agnesi fame, who occasionally lectured at the University of Bologna and turned down an appointment to the Academy of Sciences to devote herself to a religious life; 4) Sophie Germain (1776-1831), who proved an important case of Fermat's Last Theorem and whose work on elasticity won her the Grand Prix of the French Academy of Sciences in 1816; 5) Mary Fairfax Somerville (1780-1872), an English polymath and popularizer whose On the Connexion of Mathematics to the Physical Sciences went through numerous editions in the 19th century; 6) Sofia Kovalevskaia (1850-1891), the first woman to receive a doctorate in mathematics (in the modern sense of the term) and winner of the Prix Bordin of the French Academy of Sciences; 7) Emmy Noether (1882-1935), one of the founders of modern algebra.

These women are the most famous. But it would not be difficult to compose a list of a hundred or so prominent women mathematicians from many time periods and diverse

cultures. The famous medieval Indian number theorist Lilavati, and Bibi Khanim from the Islamic Renaissance in Samarkkand, come to mind in this connection.

WOMEN MATHEMATICIANS AS PIONEERS

Women mathematicians have often been the ones to break down educational barriers and open up professional opportunities for all women. Some examples:

--The first woman in modern times to be fully integrated into professional, academic life at the university level in Europe was a mathematician. Sofia Kovalevskaia joined the faculty of Stockholm University in 1884 and became an ordinary (full) professor there in 1889. Kovalevskaia was also the first woman to be elected corresponding member of the Russian Imperial Academy of Sciences; the rules were changed to permit her membership.

--The first Nigerian woman to obtain a doctorate in any field was a mathematician; Grace Alele Williams received her Ph.D. from the University of Chicago in 1963.

--The first woman to be awarded a full professorship in a scientific or technical field in Vietnam (where full professor is very rare as a title) was a mathematician, Hoang Xuan Sinh.[2]

I regret that I cannot give any examples that pertain directly to Austria, but a couple of "firsts" from the German-speaking world are relevant here:

--In 1920, Emmy Noether became the first woman in any field to obtain full qualifications to teach in German universities.

--The applied mathematician Hilda Pollaczek was the first woman to become a *privatdozent* at the University of Berlin; she gave her *habilitation* lecture in 1927.

Moreover, there are instances in which the attitude of male mathematicians toward their female colleagues has been particularly impressive:

--In 1896, a survey of the German professoriate was taken on the question of whether women should be admitted to universities with the same rights as men. Mathematicians were unanimously in favor, physicists only slightly less so. Historians, however, were almost all opposed to the entry of women.

--Carl Friedrich Gauss attempted to arrange for Sophie Germain to obtain a doctorate from Göttingen University. Gauss had tremendous admiration for what Germain had achieved in mathematics. He wrote:

> But when a person of the sex which, according to our customs and prejudices, must encounter infinitely more

difficulties than men to familiarize herself with these thorny researches, succeeds nevertheless in surmounting these obstacles and penetrating the most obscure parts of them, then without doubt she must have the noblest courage, quite extraordinary talents, and a superior genius.[3]

DISCRIMINATION

On the other hand, one can chronicle enough cases of blatantly discriminatory conduct of male mathematicians toward their female colleagues to remove any doubt that male mathematicians are as much a product of their culture as any other occupational group. Some examples:

--Sophie Germain was a mathematical correspondent of Gauss, Lagrange, and others, and, as mentioned above, her work on the elasticity of metals won the Grand Prix of the French Academy of Sciences. Nevertheless, her name was not on the original list of prizewinners on the Eiffel Tower, even though her work contributed to making the tower itself possible.

--Christine Ladd-Franklin, a student of J. J. Sylvester at Johns Hopkins University, completed all work for the Ph.D., up to and including her soon to be published dissertation, in 1882. The university did not award her a degree at the time, and in fact did not do so until forty-

four years later, in 1926. Ladd-Franklin's work earned her one of the very few stars given to women in early editions of American Men (sic) of Science.

--D. E. Smith and J. Ginsburg note in their A History of Mathematics in America before 1900 that Mathematische Annalen published fifteen articles by U.S. mathematicians in the period 1893-1897. They list fourteen authors, all male. The only one they omit is the one woman-- Mary Frances Winston, a student of Felix Klein at Gottingen.

--Emmy Noether was an editor of Mathematische Annalen in the late teens and twenties, as the whole of the European mathematical community knew well. She was not listed on the masthead of the journal (in contrast to Sofia Kovalevskaia, who thirty years earlier was listed as editor of Acta Mathematica). Moreover, she was sometimes disrespectfully referred to by her colleagues as "Der Noether."

--In relatively recent times as well, we can meet with those who feel that women cannot do mathematics, even when they obviously are doing mathematics. I have a lovely example of this, taken from a 1961 textbook on mathematical physics:

> We will discuss a problem which is purported to have been solved for the first time by *Queen Dido of Carthage*-- of course, in a purely intuitive way, as is

characteristic of female reasoning, especially if tricking a man and making considerable gain is the goal.... *Queen Dido*, being a refugee from *Tyria*, asked a North African chieftain named *Jarbas* for as much land as she could encompass with the hide of a cow. This poor man, falsely thinking that this could not possibly amount to much, gave his consent to the deal, whereupon *Queen Dido* proceeded to slice the hide into numerous small strips and lay these out in a semicircle, using the North African coast as the supplementary boundary. Whether she knew it or not, she obtained in this way the maximal area she could possibly obtain by such a procedure, and established within that area the State of Carthage, in 850 B.C.[1]

HISTORICAL VARIATION IN WOMEN'S POSITION IN MATHEMATICS

There is immense variability in the position of women in mathematics across time periods, and there are many countries, including the United States, Turkey, Russia, and the Philippines, for example, in which women have been represented at higher levels in the mathematical profession during an earlier period in the 19th or 20th century than they are now, or in which the position of women in

mathematics is only just now attaining the prominence of some previous time.

The reasons for this phenomena are amazingly complex, and would require a book-length treatise in and of themselves. Suffice it to say that mathematics does not take place in a vacuum, and that the profession can be affected in negative as well as positive ways by changing political or socio-cultural circumstances. For example:

--In the relative openness and cultural experimentation of 1920s Weimar Germany, 11 women availed themselves of the new opportunities to become *privatdozents*. Among these were two mathematicians, Emmy Noether and Hilda Pollaczek. (Given how few mathematicians there are as a percentage of the total academic community, by the way, 2 out of 11 is quite impressive.) With the rise of Nazism in the 1930s, however, 7 out of 11 of the women were forced out of their positions. Among these were of course both mathematicians.

--Largely as a result of Kemal Ataturk's modernization push in the 1920s and 1930s, at least two generations of privileged Turkish women were encouraged to pursue careers in the natural sciences, engineering, medicine, and mathematics. In the older generation of professors and in the older, more prestigious urban universities, women constitute between 25% and 40% of the total faculty in

engineering, natural sciences, and medicine. They also occupy an impressive proportion (close to 20%) of full professorships and high administrative posts in university departments, laboratories, and research institutes. Now, however, with the fading of the Kemalite message and the influence of more western (and also more fundamentalist) perceptions of appropriate career choices for women, younger Turkish women are selecting more stereotypically feminine fields such as languages and literature.

REGIONAL VARIATION IN WOMEN'S POSITION IN MATHEMATICS

Countries in the same region of the world can have quite different percentages of women in mathematical areas. Take, for example, the Southeast Asian countries of Vietnam and the Philippines. The Philippines' percentage of women in mathematics is unusually high: seventy percent of the mathematics department at the University of the Philippines Diliman (main) campus is female. At Hanoi University, by contrast, there are no women faculty in mathematics, though the Vice Rector (a mathematician) told me when I visited in January 1993 that most of his best students now are women. (As an aside I should point out that this comparison between Vietnam and the Philippines says nothing about general mathematical level. There are very few research mathematicians of either sex in the Philippines. Vietnam,

on the other hand, has world class research mathematicians of both sexes. In fact, a woman mathematician of Vietnam, Dr. Le Hong Van, recently received a distinguished investigator prize from the Third World Academy of Sciences.)

One can see similar disparities elsewhere. China has a relatively high proportion of women in mathematics, while Japan has an exceedingly low proportion. Mozambique has many women in mathematics-related majors (45% of the total), while nearby Madagascar has a lower percentage (women are only 22% of students of mathematics and computer science).

DOES WOMEN'S STATUS CORRELATE WITH ECONOMIC INDICATORS?

Although one might assume that the percentages of female mathematicians in countries with similar economic indices might be comparable, in fact there are many obvious (and not so obvious) counter-examples. Among the obvious are Great Britain and northern Europe in general as opposed to the U.S. and southern and eastern Europe. The U.S., France, Italy, Portugal, Turkey, and Spain have significantly higher proportions of female mathematicians than England, western Germany, Sweden, Netherlands, Norway, and so on.

A country's general economic level (measured in admittedly dubious terms like gross domestic product per

capita) is not a good predictor of the percentage of women in mathematics. The Netherlands, Japan, Sweden, England, and Austria are wealthy countries with humiliatingly low percentages of women in mathematics (and most other scientific and technical fields, for that matter). The "low countries" are particularly well-named in this regard, because in the Netherlands women constitute only 2% of full professors overall, and fewer than 1% in science and technology.

Poorer countries such as Turkey, Portugal, the Philippines, Mexico, Colombia, and India all exhibit higher percentages of women in mathematics than do the wealthier countries listed earlier. Moreover, women can be represented decently at various levels of the profession. India's delegation to the International Congress of Mathematicians in Kyoto, for example, was 2/5 female, and women chair mathematics departments in several well-known Indian universities.

In other so-called "developing countries" as well women appear to be leaders in their departments no less often-- and frequently more often-- than in North America and western Europe. In preparing this, I came up with a list of women who were or had recently been heads of mathematics, statistics or computer science departments in India, the Philippines, Costa Rica, Mexico, Ivory Coast, Peru, Kuwait,

Hong Kong. This does not necessarily mean that the situation for women in mathematics is better in these countries, merely that certain stereotypes need to be treated with caution. One cannot assume that academic communities in Asia, Africa, and Latin America will be more backward on women's issues than those of North America and Europe. For example, the Third World Academy of Sciences membership is 15% female, as compared to approximately 5% for the academies of science of the U.S. and the former U.S.S.R.[5]

At the student level, too, the picture can be varied, and run counter to some of our stereotypes and the images put forward in the popular press. Women's participation in post-secondary level programs in mathematics and computer sciences in some countries (Liberia, Cuba, Indonesia, South Korea, Kuwait, Saudi Arabia, Turkey, Albania, and Italy) approaches or even exceeds their percentage in all programs at that level. Other countries (the U.S., Canada, and most countries of northern and western Europe) have far lower percentages of women students in mathematics and computer science than the total percentage of women at that level.

EFFECTS OF SOCIAL AND ECONOMIC CRISIS

Periods of social pressure and reaction can have special consequences for women in "non-traditional" fields

like mathematics. These effects can be positive, or negative, or mixed. That is, an ostensibly positive phenomenon can have a negative side as well, and "good things" can happen for unusual, or even for the wrong, reasons.

Sometimes one sees a positive impact of progressive social philosophies, such as Kemalist ideas in 1920s Turkey, or liberalism in 1860s Spain, or nihilism in 1860s Russia. For example, the first two women in the world to receive their doctorates (in the modern sense of the term) in mathematics were both Russians. Sofia Kovalevskaia and Elizaveta Litvinova were inspired in their pioneering activities by the social ferment of post-Crimean War Russian intelligentsia culture.

On the negative side, though, let us consider the impact of an economic crisis, such as that which most of the world is experiencing at the present time. In Mexico, for example, deteriorating pay and consistent underfunding by the government has led to an abandonment of the national university system by (especially) male professors, who are leaving in droves for the private universities and the business sector. This means that the proportion of women on the mathematics faculty at the National Autonomous University is rising. But prestige and salary are falling, and my Mexican female colleagues in mathematics are

beginning to feel that they have been left in charge of a sinking ship.

Feminization of mathematics (or any other field) can very well mean that it has become less remunerative, or overcrowded, or unattractive for other reasons. The women might be there, in other words, because the men are somewhere else.

A CAUTION ABOUT CROSS-CULTURAL COMPARISONS

One must be very careful about making generalizations from historical and cross-cultural comparisons. Mindless use of one or another indicator to make a sweeping generalization about women's status in mathematics can give misleading results. It is not possible to use the same indicators to determine the situation in every country. The significant statistic might be the percentage of women teaching at the university level. But it might also be the proportion of women at research institutes and academies of sciences (and at what level), or the percentage of women who publish (or who publish in international as opposed to domestic journals), or the proportion of women who go abroad for conferences, post-graduate study, etc., or the percentage of women awarded grants by national and international funding agencies.

Indices can have different meanings in different countries, and the prestige of various positions and honors can vary considerably. This is not to say that it is unimportant that women constitute a large percentage of professors on a mathematics faculty in a certain country. But this measure might not be the unique indicator of women's success or status in the mathematical world. In many countries, for example, women do teach mathematics at the university level. But they are not well represented at the more prestigious non-teaching research institutes, such as those associated with academies of science.

THE POSITIVE SIDE

Despite the problems and societal obstacles, women do seem to be able to fare reasonably well in mathematics for a number of reasons. There are, after all, some recognized and relatively objective standards in the mathematical community. Women might have to be better than their male counterparts to be judged equal, but the standard is not impossible to achieve. Sofia Kovalevskaia, for example, offered <u>three</u> works to Göttingen in fulfillment of her degree requirements. She and her adviser Karl Weierstrass reasoned that as the first woman applying for the doctorate, her case would have to be especially strong. Three <u>were</u> sufficient, however!

--Of the seven Ph.D.s in mathematics awarded to women by Johns Hopkins University before 1940, five were students of one professor (Morley). Eleven of the thirteen women who completed Ph.D.s at Catholic University were students of Landry. The University of Chicago granted forty-six of the 229 doctorates given to women in the U.S. through 1939; of them, thirty were students of either Leonard Eugene Dickson (eighteen of his sixty-seven students were women) or Gilbert Ames Bliss (twelve of his fifty-two students were women).

--Lee Lorch, now emeritus at York University, performed mentoring functions for many women, including several of the few Black women who later received Ph.D.s in mathematics, during the time he taught at Fisk University.

THEORIES OF INNATE GENDER DIFFERENCES DISCREDITED

Cross-cultural disparities in female educational and employment patterns in mathematics and computer science raise serious questions about theories that claim innate gender differences in mathematical ability. We need to ask ourselves whether there are other explanations: faulty test design, socio-cultural factors, and so on. Theories must be examined critically, and tested historically and cross-culturally. Several generalizations have become quite popular in late 20th century U.S. society, yet they rest on

dubious foundation, and would fail under historical and cross-cultural scrutiny.

For at least three decades the received wisdom-- and the line being pushed by so-called "objective scientists" like Camilla Benbow and Julian Stanley-- was that girls are better at verbal tests and boys at mathematical ones. Now, though, that picture is breaking down in several important ways. The much publicized "gender gap" on U.S. standardized tests narrowed considerably during the 1980s, to the point that specialists at the Educational Testing Services (ETS) in Princeton are now saying the differences are not statistically significant. Also, several recent studies have shown that even in mixed groups where males had performed noticeably better than females on mathematics Scholastic Achievement Tests (SATs), on other tests, including ETS's Mathematics Achievement Test itself, there were no significant gender differences.

More importantly, the supposed gender differences are constant neither across ethnic groups within the U.S. and Canada nor across cultures. A 1987 study noted that even within the mathematics SAT the gender gap varies considerably. It is largest for Hispanics and smallest for Afro-Americans. Moreover, Gila Hanna has pointed out in her comparative studies that differences between countries are much larger than those between boys and girls, and that the

gender gap is larger in countries with low scores (like the U.S.) than in those with high scores (like Hungary and Japan). On the geometry test, for example, U.S. males scored 39.7 while U.S. females scored 37.9-- a mere 1.8 points. Meanwhile, the advantage over the U.S. of Hungary and Japan was relatively massive, since all subgroups in both countries scored between 55 and 60 points.

Some countries (Thailand and South Korea, for example) do not exhibit any statistically significant differences between male and female performance on mathematics achievement tests. The one clear conclusion that emerges from all the statistics is that one must doubt the biological explanations of male/female difference in mathematical ability, since this is not likely to vary between countries.

Other studies have also pointed to the culture-bound nature of many of our notions of gender difference. For example, spatial ability tests given to Native American children in Alaska and to central African children show either no difference or one favoring the females. Needless to say, these tests are <u>not</u> the ones reported with fanfare in the <u>New York Times</u>!

GENDER DIFFERENCE THEORIZING AND "CULTURAL FEMINISM"

There is a strand of thought in contemporary feminist theory that comes curiously close to asserting that there are indeed gender differences in mathematical and other reasoning abilities. Theorists of this tendency, which sometimes goes under the term "cultural feminism," assume that Victorian era bourgeois stereotypes concerning femininity and gender polarities are the same across all cultures, classes and historical periods.[6] They also assume that women's participation in mathematics-related fields has been uniformly low in all cultural and historical contexts.

As examples above illustrate, however, it is easy to show that the position of women in mathematics and the sciences can change quite rapidly for the better (or worse). In my opinion, the changes are far too fast to be explainable by biological theories of difference, or by psychosocial theories such as Nancy Chodorow's.[7]

Cultural feminists and gender and science theorists have an unfortunate but consistent tendency to make generalizations despite clear historical and cross-cultural counterexamples. It simply is not true that women's status in the sciences has remained unchanged since the Scientific Revolution, though that is a clear implication of the work

of theorists like Evelyn Fox Keller, Sandra Harding, and their imitators.

In like manner, I am disturbed by certain aspects of recent work on women's purportedly different ways of knowing. Belenky and her collaborators, for example, assert that the gender differences they describe are independent of culture, ethnicity, and class; this is highly questionable. Also, writers such as Sherry Turkle have postulated gender-specific styles of interaction with the computer among schoolchildren; there is ample reason to be uncomfortable with the way Turkle's theory dovetails with current western European and North American stereotypes about women's intrinsic nature. And in any case, historical and cross-cultural data all indicate that the interrelationships of gender, culture, race, and class are far too complex to be encompassed by any simplistic gender polarity theory.

CURRENT DISCRIMINATION AGAINST WOMEN MATHEMATICIANS

In no sense should the above be read as implying that there is no discrimination against women in mathematics. In reality, any discrimination against younger faculty automatically falls disproportionately on women because of the demographics of the profession. The injustice is increased because of usually unconscious but quite pervasive attitudes about women's "natural" roles. In the U.S., for

example, women are often assigned heavier teaching loads than men, and more courses at the introductory level. This is a triple blow: more work is devoted to teaching as opposed to research; teaching evaluations are automatically worse because of the nature of the course (introductory courses virtually always receive lower evaluations than upper division courses); any deviation from stereotypically feminine behavior (such as attempting to enforce high academic standards) is met with displeasure (and low ratings) by students. Numerous studies indicate differential treatment of women faculty on evaluations. For example, students expect to be "nurtured" by women, and punish them for deviations from the ideal "feminine" standard.

Women faculty are caught in a bind. Either they devote tremendous time to teaching, in which case their research suffers; or else they devote as much time to their research as their male colleagues do, remaining aloof from students, in which case they are penalized more heavily than men on evaluations.

Moreover, the evaluatory process for granting tenure is in essence a blackballing system.[8] Even if 80% of the department have not a sexist bone in their bodies, the opposition of a relatively few curmudgeons can sink a woman's chances in a variety of ways. It is rather like the

old anti-semitic blackballing system for admission to U.S. country clubs-- the system persisted for so long because all that was needed was one person in opposition.

There is an analogous blackballing system in place for hiring and tenure in academic departments today. A couple of people can skew the process, and in fact wreck it. Consider the following:

--Say a woman has children and resumes mathematical activity after a couple of years hiatus. How does one interpret this? One could talk about the fact of her return to active research as indicating resolve, and high mathematical ability and dedication. But one typically hears the diehard sexists referring instead to the "unfortunate gap in her publication record."

--Women are often held up to far higher standards than men on the pretext of not lowering standards. For a woman's appointment, there cannot be the least shadow of a doubt, while men are often given the benefit of the doubt.[9] We all know at least one senior professor who thinks nothing of spreading stories to the effect that it would be lowering the department's standards to hire a woman, even when the woman being considered is a far better researcher than he is himself.

In the U.S. a certain amount of sound and fury signifying little or nothing has sprung up around the issue

of Affirmative Action. Departments sometimes have women come on campus for interviews, under pressure from the administration, only to have the appointment sabotaged by a couple of diehard sexists working assiduously to undermine the process. There is a lot of rumor-mongering that goes on about Affirmative Action. Traditionalists routinely exaggerate the success of the program, telling female graduate students things like-- oh, you'll have no problem getting a job, you're in fashion these days-- or jokingly advising their male students to wear a skirt to the job interview. This kind of childish and disingenuous behavior in itself creates a bad atmosphere for women. It conveys the impression that colleagues do not have confidence in the women they have hired, and implies that any women in the department are there on suffrance.

CONCLUSION

Obviously, the above is not a definitive account. My intention was to throw out food for thought, and to illustrate some of the ironies and complexities inherent in women's position in mathematics historically and across cultures. The history of women in mathematics has not been some Whiggish triumphal passage from darkness into light, but neither has it been a chronicle exclusively of discrimination and marginalization. The interactions of

gender and culture are never simple or straightforward; socio-political context is extremely important.

The picture I have presented here is complicated, and often has elements of contradiction. The mathematical world, however, is large and diverse. It can and does contain the multitudes of experience to which I have alluded here.

ENDNOTES

1. I would like to thank my colleague Richard Haan for help thinking up a title. Research for this paper was partially supported under a grant from the (U.S.) Social Science Research Council.

2. Much of my information on women mathematicians of Asia, Africa, and Latin America does not come from published sources, which are generally conspicuous by their absence. Rather, the data emerges from extensive personal interviews with the women themselves, their male colleagues, officials in women's organizations and ministries, and so on.

3. Quoted in H. M. Edwards, Fermat's Last Theorem: A Genetic Introduction to Algebraic Number Theory (New York: Springer-Verlag, 1977), p. 61.

4. Hans Sagan, Boundary Values and Eigenvalue Problems in Mathematical Physics (New York: John Wiley & Sons, 1961), p. 22; italics are Sagan's, underlining is mine. I thank Robert Phelps for bringing this to my attention.

5. The disparity is even more striking than the mere figures might suggest. The former Soviet Academy admits members from all fields of knowledge, including the humanities and social sciences, and the U.S. Academy contains social as well as natural scientists. The Third World Academy, by contrast, admits only natural scientists.

6. This is far from being the case, even within western Europe. In Italy, for instance, the stereotype is somewhat different from that in the U.S. or Sweden or the U.K. Women are purported to be "natural" theoreticians (hence the relatively large number of Italian women mathematicians and computer scientists), while men are supposed to be more practical by nature (and thus become engineers rather than theoretical scientists). Clearly, the relative salary and prestige of the various fields are ignored here.

7. In general terms, object relations theory says that a girl infant never has to disidentify herself from her mother. Therefore, she never sees the world as alienated from herself in the same way that a boy infant does. A boy baby, on the other hand, realizes very early that he is not the same gender as his mother. He has to distance himself from her, and thus begins to objectify the world. Because object relations theory attributes gender differences in intellectual outlook to an immutable mechanism of early childhood, it is almost indistinguishable from a genetic or biological theory. Moreover, there is no way the

theory can account for differences between individuals, or for change over time or across cultures.

8. I realize that the concept of "tenure" (the right to relative job security granted after a probationary period of some years) is not institutionalized in all countries. But I believe that the following discussion is applicable to most other kinds of hiring and promotion processes as well.

9. This kind of discrimination includes behavior such as the infamous cases of analogous curricula vitae being sent to chairs with male and female names attached-- the chairs routinely recommended the women for lower positions than the men! Bernice Sandler has documented many examples of this sort of (unconscious) prejudice in her "Chilly Climate" series (Sandler, n.d.).

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