Butterflies Aren't Free:

Sexism in Natural Science Books for the Layperson

by Marylee Stephenson

Foreword to Robert Michael Pyle's Watching Washington Butterflies(1), a Pyle's stand for women's right to enjoy the beauty of butterflies, that inspired the research presented below. The exceptional nature of Pyle's stance focused my thought on the sexist nature of "popular" natural scienc books for the layperson. Sexism has been examined in the social sciences (2)and there is critical work on sexis in science relative to the physical a mental health of humans.(3) Yet there remains a gap in the systematic study

> . . . butterflies have tended to be a child's hobby . . . . It has been suggested that butterflies may symbolize a boy's adolescent dreams of the fair sex, gossamer and floss creatures to be pursued and--just possibly--possessed. Therefore, it can be argued that when teenagers make the transition to the real thing the butterflies are dropped. An interesting idea but probably not valid. A pity if true, because butterflies deserve a longer attention span. (Author's note: And because women deserve butterflies, too.)

It was the above statement by renowned naturalist Roger Tory Peterson in the

Photo by Marylee Stephenson

of sexism in other areas of science. This gap needs to be filled because it is in "Field Guides" to animal and plant life, in life histories of various animals, in descriptions of comparative animal behaviour written in an informal manner, and in highly readable accounts of the workings of the human body that the public is most often in conscious contact with some aspect of that imposing endeavor--Science.

Such sexism can take many forms. One of the most frequent, and yet often most insidious, is through written and spoken language. Language is a central feature of our socio-cultural context. It is characteristic of language that

> . . . a number of fashions of speaking, frames of consistency, are possible in any given language and that these fashions of speaking, linguistic forms, or codes, are themselves a function of the form social relations take. . . . The form of the social relations or, more generally, the social structure generates distinct linguistic forms or codes and <u>these codes essentially transmit the culture and so constrain behaviour</u>. (Emphasis Bernstein's) (4)

It follows that in a society where social relations between groups and between individuals--and between combinations thereof--are egalitarian in nature the language would reflect this. It would be true of such a society's linguistic features <u>per se</u>, and it would be the case that the production and maintenance of linguistic forms would be equitably distributed among the members of that society. Since equality of social relationships on any significant scale is not a feature of our society--notably in the cases of sex, race, class, ethnicity and age--we would expect the language character and the production of it(5) to reflect these disparities.

Following on this reasoning, then, the question addressed in the analysis of the present material is not, "is it sexist?" I take for granted that science and scientists share the cultural context in which they work, partaking of its interests, its prejudices, and its strengths and weaknesses. With one exception--the book (Pyle) that sparked this research--the material is <u>all</u> sexist. Indeed, the phrase "it's a man's world" takes on even more richness (if that is the word for it) for the person engaged in the study of science-for-the-public. The question asked here is, rather, <u>how</u> is that sexism expressed. What I take as sexism in these natural history and human biology books is a consistent male-centered orientation, at the expense of the female experience (non-human or human). This occurs in a number of ways, as will be shown.

Methodology and Data Base: The data were selected by a case study approach, where a range of speciality-areas in natural history and human biology books were compiled and then several books from each area were randomly selected to be analyzed. The thirty-eight books surveyed came from a lay-person's 300 volume natural history library. The case study method was chosen over a statistical approach because numerical distributions of the occurence of sexism are not meaningful when virtually the entire research universe is sexist. The methodological necessity is, rather, to portray a fair array of the sources of study--the various types of natural history and human biology books--and to show how in the case of each type of work, sexism is perpetuated. The speciality areas include: ornithology, entomology, botany, animal ethology, biological theory (i.e., mimicry, camouflage), ecology and human biology. In type they range from field guides for practical outdoor guidance (birds, insects, wild flowers, butterflies), to comprehensive monographs on single species (herring gulls, hedgehog, condors, peregrine falcon, shearwaters) to systematic descriptions of the human body and/or its organis (bloodstream, genes); descriptions of a class (birds, insects) or order (butterflies and moths). No books were pre-viewed for possible sexist content as a criterion for selection. Virtually all the books are "popular" both in type and extent of use and could be bought in any large bookstor

Analysis of the data: Sexism in popular science books is expressed in several ways: 1. the male dominance of the practice of science; 2. an assumption by the authors of a male universe in science and elsewhere; 3. an emphasis on description of the male of the species and on "maleness" characteristics; with a concomitant denigration of females and "femaleness." I will point out both how these modes of sexism are constituted and also how the absence of the female experience in scientific practice and content often detracts from the adequacy of the scientific work presented. With rare exceptions, which will be noted, the examples given below represent regular and typical occurrences of each type of sexism, so that giving percentages would be superfluous.

1. Male dominance in the practice of science.

Two of the books are co-authored by women. The rest are written by males. Additionally, with few exceptions, virtually all the scientists, technicians or other experts they cited were male. There is nothing surprising about this, descriptively speaking.(6)

Women's presence in these books is consistently as typists, proofreaders,

illustrators and (sometimes, one and the same) long-suffering unnamed wives. A striking example of the latter is the following acknowledgement to his wife from Konrad Lorenz' in King Solomon's Ring:

> And what has my wife put up with, in the course of the years? For who else would dare ask his wife to allow a tame rat to run free around the house, gnawing neat little circular pieces out of the sheets to furnish his nests . . . . Or what other wife would tolerate a cockatoo who bit off all the buttons from the washing . . . or to allow a greylag goose to spend the night in the bedroom . . . (greylag geese cannot be house-trained). And what would she say when she found out that the nice little blue spots with which song birds after a repast of elderberries decorate all the furniture and curtains, just will not come out in the wash? (p. 2)

From Lorenz' later descriptions of his wife's role in his work, the above hardly constitute the highlights.

This situation raises again issues of the detrimental nature of female occupational segregation of the lack of role modeling for females who may have an incipient interest in science on various levels. It also raises the important question of distortion in the literature resulting from the lack of the insights and concerns of the female gender being brought to bear upon the scientific endeavor.(7)

2. Assumptions of a male universe.

Along with the descriptive facts of a male universe of science practitioners, there are two closely related aspects of sexism in science. The first aspect is the almost automatic assumption that the audience for the book(s) is male: "Any sensitive reader. . . his . . . ," ". . . any true nature lover . . . . his . . . , "Every student . . . . his, "The beginner . . . his . . . ." The second is the universal "generic" use of the male in referring to all humans, except where femaleness is specifically at issue (in reproduction, etc): "And yet man does not exist in isolation. . . ." is typical of the human referents.

It may be argued that the reader actually understands that both men and women are included in this form of address. Thus, neither group need feel selected out for attention or neglect. However, recent studies have shown that readers when seeing "man" used generically, do in fact interpret this as literally "a man" and not as "people."(8) Thus, this traditional usage perpetuates the exclusion, on a perceptual and affective level, of the female reader from the practice of

science as undertaken in these books.*

Moving from the authors' "philosophical" and linguistic stance on "man" we find the consistent use of the generic male in the descriptive material as well. We find statements such as males having 5.4 litres of blood on an average and females 3.3. Yet from then on figures of quantities of blood components (white or red cells, for example) are based on "Our average adult." (Asimov, 1) Would that be male, female or someone in between? Or we learn how long it takes a man to go without food and water, but not a woman. Or, in a discussion on hormones and growth rate patterns, the graphs presented are only of the rates for boys. (Mason) This persistent ambiguity is confusing and finally misleading because we cannot be sure whether the described characteristics, anomalies, defects or diseases are sex-linked, and it would be most interesting and important to know.

Interestingly, most of the authors refer to most non-human species as male as well: condors, lions, golden hamsters, leopards, hedgehogs. This unisex language leaves us ignorant as to whether male birds are more predatory on butterflies than females (Emmel): whether male dogs are more dependent on their master's [sic] company than are females (Lorenz, p. 23); or whether the male porcupine fish is more belligerent than the female. (Lorenz, p. 24) The incomplete nature of these kinds of statements, which pervade the literature, begs for fuller description and analysis.

3. <u>Emphasis on description of the male of the species and on "maleness" characteristics and denigration of femaleness</u>.

This mode of sexism is the culmination and extension of the other two aspects of it. Space limitations allow only one or two illustrations of a phenomenon that appears extensively and consistently through most of the books, particularly the ones discussing behaviour. In a comprehensive monograph on waterfowl the 16 figures depicting waterfowl plumages, ranges, anatomical characteristics, sexual pair forming displays, only males are shown (Johnsgard). It is not simple curiosity or female chauvinism that requires a representation of the female of the species; one of the basic tenets of animal ethology, is the essential role of <u>both</u> sexes in allowing courtship, pair formation, nest or home-building and maintenance of young. That is, there are genetically linked action patterns peculiar to the male and female respectively of the species. The

*This same process of exclusion is fairly well accepted as occurring in texts that leave out native or other ethnic or racial groups, or that derogate and otherwise distort their character and actions.

cyclical hormonal buildings will "release" the initial stages in each sexes' pattern, but for their reproductive behaviour to succeed each sex must be presented with the complementary (and different) behaviour unit inherent to the opposite sex. If the sequence of events is broken anywhere along the line, it cannot continue at that time and if it is broken too often, or the appropriate behaviour is absent entirely, reproduction and offspring care will not occur. Thus, a discussion of "sexual displays of various waterfowl species" that depicts only the males and that deals less completely with females in the text is grossly inadequate to the stated task of describing and analyzing "sexual display."

The following quotation from a book on animal camouflage is typical: "After the breeding season, the dashing, good-looking drake discards his glittering tuxedo for an unassuming tweed coat, not unlike his lady's everyday dress." (Portmann) This kind of portrayal of an array of behaviours and appearances occurs from book to book. It is often true that males are more "flashy" in appearance and behaviour and they are often more evident to the bone-weary observer. But the person attuned to the subtleties of appearance and behaviour and the person genuinely cognizant of the need for an objective, complete science will not stop at the relatively obvious.

This emphasis on males and maleness implies, by omission, a denigration of females and characteristics seen as female. In a number of books this derogatory attitude is more explicit. There is a great amount of anthropomorphism of non-humans and particularly so of females. They are portrayed as "ladies" exhibiting "coyness." (Baker) Where a single male has a number of mates the females are referred to as the "harem." (Lockley, Burt and Grossenheider) A male kestrel (a bird of prey) had the food stolen that he was taking to the brooding female: "She followed him, begging loudly for several minutes--rather tactlessly, I thought." (Timbergen, 36) Deviance does not go unnoticed in the animal kingdom [sic]. In gulls, ". . . the initiative in love-making is usually taken by the female, not the male, a very shocking fact to most of my friends when I mention it to them. . . ." (Tinbergen 37)

Human females are no less negatively stereotyped. Males are the norm for human qualities and characteristics and females provide the light relief or mild sexual titillation. So in a book on animal camouflage where the toad's ability to "appear in a host of disguises," we find that a "Miss Stephenson*(probably apochryphal) tells of a lady gardener who was con-

*No relation.

vinced that her small ornamental garden contained three toads. . . . It took the lady a long time to realize her garden had but a single toad." (Portmann) Or from a discussion of allergies: "You may be allergic to your wife's face-powder, so that either powder or wife must go." (Asimov, p. 1) And to demonstrate the manly awareness of womanliness, comments such as the following are found:

> As it happens, there is more subcutaneous fat in the female than in the male, and it is more evenly distributed. Women may perhaps feel a trifle annoyed. . . . but it is this . . . fat that softens and curves their outline--a consequence that I have every reason to believe, is quite satisfactory to one and all. (Asimov, p. 3)

Or, more pernicious, in a discussion of hormonal effects on appetites:

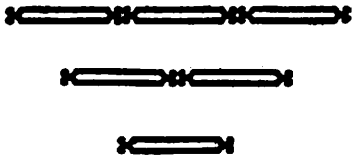
> The appetite centre is very much affected by emotion . . . the girl taunted for her puppy fat . . . . The menopausal housewife, contemplating her slim attractive daughter, may retire to her bedroom and eat a whole box of chocolates in mourning for her lost youth. (Mason)

As a final patronizing note, we find in a description of body surface area, the following:

> Female readers will be able to compare this with the number of square yards of material used to make a dress. A square metre is slightly greater than a square yard. (Green)

Conclusion

Sexism pervades both the production of and content of the literature that bridges the gap between professional scientists and the lay public. As such, the stamp of scientific objectivity is given to what is, in fact, discriminatory and often conceptually distorted work. The exceptions are so rare as to prove the rule.



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NOTES

1. Robert Michael Pyle, Watching Washington Butterflies, Seattle Audubon Society, 1974.

2. Betty Frankle Kirschner, "Introducing Students to Women's Place in Society," American Journal of Sociology. LXXVIII (January, 1973): 1051-1054; Julia Schwendinger and Herman Schwendinger, "Sociology's Founding Fathers: Sexist to a Man," Journal of Marriage and The Family, XXXIII (November, 1971): 783-799; Marjorie B.U'Ren, "The Image of Women in Textbooks," in Women in Sexist Society, ed., Vivian Gornick and Barbara Moran (New York, New American Library, 1971): 318-328.

3. Diane Scully and Pauline Bart, "A Funny Thing Happened on the Way to the Orifice: Women in Gynecology Textbooks," in Changing Women in a Changing Society, ed. Joan Huber (Chicago, University of Chicago Press, 1973): 283-288. Also Dorothy Smith and Sara J. David, eds., Women Look at Psychiatry (Vancouver, B.C., Press Gang Publishers, 1975).

4. Basil Bernstein,"The Limits of My Language Are Social" in B. Bernstein, Class, Codes and Control, Vol. 1 (London, Routledge and Kegan Paul: 1971): 204-05.

5. Dorothy Smith, "Ideological structures and how women are excluded," Canadian Review of Sociology and Anthropology: Vol. 12, #4 (November, 1975): 353-369.

6. Alice Rossi, "Women in Science: Why So Few?" in Constantina Saffilios-Rothschild, Toward a Sociology of Women (Lexington, Mass. Xerox College Publishing, 1972): 141-153.

7. Jessie Bernard, "My Four Revolutions," in Changing Women in a Changing World, Joan Huber, ed. (Chicago, University of Chicago Press, 1973) and Dorothy Smith, "Women's Perspective as a Radical Critique of Sociology," Sociological Inquiry, 4, #1 (1974): 7-13.

8. Johanna S. De Stefano, "A Study of developing perceptions of Referents in selected English generic terms." Mimeographed. Columbus, Ohio: The Ohio State University, 1975; Joseph Schneider and Sally Hacker, "Sex role imagery in the use of the generic 'men' in introductory texts: a case in the Sociology of Sociology," American Sociologist 8 (1973): 12-18.

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