Robert Mayhew, *The Female in Aristotle's Biology. Reason or Rationalization* (Book Review)

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Natural philosophers make mistakes. Descartes got the laws of inertia wrong, Kant misunderstood the primacy of Euclidian geometry, and almost everyone (except perhaps Aristarchus of Samos) prior to the discovery of the telescope mistakenly thought that the solar system was geocentric. That we find Aristotle mistaken on questions in the life sciences -- questions which required advances such as the microscope to even articulate -- should come as little surprise. There seems nothing remarkable in the fact that Aristotle mistakenly thought that the constitutive elements of the world were four (earth, wind, air, fire) or that the "organ" of thought was not the brain, but the heart. But the matter is otherwise when scholars examine Aristotle's remarks about the female in his biological writings.

1 When Aristotle claims that the leader of a hive is the king bee (HA 8 [9].40.623b9-10), that woman have smaller brains than men (PA 2.7.653a28-9), and that the female of the species have fewer teeth than the male (HA 2.3.501b19-21), Aristotle's critics have suspected something more nefarious than simply poor observation at work. When Aristotle goes on to claim that "the female is, as it were, a mutilated male" (GA 2.3.737a27-8) or that "the female is more dispirited and more despondent than the male, more shameless and more lying, readier to deceive and possessing a better memory for grudges" (HA 8 [9].1.608b10-12), critics have accused Aristotle of trying to pass off misogyny as science.

Robert Mayhew's *Female in Aristotle's Biology* seeks to clear Aristotle of the charge that his biological writings that discuss the female are not only scientifically false but were the result of ideological rationalization or the desire to suppress woman and reinforce the male power structure. Mayhew [M] examines Aristotle's account of the female in the fields of entomology, embryology, anatomy, and biological "psychology" to evaluate the claims made by critics that Aristotle's biological sciences are misogynistic.2 M. explicitly notes that his intended audience is broad and that it includes not just Aristotle scholars but also people interested in the history of science, classical studies, and women's studies. The monograph is editorially well prepared and includes a lengthy index locorum and bibliography of works cited. In his at times polemical response to critics of Aristotle, M. successfully clarifies what Aristotle in fact says in his biological writings, justifies the reasoning and even the conclusions of some of the more notorious discussions of the female in Aristotle's biology, and often makes one wonder if Aristotle's feminist critics have really read (or at least read carefully) the texts that they critique.

M.'s goal requires him to address the difficult issue of objectivity and ideology in science. To argue that Aristotle misunderstood embryology is one thing, but to claim that his account of
embryology was also ideologically motivated to suppress women is something else. Drawing on
an article by Charles Kahn, M. formulates a two-fold "test for ideological rationalization" to
evaluate not just if the claim a thinker makes is mistaken but if that error can be attributed to his
or her ideological blinders. To justify that an assertion is an ideological rationalization, M.
claims that it must be proven that first, the assertion justifies the interest of one group at the
expense of another (in the case of M.'s topic, that Aristotle's account of the female justifies the
interests of men at the expense of women), and second, that either the claim rests on arbitrary
assumptions and unusually bad reasoning or the claim contradicts other fundamental principles
held by Aristotle (M. 7-11). For example, a social scientist who designed a policy of university
admission on the basis of the claim that the Caucasian race was inherently superior to all other
races would be guilty of "ideological rationalization" according to M. The white supremacist's
claim was not only based on poor reasoning or arbitrary assumptions but also had a relatively
clear relationship to the interest of one group at the expense of another. But consider the case of
a modern scientist who claimed that the moon was composed of green cheese. Although such a
claim would fail the second part of M.'s test since it was demonstrably at odds with all empirical
evidence about the material composition of the moon, most likely such a claim does not justify
or advance some group at the expense of another. To claim that the moon is made of green
cheese is bad science, but (pending evidence of some peculiar green cheese interest group) it is
not ideologically biased science.

Thus armed to prove ideological bias, M. examines Aristotle's most outrageous claims about the
female within the fields of entomology, embryology, anatomy, and biological "psychology." It
should be noted that M.'s examination of Aristotle's biology is extremely focused, indeed more
narrowly than the title of the book implies. For instance, in his eight page chapter on entomology
M. is really concerned just with rebutting critics of Aristotle's account of bees and wasps in the
hive. Although M. sheds light on aspects of Aristotle's entomology, it is hardly a systematic
account of the field or even a detailed account of gender difference throughout entomology
(which, it should be granted, is not an independent field of study for Aristotle). M. amply
responds to Aristotle's critics, but he does not provide a systematic account of sexual difference
or even a complete account of the notion of the female in Aristotle's biology.

In any case, to meet Aristotle's critics in the case of etymology, M. first clarifies that within
Aristotle's discussion, "male" means an animal which generates in another and that "female"
means one which generates in itself (M. p. 22 n. 7; see GA 1.2.716a13-15, HA 1.3.489a10-12).
But given this clarification, it turns out that in Aristotle's understanding of bee generation, male
and female are not mutually exclusive, and more oddly "that the king bees are not male (or
female) and that the mother wasps are not (exclusively) female" (M. 22). Pace Aristotle's critics,
Aristotle thus never claims that the leader of the hive is a male king. Rather, what emerges is that
concepts such as male and female which at first glance seem perfectly clear to us become much
less familiar, much less "modern" the more one is immersed in Aristotle's natural science, a
science, which is in many respects (such as chemistry, cosmology, and causation) utterly foreign
to the modern scientific world view.

To take another example, consider the malicious ideological intent that one might find in
Aristotle's claim that "among human beings the males have a larger brain than the females" (PA
2.7.653a28-29). At first glance, any modern exegete sees the thinly veiled claim of male
supremacy here, namely the claim that men are smarter than women. But as I alluded to above, and as Mayhew makes clear in his discussion, Aristotle sees no connection between the brain and thinking. Aristotle locates cognitive function within the heart, not the brain, and the brain is responsible for regulating the temperature of the entire body (PA 2.10.676a15-35). Only in post-Cartesian science did anatomists begin to associate the brain with cognitive function. Of course, Aristotle's understanding of anatomy is wrong, but more importantly, there is nothing remotely ideological in his assertion about relative brain size. Critics who have seized about such a claim as evidence of misogyny clearly have not undertaken any care in understanding the author whom they criticize.

Mayhew's response to the critic's of Aristotle's embryology and the claims that he views women as either "containers" or contributors of "inert matter" who are passive and play no role in determining the outcome of generation is too complex to detail, but suffice to say that Mayhew takes critics to task for ascribing to Aristotle views he did not hold. Ultimately, Mayhew claims that for Aristotle, in human generation women contribute not fully concocted seed through their menses (52). Although such a belief is obviously seriously flawed from a modern scientific perspective -- as of course it must be, given that Aristotle had no microscope to examine ova and spermatozoa -- M. shows that Aristotle's view is ultimately far too sophisticated and based in careful reasoning and observation to be just an ideological rationalization. At the same time, one wonders if Aristotle's feminist critics will take solace in the claim that according to Aristotle, women contribute a kind of seed to human generation, just a "not fully concocted" kind of seed (M. 50). Although scholars working on Aristotle's biology will find M.'s detailed discussion helpful, I suspect that the more general audience will miss the importance of distinguishing between "inert matter" and unconcocted seed.

What about that most infamous claim, that women have fewer teeth than men? At first glance, one wonders (as does M.) how such a claim could serve an ideological purpose. How are the interests of men advanced at the cost of women by the belief that they have more bicuspids and molars? But more importantly, M. points out that there is some evidence to suggest that Aristotle's claim about teeth is actually a testament to his careful observation rather than evidence of apriorism in his science. Although the evidence is speculative, there is some proof that the diets of ancient Mediterranean women were deficient in vitamin C and D, deficiencies which resulted in diseases such as scurvy, osteomalacia, and osteoporosis, especially in pregnant and lactating women. No one knows exactly what Aristotle saw when he looked into the mouths of Mrs. Aristotle and her friends, but if he consistently saw fewer teeth that would hardly have been implausible given what we know about diet, calcium deficiency, and tooth loss.

On the whole, M. shows that in most cases (including several more I have not discussed), accusations of ideological rationalization in Aristotle's natural science writings are based on misunderstandings of Aristotle's texts, misunderstandings which sometime appear to be the result of very careless exegesis with perhaps its own ideological axe to grind. Thus, Mayhew succeeds with the stated goal of his monograph, namely to clear Aristotle of the charge of ideological rationalization in his biological writings. (Whether those whom Mayhew criticizes will be ashamed of their sloppy exegesis is another question.) But I must admit at least a whimper of dissatisfaction with this book because of what it is not. Mayhew doggedly sticks to the "woman problem" in only Aristotle's biological writings, and self-consciously refuses to extend his
Mayhew justifies the limitation of his study on the grounds that he "does not believe there is much of a connection between [Aristotle's] biology on the one hand and his moral and political philosophy on the other" (17). That is certainly a justifiable position, but M., the author of a book on Aristotle's Politics, knows quite well that the relationship between Aristotle's biological and political works is a much debated question, indeed, one which even extends into questions about modern sociobiology. At the least, M. should have defended further such a decision to justify the limitation of his study. But further, I think M.'s book would have been improved by extending his analysis to the discussions of women throughout the Aristotelian corpus. (Indeed, at only 118 pages of text, M's monograph seems to welcome expansion rather than limitation.) One wonders if M. thinks Aristotle's account of women in the ethical and political works is in fact proof of Aristotle's ideological bias, in which case the sloppy exegetes whom M. rightly criticizes would seem to have been right in spirit if not in fact. And that would be a pity.

Notes:

1. It should be noted that the concept of the "female" (thêlu) is not the same as that of "woman" (gunê). A woman is a human being of the female sex, but "the female" and "the male" are abstract principles (archai) in Aristotle's life sciences. Indeed, it would appear that human beings combine the two principles, and although one or the other predominates, men possess "male" and "female" aspects as do women. See further GA 4.1.766a16 ff.


4. Although, oddly enough, Aristotle was not wrong to claim that men's brains on average are heavier than woman's. Modern studies in comparative anatomy claim that on average men's brains are 15% larger than women's brains. See the studies cited by M. p. 72 n. 8.

