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Book Review

The Love that Dares to Constitute an Evolutionary Mystery

A review of Aldo Poiani, *Animal Homosexuality: A Biosocial Perspective*. Cambridge University Press: Cambridge, UK and NY, USA US\$60.42, ISBN 978-0521145145 (paperback).

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Everybody likes a mystery ... except for those who don't. But if you are someone who does, you couldn't do better than to consult some of the conundrums of evolutionary biology, especially when it comes to our own species: e.g., why do people make art, why is religion a cross-cultural universal, why consciousness, why bipedalism, why hairlessness, why, why, why? Science is our best way – I would argue, our only genuine way – of getting answers about the natural world, and indeed, nearly every book about science endeavors to share these answers, even though it is the mysteries, the things we *don't* know, that really give the pursuit of science its particular thrill (Barash, in press).

Among these, one of the most notable involves homosexuality. As Winston Churchill described the Soviet Union in 1939, same-sex erotic preference is a “riddle wrapped in a mystery inside an enigma.” Thus, although the precise genetic underpinning of homosexuality remains obscure, there is no doubt that it is real; hence, the conundrum. The problem is that even if many individuals identified as homosexual are in fact bisexual, the reality is that a non-trivial number – in the human population at least – evidently are exclusively homosexual (approximately 3% of men and 2% of women), and in any event, even a tiny difference in fitness should doom the less-fit alternative allele(s).

As the great evolutionist J.B.S. Haldane first pointed out (1927), let us imagine two competing alleles, X and Y, with the frequency of X being initially .1% and that of Y, 99.9%. Imagine, further, that X leads to 101 offspring for every 100 produced by Y; that is, it enjoys a fitness advantage of merely 1%. Despite starting with insignificant abundance, and despite the fact that it does only 1% better than its rival, in just 4,000 generations the situation would have reversed, and allele X would now comprise 99.9% of the population and Y, a mere .1%. Yet, homosexuality is very much with us, and with many of our animal relatives as well.

There have been several serious attempts to examine the biology of homosexuality, of which Poiani's *Animal Homosexuality* is both the most recent and the most thorough-going. Indeed, anyone interested in unraveling this mystery – for human beings as well as other animals

– will owe a great debt to the author, who has put together a truly monumental compendium of everything you might have wanted to know about same-sex biology, its proximate as well as ultimate causation. Especially worth noting, for genetically-inclined evolutionary psychologists, is that rumors of the death of kin selection as an ultimate explanation for homosexuality have been greatly exaggerated, and that evidence also continues to mount in support of “sexually antagonistic selection,” whereby the heterosexual female relatives of male homosexuals appear to have a higher fitness than do heterosexual female relatives of heterosexual males.

But possible genetic underpinnings for homosexuality do not exhaust Poiani’s detailed attention. He seems to have covered all possible bases, and – what is most astonishing and impressive – he appears equally competent and qualified when discoursing on an extraordinary range of topics: when reviewing the genetic data, he seems to be a geneticist; when talking neuroimmunology, a neuroimmunologist; even, when appropriate, a psychologist, embryologist, endocrinologist and learning theorist. Indeed, *Animal Homosexuality* reads in some ways as though it were a contributed volume, with specialists covering their own expertise. It isn’t, which is all to the author’s credit and to the reader’s benefit, since it avoids the stylistic inconsistency that so often bedevils multi-authored volumes. Included herein, however, is a chapter by Alan Dixson on homosexual behavior in primates, which is if anything too brief and in my opinion at least, unfortunately provides too little information on the notoriously pan-sexual bonobos. (I say this despite generally feeling that those erotic little apes have, if anything, received more attention by those seeking models for human social and sexual behavior than they actually warrant.) The rest is all Poiani, and what a goldmine it is: 558 dense, double-column pages, with a treasure-trove of many hundreds of references, a large proportion of them blessedly recent as well as relevant.

My enthusiasm has some limits, however. For one thing, *Animal Homosexuality* is peppered with brief personal observations that should have been edited out. For example, “My view of a scientist’s ideal world is one where theoreticians and empirical scientists work in close collaboration to produce the best hypotheses, which are quickly and efficiently tested using data from controlled experiments.” Of course. Is there anyone out there who disagrees? The author’s distracting tendency to pontificate could also have benefited from judicious editing: e.g., “It is also perfectly understandable and indeed welcome that close scrutiny of the scientific quality of research should be especially elevated for those issues that may have a significant social impact. Yet, knowing is better than not knowing, and if a reality does not fit our expectations it won’t disappear just by turning our sight away” (p. 128). Duh.

I also find it somewhat troublesome that parts of this book read as an extended technical research article, with data presented (all of it based on meta-analyses), then subjected to rigorous statistical testing. Although the science is admirable, I would have preferred if it were subject to peer review and then published separately, with the conclusions and implications discussed in book form. So many tests are run, moreover, that the prospect of one or more type I errors must be taken seriously.

His concluding “biosocial model for the evolution and maintenance of homosexual behaviour in birds and mammals” is a flow-chart containing no fewer than 17 distinct and undeniably important cells, such as “Ecological Constraints,” “Altriciality,” “Kin Selection,” “Large, Complex and Plastic Brain,” etc. I don’t argue with any particular factor, but rather, with the notion that this constitutes a “model.” Rather, it’s a summary statement that contains just about everything! This might be entirely appropriate, since there is no reason to assume that nature in general or natural selection in particular necessarily favors the simple over the

complex. Indeed, Occam's renowned Razor is often misunderstood: Its key insight is *not* that explanations necessarily aren't complex, but that we should take pains not to make them more elaborate than they actually are.

Toward that end, Poiani offers the following "resolution to the evolutionary paradox of homosexuality: same-sex sexual behaviors occur across a variety of taxa as a result of a diversity of genetic and neuro-endocrinologic mechanisms that act at various levels of causation, from proximate, to ontogenetic, adaptive and evolutionary and that can be affected by aspects of the external environment, the social milieu in particular" (pg. 412). This may be true, but isn't especially clarifying, and is reminiscent of the claim – of which one still hears echoes today – that a trait may well be under distinct genetic influence even though it follows no Mendelian pattern, and indeed, no known pattern whatsoever, if it generates a phenotype that results from "incomplete penetrance and variable expressivity." Such a contingency pretty much covers all eventualities, pretty much like Poiani's "model"!

On the strongly plus side, however, in addition to the sheer magnitude of his synthesizing and summarizing achievement, Poiani proposes a "Synthetic Reproductive Skew Model for Homosexuality," based on examining numerous ecological and life-history parameters, and considering an admirable array of variables, such as presence or absence of dominance-based mounting, affiliative mounting, coefficient of genetic relatedness among participants, and so forth. I believe this is the first time that reproductive skew – an important theoretic perspective in behavioral ecology – has been applied to homosexuality, and it may well prove fruitful. Evolutionary psychologists with an interest in reproductive behavior generally, even if limited to the heterosexual variety, would do themselves a favor by delving into the literature on reproductive skew, if they are not already familiar with it (the classic foundational papers are by Sandra Vehrencamp, 1983a and 1983b).

Unlike the typical mystery story, *Animal Homosexuality* does not conclude with an answer to its particular "whodunnit" ... or rather "whyisit." No surprise here, and indeed, no reason for disappointment, since when it comes to homosexuality there may very well not be a single, identifiable "who" or "why." But aspiring sleuths owe a considerable debt to Aldo Poiani, who, in this admirable volume, has drawn together the best, most coherent summary to date of the currently available evidence.

References

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