

Supplemental Material

Gender classification

Classification into binary gender categories was performed for all authors and APs (Tables S3 and S4). While the use of these binary categories excludes transgender and gender nonconforming individuals, limiting the accuracy and scope of our analysis, collecting more detailed gender information from these data is practically infeasible. The binary gender analysis presented here is still informative of broad gender dynamics.

When a full, commonly-understood, gender-specific name, or when honorifics (ex: Miss. or Mr.) were provided, gender categorization was straight-forward. However, gender classification was less obvious when provided an individual's first initial and or a gender-neutral name. To classify an author's gender, we sought supplementary evidence. For example, by referring a publication, we learned that J. A. Sved is John A. Sved (Sved, 1972; Kidwell *et al.*, 1977). Another example is G.L.Yang, whose full name was identified via a book published in the same field by Grace Lo Yang, who had the same university affiliation (Yang, 1972; Cam and Yang 2000). The sources of our evidence (*i.e.*, website addresses) are documented in Table S4.

Programmer classification

We identified programmers through key phrases in acknowledgement section such as “ably programming and executing all the computations” (Table S1). However, in some

cases the acknowledgements were ambiguous about specific technical role, for example, “carrying out the computing” (Table S1). In these cases, we evaluated if the study required programming for the task indicated. The vast majority of individuals acknowledged made non-computational contributions. These non-programmers were acknowledged for contributions like “typing the manuscript,” or “helpful comments and financial support”.

Citation analysis

Between 7 and 12 June, 2018, we recorded the number of citations for each article in the dataset according to Google Scholar (Figure S3). Google Scholar may not include every paper that cites the *TPB* articles we examined. If Google Scholar is more or less likely to archive papers that cite AP-supported manuscripts, our citation analysis may be biased. Since we are not aware of a mechanism to produce that difference in archiving, we use the citation data for an exploratory analysis of AP participation and article impact.

Repeat acknowledged programmers

We researched more articles outside our original *TPB* dataset where repeat APs were acknowledged. As an illustrative example, consider Jennifer Smith, who was acknowledged by William Hill in *TPB*. We used Google Scholar to find articles by “William G. Hill” and “W.G.Hill” between the years 1965 and 1980. After ensuring that

the William Hill who authored these newly identified manuscripts had the same affiliation as the original William Hill (Institute of Animal Genetics in Edinburgh or Iowa State University), we examined the acknowledgements section in each resulting article.

Changing AP gender ratio

To determine if the gender ratio of APs differed between the 1970s and 1980s, we performed a one-tailed Fisher exact test to determine if the proportion of women APs decreased. There were a total of 373 articles in the 1970-1979 and 364 articles in the 1980-1990. There were 17 women programmers and 12 men programmers acknowledged in the 1970s. The 1980s had two women programmers and 13 men programmers. The proportion of women programmers was significantly lower in the 1980s ($p=0.00425$) compared to the 1970s.

Supplemental Materials Citations

Le Cam, L., & Yang, G. L. (2012). Asymptotics in statistics: some basic concepts. Springer Science & Business Media.

Goodisman, Michael A.D. (2010). Ross H. Crozier (1943-2009). *Entomologica Americana*, 116(1/2), 92–94.

Kidwell, M. G., Kidwell, J. F., & Sved, J. A. (1977). Hybrid dysgenesis in *Drosophila melanogaster*: a syndrome of aberrant traits including mutation, sterility and male recombination. *Genetics*, 86(4), 813-833.

Sved, J. A. (1972). Heterosis at the level of the chromosome and at the level of the gene. *Theoretical population biology*, 3(4), 491-506.

Yang, G. (1972). On the probability distributions of some stochastic epidemic models. *Theoretical Population Biology*, 3(4), 448-459.

Table S1: Acknowledged programmers

Year	Name	Gender	Acknowledgement
1970	Mrs. H. Walker <u>Barbara McCann</u>	Woman Woman	"...Mrs. H. Walker for computing Tables II, III, and IV..." "...programming assistance of Barbara McCann,..."
1971	Mr. J. Robinson Miss E.P. Bennett Professor B.D.H. Latter Dr. E[ric] N. West	Man Woman Man Man	"...Mr. J. Robinson and Miss E.P. Bennett for assistance with computer programming." "...Professor B.D.H. Latter and Dr. E.N. West for help in computing tables I, II, IV, and V,..."
1972	<u>Barbara McCann</u> Joan Kieper Mr. M. Legg	Woman Woman Man	"...programming assistance of Barbara McCann and Joan Kieper..." "Mr. M. Legg for carrying out the computer programming to solve equations."
1973	Mrs. M. Driver Paul Roda Lucy B.B. Rowe	Woman Man Woman	"...Mrs. M. Driver who carried out the computations required for the figures." "...Paul Roda for programming the solution to the likelihood equations..." "...Lucy B. B.Rowe for computer work."
1974	<u>Mrs. Jennifer Smith</u> Dianne Hollenbeck <u>Mrs. J[ennifer]. Smith</u> Miss M. Chang Miss L. Moore	Woman Woman Woman Woman Woman	"...Mrs. Jennifer Smith for ably programming and executing all the computations." "...excellent computing assistance of Dianne Hollenbeck." "...Mrs. J Smith for carrying out the computing." "...Miss M. Chang and Miss. L. Moore for computing the tables."
1975	Mr. Kukuhsa Jeffrey H. Kinrich <u>Mrs. M[argaret] Wu</u> Boris Skolar	Man Man Woman Man	"...Mr. Kukuhsa for his assistance in running the computer programs." "...Jeffrey H. Kinrich... programmed most of the calculations reported in this paper." "...Mrs. M. Wu for help with the numerical work, and in particular for computing Table 1." "...Boris Skolar for carrying out the computer work."

1976	NA	NA	NA
1977	Marjorie McEwan <u>Jenny [Jennifer] Smith</u> Yoshio Tateno T[om] Carney	Woman Woman Man Man	"...Marjorie McEwan and Jenny Smith for Computing assistance." "...Yoshio Tateno for his valuable help in computer programming." "...T. Carney for programming assistance..."
1978	Christopher Hermansen Randy Sharp	Man Man	"...Christopher Hermansen for his computational assistance." "Randy Sharp's able programming assistance..."
1979	Mrs. M. Ortner <u>M[rs]. M[argaret] Wu</u>	Woman Woman	"Mrs. M. Ortner for considerable computational and editorial help" "...M. Wu for helping with the computing."
1980	Frank Archibeque	Man	"Frank Archibeque helped in the computing..."
1981	Hugh Everett	Man	"Hugh Everett for his efficient programming..."
1982	Rod Thompson	Man	"The simulations were expertly programmed by Rod Thompson."
1983	S. Kennedy Mrs. Barbara Anderson	Unknown Woman	"...S. Kennedy for assistance in programming." "...Mrs. Barbara Anderson for computer assistance in numerical studies of the model."
1984	R. Barker R. Kennedy	Man Man	"...R. Barker and R. Kennedy for computer programming..."
1985	Pankaj Shah P.E. Johnston P.E. Johnston	Man Man Man	"...Pankaj Shah for doing much of the programming..." "...P.E. Johnston for help with programming..." "...P.E. Johnston for help with programming."
1986	John Spalding	Man	"John Spalding...helped greatly with the computer simulations and graphics."
1987	Mr. P. Mancini T. Roeder	Man Unknown	"...Mr. P. Mancini for his excellent technical assistance in computer simulations." "...T. Roeder for computing work..."

1988	Shiang-tai Tuan Susan Paulsen	Man Woman	“...Shiang-tai Tuan and Susan Paulsen for programming.”
1989	James Bradley	Man	“...James Bradley for assistance with plotting some of the simulation results...”
1990	Mr. G. Baglioni	Man	“...Mr. G. Baglioni for computer technical assistance...”

Each acknowledged programmer is indicated by year. The binary gender of each programmer is identified, when possible. Underlined and italicized names are APs who were acknowledged more than once in different years.

Table S2: Work of recurrent programmers

Year	Journal	Article title	Indicative acknowledgments text or authorship
1975	<i>Biometrics</i>	Tests for Association of Gene Frequencies at Several Loci in Random Mating Diploid Populations	"I am indebted to ... Mrs. Jennifer Smith for programming the analysis on the computer."
1976	<i>Biometrics</i>	Order Statistics of Correlated Variables and Implications in Genetic Selection Programmes	"I am indebted to Jenny Smith for undertaking the numerical analysis..."
1977	<i>Biometrics</i>	Order Statistics of Correlated Variables and Implications in Genetic Selection Programmes. II. Response to Selection	"I am indebted to Jenny Smith for undertaking the numerical analysis."
1976	<i>Genetics</i>	Heterosis or Neutrality	"... Mrs. M. Wu helped with some computing."
1978	<i>Genetics</i>	An Analysis of Multi-allelic Data	"... Mrs. M. Wu for help with the computing."
1977	<i>Genetics</i>	The Homozygosity Test of Neutrality	"I thank Mrs. M. Wu for help with computing..."
1970	<i>The Milbank Memorial Fund Quarterly</i>	Selective Fecundability and Contraceptive Effectiveness	Barbara McCann on author list
1970	<i>Population Studies</i>	Net Delay of Next Conception by Contraception: A Highly Simplified Case	Barbara McCann on author list

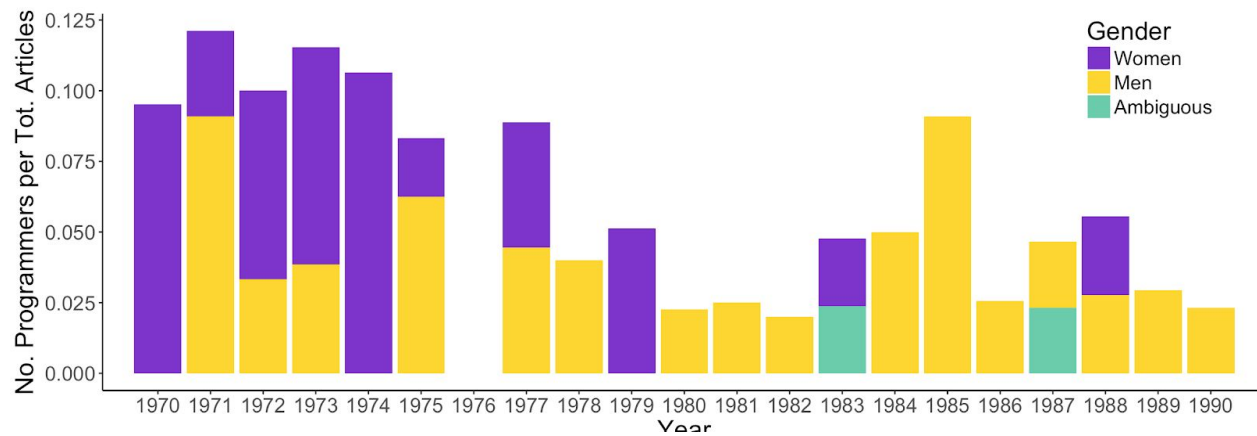


Figure S1: Acknowledged programmers per total number of articles. Each bar represents the frequency of acknowledged programmers per total number of articles in a year broken down by binary gender: red indicates women, green indicates men, and blue indicates gender ambiguous programmers.

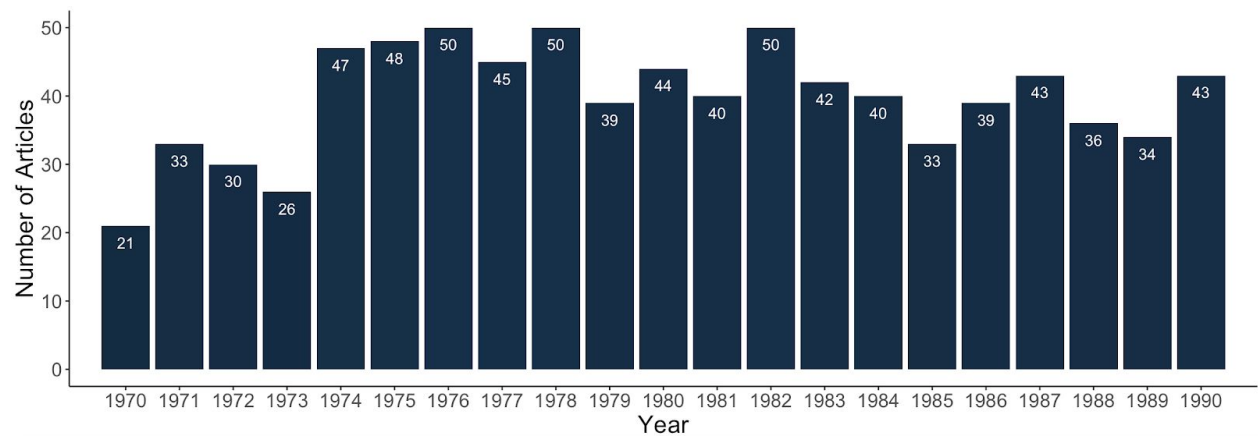


Figure S2: Total number of articles per year in *Theoretical Population Biology*. Each bar illustrates the total number of articles published in *Theoretical Population Biology* in one year from 1970 to 1990.

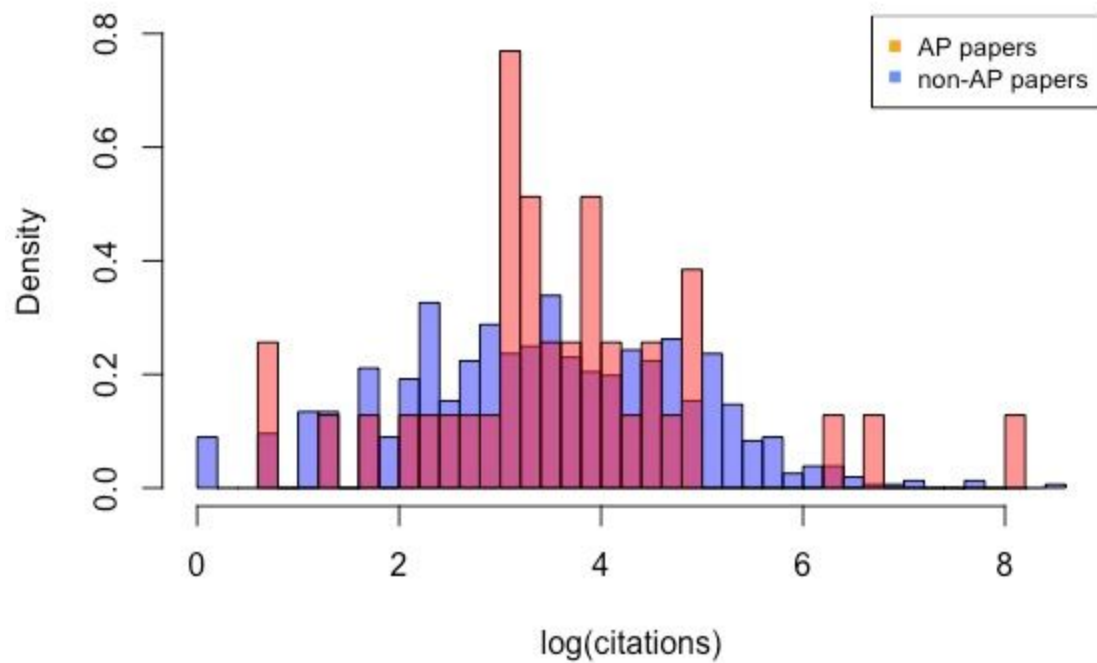


Figure S3: Histogram of number of citations for AP-supported and non-AP papers. The $\log(\text{number of citations})$ is shown for AP-supported papers (in orange) and non-AP papers (in blue).