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Appendix B from S. J. Arnold and L. D. Houck, "Can the Fisher-Lande Process Account for Birds of Paradise and Other Sexual Radiations?" (Am. Nat., vol. 187, no. 6, p. 717)

Supplemental Figures

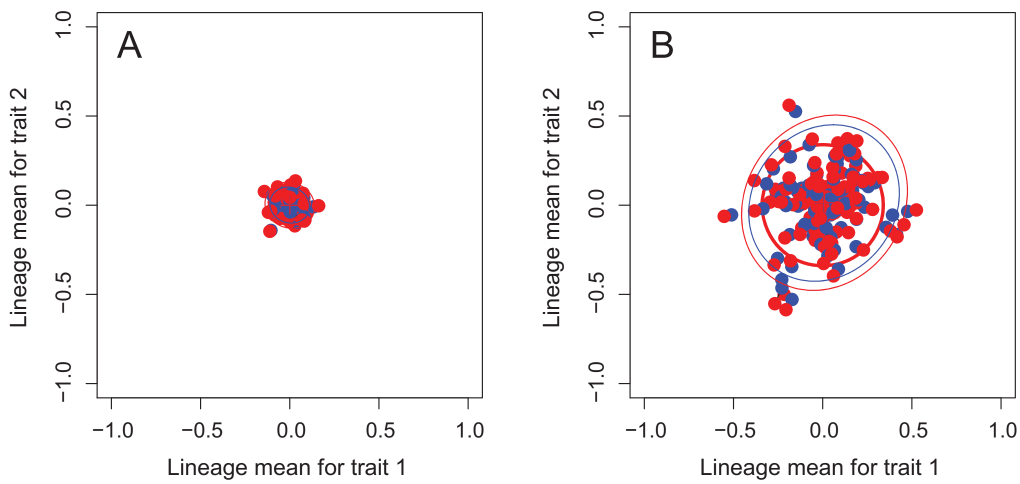

Figure B1: The extent of the radiation (dance floor) enlarges when natural selection on the preferences is relaxed (illustrated with sets of 100 lineages at generation 500; $N_e = 5{,}000$; $P_{ii} = Q_{ii} = 1$; $G_{ii} = H_{ii} = 0.4$; $B_{ii} = 0.24$; $\nu_{ii} = 0.4$; $\nu_{ij} = 0$; $\omega_z = 4, 0, 0, 4$). Graphic conventions are as in figure 4. *A*, Strong stabilizing selection on preferences ($\omega_y = 9, 0, 0, 9$). *B*, Weak stabilizing selection on preferences ($\omega_y = 99, 0, 0, 99$).

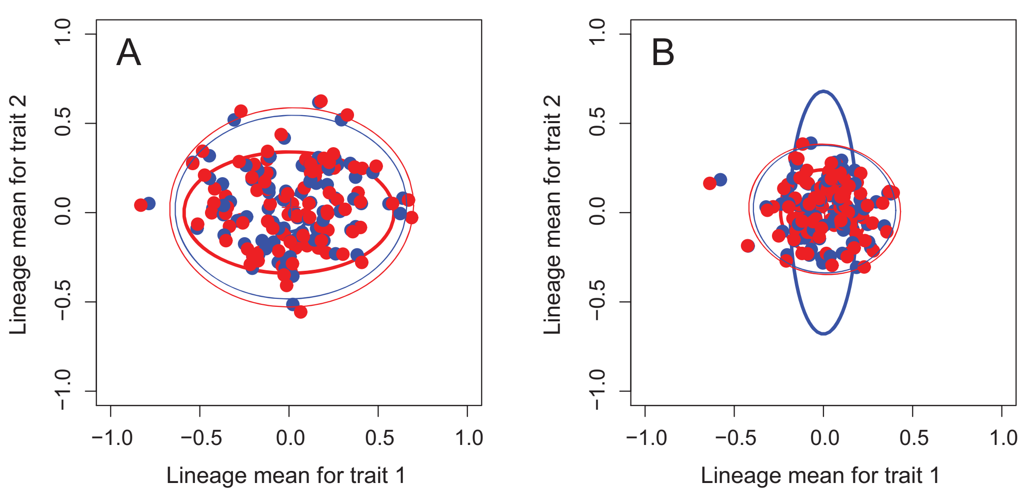

Figure B2: Stabilizing natural selection on the preferences defines the shape the size of the radiation (illustrated with sets of 100 lineages at generation 500; $N_e = 5{,}000$; $P_{ii} = Q_{ii} = 1$; $G_{ii} = H_{ii} = 0.4$; $B_{ii} = 0.24$; $\nu_{ii} = 0.4$; $\nu_{ij} = 0$). Graphic conventions are as in figure 4. *A*, When stabilizing selection on the two preferences is asymmetric, so is the ornament radiation ($\omega_z = 9, 0, 0, 9$;

$\omega_y = 299, 0, 0, 99$). *B*, When stabilizing selection on the two ornaments is asymmetric, the ornament radiation mirrors the shape of selection on preferences ($\omega_z = 29, 0, 0, 399$; $\omega_y = 49, 0, 0, 49$).

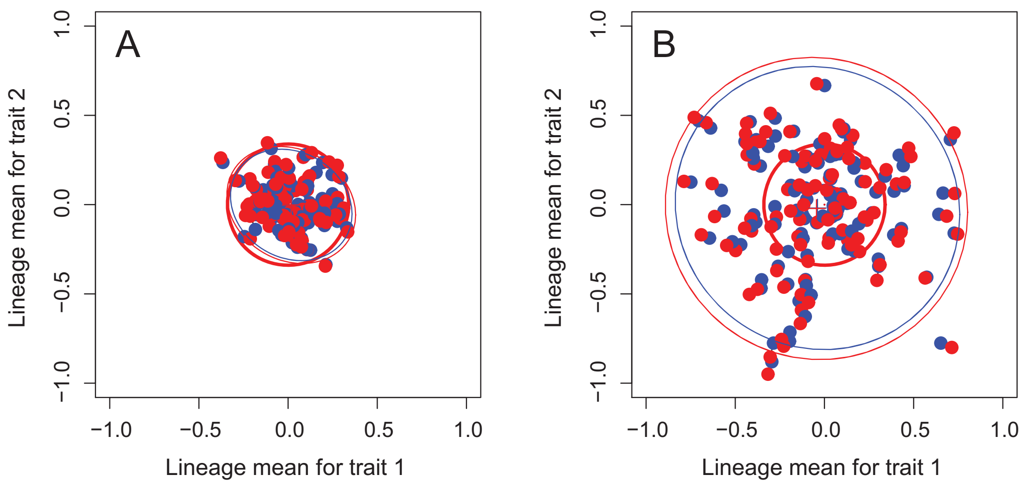

Figure B3: A genetic correlation between the sexes is required for extraordinary evolution of preferences but not for extraordinary evolution of ornaments (illustrated with sets of 100 lineages at generation 500; $N_e = 5{,}000$; $P_{ii} = Q_{ii} = 1$; $G_{ii} = H_{ii} = 0.4$; $B_{ii} = 0.24$; $\nu_{ii} = 0.4$; $\nu_{ij} = 0$; $\omega_z = 9, 0, 0, 9$; $\omega_y = 99, 0, 0, 99$). Graphic conventions are as in figure 4. *A*, With no genetic correlation between the sexes, ornaments and preferences do not evolve outside the limits imposed by natural selection on preferences ($B_{ii} = 0$, correlation is 0). *B*, With strong genetic correlation between the sexes, both ornaments and preferences evolve beyond bounds imposed by natural selection ($B_{ii} = 0.36$, correlation is 0.9).

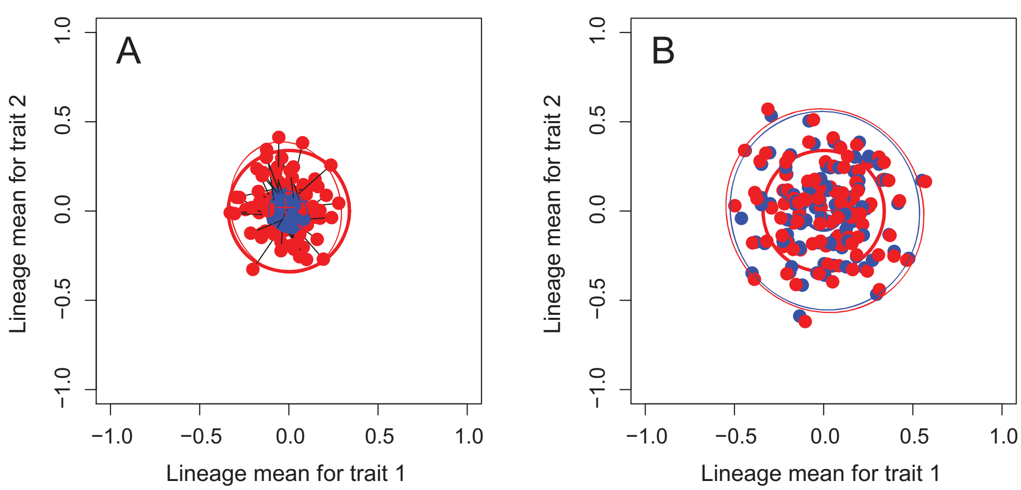

Figure B4: Strong mate choice (large ν) increases the size of the sexual radiation and the tempo of the tango (illustrated with sets of 100 lineages at generation 500; $N_e = 5{,}000$; $P_{ii} = Q_{ii} = 1$; $G_{ii} = H_{ii} = 0.4$; $B_{ii} = 0.24$; $\nu_{ij} = 0$; $\omega_z = 4, 0, 0, 4$; $\omega_y = 99, 0, 0, 99$). Graphic conventions are as in figure 4. *A*, With weak mate choice ($\nu_{ii} = 40$), ornaments remain close to their natural selection optimum. *B*, With strong mate choice ($\nu_{ii} = 0.08$), ornaments are pulled far from their optimum.

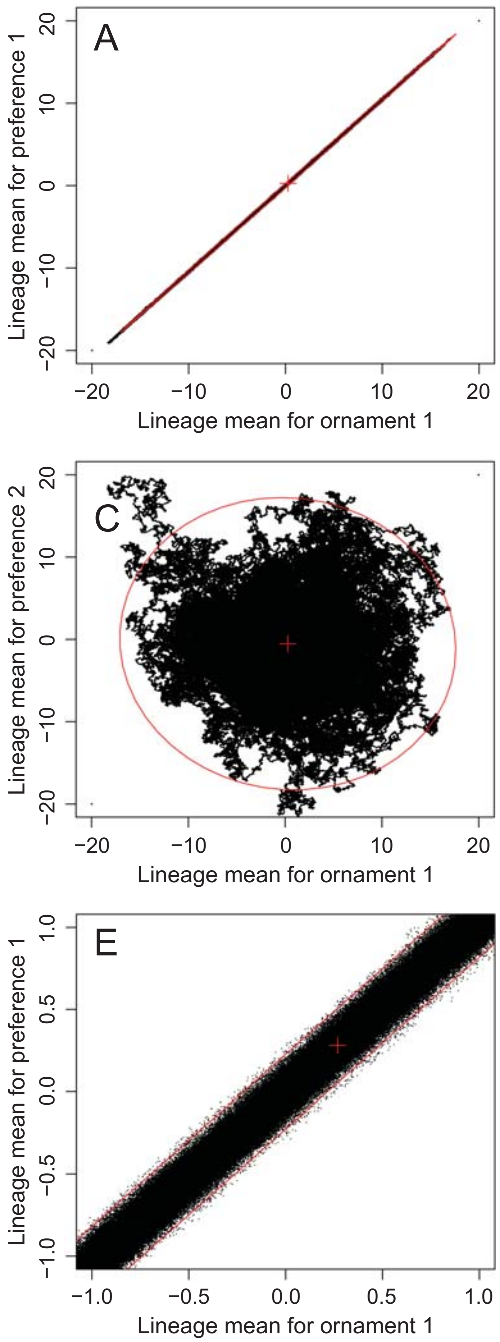

Figure B5: Lineage preference means plotted against lineage ornament means, showing dispersion of bivariate means along a line of equilibrium (illustrated with 25 lineages at generation 100,000; $N_e = 500$; $P_{ii} = Q_{ii} = 1$; $G_{ii} = H_{ii} = 0.4$; $B_{ii} = 0.24$; $B_{ij} = 0$; $\nu_{ij} = 0.4$; $\nu_{ij} = 0$; $\omega_z = 9, 0, 0, 9$; $\omega_y = 9{,}999, 0, 0, 9{,}999$). The data are from the same simulation run portrayed in figure 6. The 95% confidence ellipse for the bivariate mean is shown in red. *A*, Preference trait 1 as a function of ornament trait 1. *B*, Preference trait 1 as a function of ornament trait 2. *C*, Preference trait 2 as a function of ornament trait 1. *D*, Preference trait 2 as a function of ornament trait 2. *E*, Close-up view of preference trait 1 as a function of ornament trait 1. The band of data points, assessed perpendicular to the band, is about 0.3 within-population phenotypic standard deviations wide.

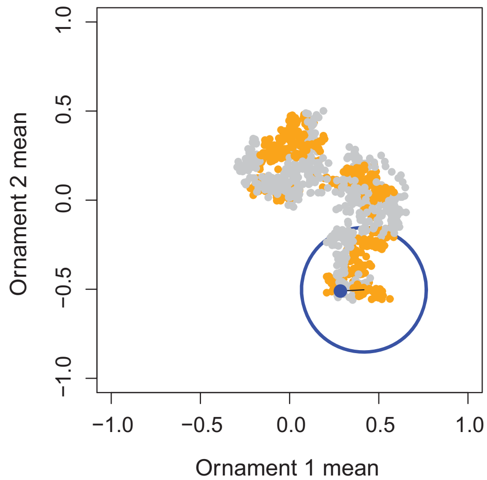

Figure B6: Simulated evolution of ornaments with a moving optimum but no sexual selection. The orange dots show past positions of the optimum, which moves by Brownian motion over a period of 500 generations. Parameters and conventions are as in figure 3 but with the optimum moving at a rate specified by $\sigma_\theta^2 = 0.00055$.