

Re: Group selection in the breeding of super chickens

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- *From:* "John W Edser" <edser@xxxxxxxxxxxxxxxx>
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Lorentz <drosen0000@xxxxxxxx> wrote:--

JE:--

You are not new to this group. I must have defined these over a hundred times by now. ...

1) Total Darwinian Fitness (TDF): the total number of just fertile forms reproduced per parent per population. The only possible way to halt all Darwinian natural selection within one natural population is to artificially maintain TDF to remain equal per parent per population. Note that this also remains the only way that heritable variation provided by just random mutation and random sampling error can become empirically separated within a natural population because after non random selection has been halted entirely, all that remains are these random processes.

Your formulation STILL doesn't explain how a sexual animal can go from being almost totally asocial to have a refined, sophisticated group identification.

JE:--

Sexual forms can indeed be selected to become social in more and more complex ways via mutualised increases in TDF. Groups are predicted to form and split depending on mutualised TDF payoffs. The mean cost of maintaining such groups (they don't come for free) must remain less than the mean TDF mutualised gains otherwise the social grouping will be selected against at just the monocentric Darwinian, adult organism level of selection and dissolve. The mutual reduction of risk per parent has become a very strong focus for the selection of social group mutualisation via the Baldwin effect. An example is the way Emperor penguins huddle to provide warmth when incubating an egg with their feet in just appalling, sub zero conditions.

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Cheating can lower the mean TDF mutualisation point providing a loss for every parent within one group including the cheater.

http://en.wikipedia.org/wiki/Emperor_Penguin

Those huddling on the outside are more at risk than those on the inside where the larger the group the less are the relative numbers that have to be on the outside because of simple volume/surface area ratios. Mutualised TDF selection predicts that these groups should remain as large as possible. Study of these huddles demonstrates that every penguin must rotate their position so that those on the outside eventually get their turn on the inside. Note that any one penguin not rotating stops all the others. An insurance premium which has to be paid (your turn on the outside) provides a gain larger gain (the time you spend on the inside) for each and every member of that group allowing a complex social trait to evolve without any group selection. Note that some social interrelation is much better than none at all, i.e. just two penguins making a huddle is much better than none. Primitive, selfish, scramble competition for huddling which acts as a critical social resource cannot work because the ensuing fighting destroys that resource. This is just obvious in this unique situation. However, I argue that the exactly the same risks/costs are to be found within any fitness mutualized social trait. The only difference is that they are not as obvious. In the chicken example the socialised group paid monocentric TDF dividends which remained greater than the costs allowing group sociality to remain 100% NOT group selected.

The self contradiction can be seen in three easy steps.

1) Your formulation doesn't allow us to consider the natural selection of a gene. Talking about competition between genes is a narrow, gene centric view. I can't talk about selfish genes, altruistic genes, cheater genes, or even genes that make one good looking. I can only talk about genes in the "sexually mature individual" or some approximation of that concept.

JE:–

Monocentric selection acting on single genes can happen, but only indirectly and not directly. This is because the fitness relationship of any one gene to any other within the same genome was and remains epistatic, i.e. non additive. This can provide two opposing effects: buffer one phenotype against change (canalization) while providing the reverse for another phenotype coded within the same genome: accelerate change (assimilation). Geometric change is not as predictable as simple, additive change, i.e. it remains many times more complex and not at all understood. This is why it is deleted within popular gene centric oversimplified models. Please refer to the Waddington's critical amendment to Haldane's basic population genetics

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equations which I have posted here twice, where Waddington provided a variable for epistasis for the very first time. Waddington's critical amendment remains ignored.

2) The "sexually mature individual" never replicates itself completely.

JE:–

Yes. If it did and this was heritable, then evolution by natural selection would become impossible.

Each sexually mature reproductively active individual animal (your favourite unit)..

JE:–

No, just Darwin's implied monocentric unit.

will vary greatly from its parents. Since sexual animals exchange genes (the units you feel are too poorly defined to be meaningful), each generation is different both genetically and phenotypically from the next.

JE:–

Yes, but the overwhelming majority of heritable variation is deemed "inherited but not heritable" only because it remains epistatic. Conventional wisdom dictates that epistatic traits cannot survive meiosis as just an unproven proposition. We simply cannot code for the vast number of inherited phenotypes which typify our species compared to another such as the chimp with only 20,000 or so additive genes.

We may resemble our parents, but we never are exactly like our parents. So we don't know what variation is acted on by natural selection, because "the whole animal" doesn't have any trait that is 100% inheritable.

JE:–

And..neither does the fitness of any one gene...

If a "sexually mature individual" is very fit, I can't discuss which of its siblings carries the mantle of being its true copy.

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JE:–

Canalisation can take care of that.

3) By your definitions, there can be no sexually mature individuals individuals that can be described as "group of more than one sexually mature individual organisms."

JE:–

There are expanding and contracting fitness mutualised groups of sexually mature individuals which associate or not, depending entirely on the benefits they provide for others /take for themselves, on just an additive fitness basis.

Otherwise, one is left with the same ambiguities as in a "gene centric model." So I can't use group selection in your formalism, either.

JE:–

My formalism of Darwinism allows just the one fitness maximand: TDF. A maximand is something which always remains maximal e.g. the velocity of light in a vacuum. If two maximands exist within the same theory they must mutualise or extinguish each other. Di-centric group selection theory has never taken this logic into consideration.

You can't make an ambiguity go away by saying "statistics lie."
Regardless of whether a model can be mathematically modeled or not, the logic has to be describable linguistically.

JE:–

I have never claimed that "statistics lie" because they always have to be interpreted within a theory and I agree entirely that all valid models remain logical. I propose that any linguistic model has to remain a theory and not just a simplified/oversimplified model of a theory

A linguistic ambiguity
is still an ambiguity.

JE:–

I entirely agree.

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Its possible there is no completely unambiguous
formulation that completely describes natural selection.

JE:-

No. TDF equalisation remains _the only empirical way_ to halt all Darwinian
monocentric natural selection within one natural population.

Never the
less, maybe you should document the points in your theory, and others
if you wish, where the concept is ambiguous.

JE:-

AFAICT, Darwinian theory as I have formulated it remains unambiguous.

Regards,

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